

**Project Name: Development of S&D Network in Ajaynagar and adjoining areas in Borough XII (Part of Ward 109)**

**Contract Package No. KURIP/OCB/SD02/2023-24**



**KOLKATA MUNICIPAL CORPORATION**



**Kolkata Urban Resilience Improvement Project**

**SITE SPECIFIC ENVIRONMENTAL MANAGEMENT PLAN**

**Traders & Engineers Private Limited**

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# **SITE SPECIFIC ENVIRONMENTAL MANAGEMENT PLAN**

**This document prepared by our Environment Specialist and is approved by authorised signatory of the Traders & Engineers Private Limited which is binding on the designated Project Manager & Environment Specialist after approved of KMC.**

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## LIST OF ABBREVIATIONS

ADB - Asian Development Bank  
ASI - Archaeological Survey of India  
BOD - biochemical oxygen demand  
COD - chemical oxygen demand  
CPCB - Central Pollution Control Board  
CTE - consent to establish  
CTO - consent to operate  
DWF - dry weather flow  
EIA - environmental impact assessment  
EKW - East Kolkata Wetlands  
EMP - environmental management plan  
FDL- Full Discharge Level  
GRC - grievance redress committee  
GRM - grievance redress mechanism  
IEE - initial environmental examination  
KEIP - Kolkata Environmental Improvement Project  
KEIIP - Kolkata Environmental Improvement Investment Program  
KMC - Kolkata Municipal Corporation  
KMDA - Kolkata Metropolitan Development Authority  
KURIP - Kolkata Urban Resilience Improvement Project  
MFF - multitranche financial facility  
NIOSH - National Institute of Occupational Health  
O&M - operation and maintenance  
PMU - program management unit  
PMDSC - project management and design supervision consultant  
REA - rapid environmental assessment  
ROW - right-of-way  
S&D - sewerage and drainage  
SEMR - semi-annual environmental monitoring report  
SPS - Safeguard Policy Statement  
STP - sewage treatment plant  
SWF - storm water flow  
TDS - total dissolved solid  
TMP - traffic management plan  
WBPCB - West Bengal Pollution Control Board

## WEIGHTS AND MEASURES

m<sup>3</sup>/h - cubic meter per hour  
dB(A) - decibel in A network  
°C - degree Celsius  
km - kilometer  
km/h - kilometer per hour  
kVA - kilovolt-ampere  
kW - kilowatt  
m - meter  
µg/m<sup>3</sup> - microgram per cubic meter

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mg/l - milligram per  
liter ML - million liters  
MLD - million liters per  
day mm - millimeter  
MPN/100ml - Most Probable Number per one hundred  
milliliters NTU - Nephelometric Turbidity Unit  
km<sup>2</sup>- square kilometer

# 1. PROJECT LAYOUT DRAWING

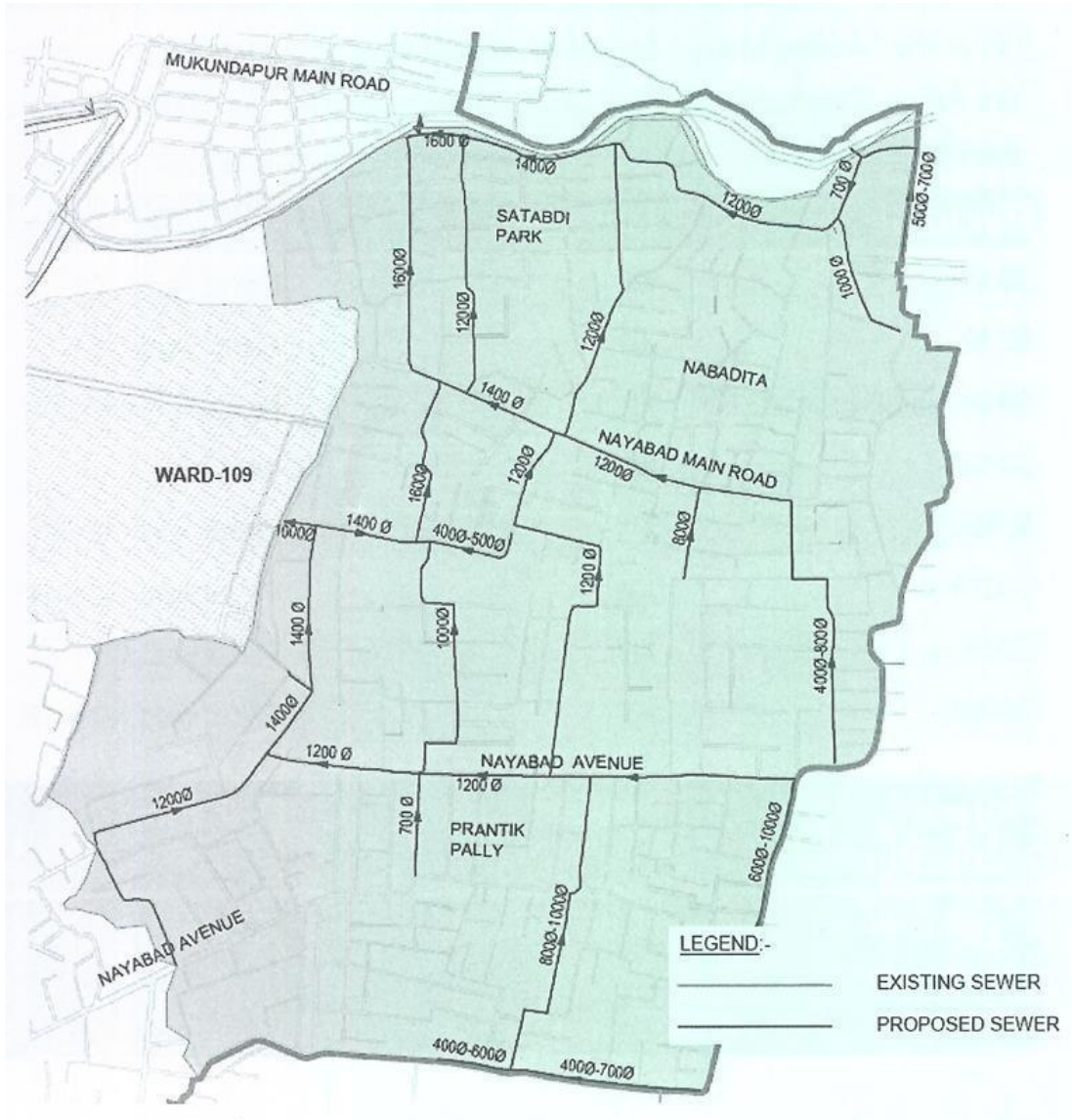


Figure 1

## 2. SITE ORGANISATION CHART

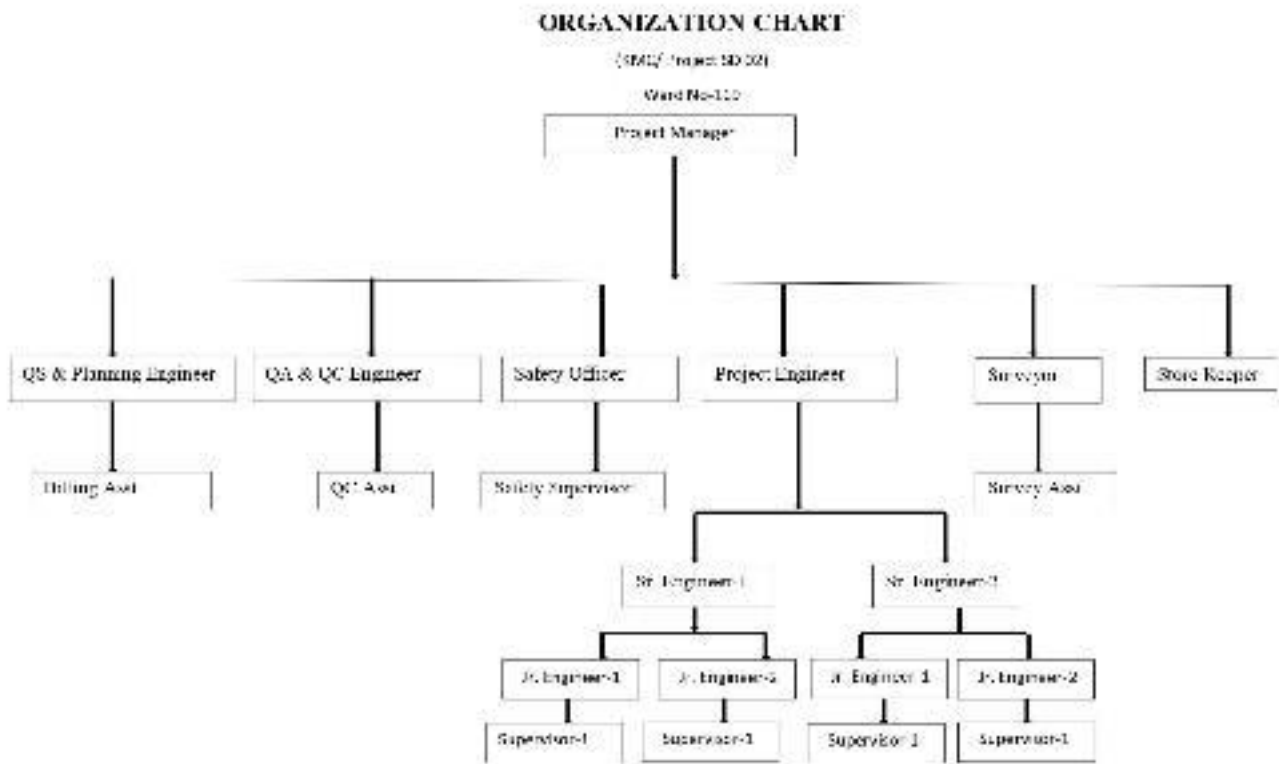


Figure 2

### **3. EXECUTIVE SUMMARY**

Background: Kolkata Urban Resilience Improvement Project (KURIP) is a key urban infrastructure initiative of the Kolkata Municipal Corporation (KMC). KURIP is a continuation endeavour of ADB's support to improve the liveability and quality of life of the urban people in the jurisdiction of the KMC area. The project aims to improve the urban environmental condition and quality of life in Kolkata Municipal Area through improvement of sewerage and drainage (S&D) system. The expected outcome of the project is to increase access to resilient, inclusive and sustainable urban services. The following are the outputs: Output 1: Urban infrastructure and systems strengthened and Output 2: Enabling environment for sustainable and resilient urban services strengthened.

Development of S&D networks are proposed in Ajaynagar their adjoining areas which are part of Ward no.109 under Borough XII of KMC. Total area considered under this sub-project is 270.2 ha. The proposed system has been developed essentially as a combined network to carry both Dry Weather Flow (DWF) and Storm Water Fow (SWF) generated from the catchment area. This sub project includes following civil works:

### **4. PROJECT DESCRIPTION**

**Ajaynagar area (SD 02):** (i) sewer networks of 8.4 km;(ii) construction of catch pits (981nos), Gully pits (52 nos) & Manholes ( 466 nos.),(iii) House service connections and (iv)construction of outfall structures (4 nos.)

## 5. DETAILS OF CONSTRUCTION WORK SITES

Ajaynagar Zone					
Budherhat road	600 – 1600	804	1.3 – 2.8	11.0	Roads through which sewer pipelines will be laid are under the ownership of Kolkata Municipal Corporation (KMC),
Roads in Budherhat area	300 – 800	1348	0.85 – 1.6	4.5	
Budherhat road crossing to SRFTI crossing	500 – 1200	871	1.15 – 2.2	9.5	
Sonai road	1400	161	2.5	9.5	
Near Nabadiganta playground to Sonai road crossing	400 – 700	316	1.0 – 1.45	6.0	
Sonai road crossing to MK Star Motors crossing	1400	288	2.5	9.5	Kolkata Metropolitan Development Authority (KMDA) and Public Works Department (PWD).
Maa Kite centre crossing to Guniagachi canal bank road	1200	401	2.2	7.0	
Vivekananda park area road	1200	267	2.2	6.0	
Road beside Agnibina Sangha playground	1200	193	2.2	6.5	
Road beside Ajoy Nagar Tarun Sangha playground	600	149	1.3	6.5	
Road beside SRFTI	600 – 1200	522	1.3 – 2.2	6.5	
Nabadiganta area road	400 – 600	309	1.0 – 1.3	7.5	
Budherhat road crossing to Guniagachi canal bank road	1200 – 1600	490	2.2 – 2.8	9.5	
Dinesh nagar area road	300 – 1400	630	0.85 – 2.5	6.0	

Figure 3

Ajaynagar Zone (SD-02)			
Laying of trunk sewer and secondary sewer network with manholes and house sewer connections	Collection of Storm Water Flow (SWF) from entire catchment area and Dry Weather Flow (DWF) from individual houses	<p><b>New:</b></p> <p><b>1.Total networks</b></p> <ul style="list-style-type: none"> <li>Length: 6.7 Km</li> <li>Pipe material: Reinforced Cement Concrete (RCC) with class NP3, spigot and socket type conforming to IS: 458 which may be vertically cast Diameter: 300 to 1600 mm</li> <li>Road width: 4.5 to 11.0 m</li> <li>Trench width: 0.85 to 2.8m</li> </ul> <p><b>2. Trunk sewer</b></p> <ul style="list-style-type: none"> <li>Length: 5.4 Km</li> <li>Diameter: 600 mm and above</li> </ul> <p><b>3. Secondary Sewer</b></p> <ul style="list-style-type: none"> <li>Length: 1.3 Km</li> <li>Diameter: below 600 mm</li> </ul> <p><b>4. Manholes - 352</b></p> <ul style="list-style-type: none"> <li>Material: Brick masonry circular manholes</li> </ul> <p><b>5. Gullypit – 41, Catchpit - 784</b></p> <p><b>6. Household sewer network: 15.6 km</b> Materials: Unplasticized Polyvinyl Chloride (uPVC) as per IS: 4985 PVC-U pipes of Class-III (6 Kg/cm<sup>2</sup>) rated pipes Pipe stiffness (SN): 110 mm or 160 mm outside diameter (OD)</p> <p><b>7. Road restoration: 6.7 Km</b></p>	<p>Trunk sewers are proposed to be laid underground along the major roads of the catchment viz. Budherhat Road, Guniagachi branch canal road, Nabadiganta etc.</p> <p>No government or private land acquisition is required for the project as the pipeline will be laid in the middle of the existing roads of PWD/KMC/KMDA.</p> <p>The manholes will be constructed based on the assessment of subsoil condition and traffic loads within the ROW of government roads along the sewer network.</p> <p>House sewer connections will be provided through a chamber constructed within property line and another chamber outside the property line. Chambers are to be connected with manholes in the main sewer line below the roads</p>
<b>Outfall structures</b>	Gravity outfalls are included in the network	<b>New:</b>	<b>New:</b>
Component	Function	Description	Location
	design to evacuate storm runoff generated from the packages. All the outfalls are proposed to be with controlling arrangement to prevent possibility of intrusion of canal water into the S&D system during the high water level condition in the canals. Invert level of all the outfalls are considered to be at FDL or above FDL of canal with sluice gate with requisite size.	<p>Six gravity outfall structures</p> <p>Storm water from the S&amp;D network is proposed to be disposed of to the Suti canal under TP Basin by gravity outfalls proposed at Budherhat Road</p> <p>Drainage system in and around KMC area including Suti canal mostly gravitated eastwards to Kulti River of Matla estuary system (about 45 km downstream of Kolkata) which ultimately meets with River Bidyadhari at a distance of about 70km.</p>	<p><b>All outfalls are proposed at Budherhat Road in following locations:</b></p> <ol style="list-style-type: none"> <li>Long. 88.402929, Lat. 22.4803</li> <li>Long. 88.403141, Lat. 22.481955</li> <li>Long. 88.402539, Lat. 22.483774</li> <li>Long. 88.402238, Lat. 22.484417</li> <li>Long. 88.402028, Lat. 22.484347</li> <li>Long. 88.402174, Lat. 22.48505</li> </ol> <p>Outfall locations (canals) are under the Irrigation department Govt. of West Bengal</p>

**Figure 4**

## **6. Construction Materials.**

Significant amount of construction material will not require in this sub-project as only pipelines of about 16 km are proposed to be laid along with construction of manholes and outfall structures. Sand and coarse aggregate will be required for this project, which will be sourced from quarries. Quarries inevitably cause extensive physical changes; as construction materials are excavated from the ground, leaving large cavities, or levelling hillsides, etc. The physical damage caused by quarries is controlled by allowing them to operate within specific limited areas only, so the damage is restricted in extent and not allowed to spread indiscriminately. New quarries are subject to a rigorous process of environmental assessment to ensure appropriate siting and adequate environmental controls on the operation. It will therefore be important to ensure that construction materials for this project are obtained from government approved licensed quarries only, to ensure these controls are in place. Contractor should avoid new borrow pits / quarries as far as possible, if necessary, all the permissions, including conduct of environmental assessment, and environmental clearance as necessary shall be obtained prior to start of quarrying activity. The contractor should also make a concerted effort to re-use as much excavated material from this project as possible. The construction contractor will be required to:

- (i) Obtain construction materials only from government approved quarries with prior approval of PMU;
- (ii) Verify suitability of all material sources and obtain approval of PMU; and
- (iii) Submit to PMU on a monthly basis documentation of sources of materials.

If contractor is purchasing ready mix concrete, asphalt/macadam and aggregates from third party, contractor will assure that all the parties/ suppliers are having CTE/CTO from WBPCB and will collect the copy of these certificates and submit to PMU/ PMDSC consultants.

- (iv) Avoid creation of new borrow areas, quarries etc., for the project; if unavoidable, contractor to obtain all clearances and permissions as required under law, including Environmental Clearance prior to approval by PMU.

## **7. POPULATION FORECAST**

The subproject area is a rapidly developing area with increasing number of populations.

According to 2011 Census data, Ward 109 had a population of 64,567. Total number of projected population in 2028 (base year) would be 32,462 in Ajaynagar Zone

## **8. Project Back ground**

Existing condition of sewerage and drainage in subproject area. Kolkata has a combined sewerage and drainage system. An organized S&D system (Town System) was first introduced in 1859 covering 19.13 sq. km area. For the fringe areas (covering wards 101 to 144) annexed to KMC in 1984 & subsequently in 2012, the existing drainage network was grossly inadequate, before development of S&D system in KEIP & ongoing KEIIP. The present subproject area is a part of the 'Added areas' but not covered under the KEIP & the ongoing KEIIP. The area is partially covered by S&D network, except few segregated parts. However, due to, proper drainage outlet, undersized size sewer line and sewers being laid at a shallow depth, they are not functioning properly which is resulting in waterlogging in different parts of the project area after any event of moderate to high intensity rainfall occurrence.

A part of the combined flows from the south and south eastern parts of the project area in Ajaynagar reaches the existing Chakgaria PS through the existing Ajaynagar avenue sewer. A large sized drain (part open, part covered) flowing from east to west exists along Shuvam avenue which receives the flows generated from the areas in between Shuvam avenue and Ajaynagar main road, viz. Bhagat Singh

nagar, Bikash Guha colony etc. Part of the flow from this drain finds its way to the Ajaynagar avenue sewer through a connection in Prantik Pally for onward transmission to Chakgaria PS. The remaining part of the flow gets discharged to a canal at two locations viz. one near Saregamapa More and the other near Appearance Roy's apartment for onward transmission to Suti canal. Areas in between Ajaynagar main road and Guniagachi branch canal viz. Nabadita, Satabdi Park etc. discharges to Guniagachi branch canal through 8 nos. outfalls. via the existing network.

Combined flows generated from Sahid Smrity area discharges to the Panchasayar sewer network which in turn conveys its flow to Chakgaria Pumping Station. The existing sewerage and drainage network in Nabadiganta area discharges a part of its flow to Suti canal through two outfalls. Remaining part of the flow from Nabadiganta area, entire flow from Ajoynagar, Vivekananda park, Mukundapur, Dineshnagar etc. are discharging directly to Guniagachi canal through four outfalls. Flows from Budherhat area discharges to Suti canal through three outfalls.

In absence of any sluice gate<sup>7</sup> these outfalls also act as inlets for canal water into the existing sewerage and drainage system when water level in the canal is high. As a result of this, those areas remain water logged for a prolonged period of time during the rainy season. Number of water-logged areas/ pockets have been identified during field survey viz. Dreamland, Bhagat Singh Nagar, Bikash Guha Colony, Daspara Bazaar area, Saregamapa More, Budherhat, Nabadiganta, Ajoynagar, Mukundapur 4 No., Dinesh Nagar etc. Waterlogging condition sometimes lasting upto one week often become breeding ground of mosquitoes, which transmit malaria, dengue and other diseases.

The sub project area depends largely on septic tank arrangement for household sanitary systems and existing drainage systems for storm water, wastewater, and effluents of septic tanks in many cases the existing lines do not have any proper outlet and terminated into low land/ canal. All these existing practices need to be controlled by providing comprehensive waste water (DWF + SWF) collection system. This system needs to be proposed for the basin with defined drainage outlet to canal through gravity overflows and pumping of SWF to Tollygunje - Panchannagram (TP) Canal and diversion of the entire quantum of DWF generated.

## **9. Proposed Project**

The proposed system has been developed essentially as a combined network to carry dry weather flow (DWF) and storm water flow (SWF) generated from the catchment area. The existing drainage pattern of the study area was also combined in nature. The system will be developed in such a manner so that, the functioning of the proposed S&D network will be independent of one another.

In the combined system the sewage as well as the storm water flows through the same conduit. As quantum of storm water flow is several times greater than the dry weather flow, the system carries an insignificant flow for major period of a year. The roads within the KMC are in general narrow, particularly in the study areas and it will be extremely difficult to lay at least two separate conduits for storm water flow (SWF) and dry weather flow (DWF) keeping into consideration the presence of other utility lines. Further, the prevailing drainage system in the city is combined in nature i.e. carries both sewage and storm runoff. Therefore, the sewer network in the study area is proposed to be designed as a combined system, considering the prevailing drainage pattern and narrow road network in the entire catchment area which is prohibitive for laying at least two conduits required for a separate system – one to carry dry weather flow and other for storm flow. In order to avoid undue loading bypass arrangement is proposed at strategic locations so that during heavy showers, excess flow is diverted through the outfall system. Design Period. The design period of proposed network is decided that the systems will operate for many years after their completion. The gestation period of subprojects under KURIP is to be considered as 5 years thus completed by 2028. Accordingly, the project horizon is considered as year 2058 considering 30 years of design period.

## **10. POLICY, LEGAL AND REGULATORY REQUIREMENTS**

The key applicable legal requirements to the environmental and social aspects of the investments implemented in the project are as follows:

Environmental Impact Assessment (EIA) Notification	The EIA Notification of 2006 and 2009 (replacing the EIA Notification of 1994), set out the requirement for environmental assessment in India. This states that Environmental Clearance is required for certain defined activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts. Category A projects requires Environmental Clearance from the National Ministry of Environment, Forest and Climate Change (MOEFCC). Category B projects require Environmental Clearance from the State Environmental Impact Assessment Authority (SEIAA)
National Environment Policy (NEP), 2006	NEP is a comprehensive guiding document in India for all environmental conservation programs and legislations by Central, State and Local Government. The dominant theme of this policy is to promote betterment of livelihoods without compromising or degrading the environmental resources. The policy also advocates collaboration method of different stakeholders to harness potential resources and strengthen environmental management
Water (Prevention and Control of Pollution) Act of 1974, Rules of 1975, and amendments	Water (Prevention and Control of Pollution) Act of 1974, Rules of 1975, and amendments. Control of water pollution is achieved through administering conditions imposed in consent issued under provision of the Water (Prevention and Control of Pollution) Act of 1974.
Air (Prevention and Control of Pollution) Act of 1981, Rules of 1982 and amendments.	This Act was enacted to achieve prevention, control and abatement of air pollution activities by assigning regulatory powers to Central and State boards for all such functions. The Act also establishes ambient air quality standards.  The projects having potential to emit air pollutants into the atmosphere have to obtain CFE and CFO under Section 21 of the Act from WBPCB. The occupier of the project/facility has the responsibility to adopt necessary air pollution control measures for abating air pollution.
Environment (Protection) Act, 1986 and Central Pollution Control Board (CPCB) Environmental	Emissions and discharges from the facilities to be created or refurbished or augmented shall comply with the notified standards notified.

Standards.	
Noise Pollution (Regulation and Control) Rules, 2002 amended up to 2010.	Rule 3 of the Act specifies ambient air quality standards in respect of noise for different areas/zones.
Solid Waste Management Rules 2016	Rules for management of municipal solid waste. Responsibility of solid waste generator include waste segregation, and no throwing, burning or bury the solid waste generated on streets, open public spaces outside the premises or in the drain or water bodies, storage and disposal as per the rules
Construction and Demolition Waste Management Rules 2016	Rules for management of construction and demolition waste generated. Rules requires waste generators to segregate, ensure no littering or deposition so as to prevent obstruction to the traffic or the public or drains, obtain permission from local authority.
Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016,	Rules for management of hazardous wastes, which specifies, among others, the responsibilities for safe and environmentally sound management of hazardous and other wastes.
Biodiversity Act of 2002	An act to regulate and control the development and management of ground water and matters connected therewith or incidental thereto.
Forest (Conservation) Act, 1980 and Forest Conservation Rules, 2003 as amended	As per Rule 6, every user agency, who wants to use any forest land for non-forest purposes shall seek approval of the Central Government.
West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006	The Act states that those who want to fell trees will have to obtain permission from the Forest Directorate, Government of West Bengal. Violators (means whoever fells or causes to be felled any tree or cuts, uproots or otherwise disposes of any fallen tree or contravenes the permission granted) shall be punished with imprisonment up to one year or with fine of Rs.5000/- or both. Also, until plantation of requisite number of trees is undertaken, the violators will be fined for each day of default of Rs.50/-. In case the development agency or entrepreneur fails to implement the plantation plan, the defaulter might have to face an imprisonment up to two years or fine that may extend to Rs.10,000/- or with both. Permission from the Divisional Forest Officer (Utilization Division), Forest Directorate, Government of West Bengal will be required if trees, particularly those looked upon as sacred groves, identifies as belonging to an endangered species, or given the status of heritage, will be cut/felled.
East Kolkata Wetlands (Conservation and	In August 2002, 12,500 hectares (ha) of the East Kolkata Wetland area was included in the 'Ramsar List' making it a 'wetland of International Importance'. The Ramsar convention is playing a vital role by

Management) Act, 2006	<p>providing certain basic guidelines to draw up suitable plans for the maintenance and sustenance of the wetlands. Among these, the three most important guiding principles are: (i) maintenance of the special characteristics of the ecosystem; (ii) wise use of its resources with an eye towards sustainability; and (iii) economic development for the wetland community. The East Kolkata Wetlands Management Authority (EKWMA) has the power to enforce land use control in the substantially water body-oriented areas and other areas in the East Kolkata wetlands.</p>
Labor Laws	<p>The contractor shall not make employment decisions based upon personal characteristics unrelated to job requirements. The contractor shall base the employment relationship upon equal opportunity and fair treatment and shall not discriminate with respect to employment relationship, including, aspects of the recruitment and hiring compensation (including wages and benefits), working conditions and terms of employment or retirement, and discipline. The contractor shall provide equal wages and benefits to men and women for work of equal value or type.</p>
The Child Labour (Prohibition and Regulation) Amendment Act, 2016	<p>No child below 14 years of age will be employed or permitted to work in any of the occupations set forth in the Act's Part A of the Schedule or in any workshop wherein any of the processes set forth in Part B of the Schedule. Child can help his family or family enterprise, which is other than any hazardous occupations or processes set forth in the Schedule, after his school hours or during vacations</p>
Construction and Demolition Management Rule 2016 of MOEF & CC (26 March 2016)	<p>Applies to everyone who generates construction and demolition waste. Every waste generator shall segregate construction and demolition waste and deposit at collection centre or handover it to the authorised processing facilities. Shall ensure that there is no littering or deposition so as to prevent obstruction to the traffic or the public or drains.</p>
Department of Environment's direction under Air Act 1981 for control of air pollution from construction activities in West Bengal. (Department of Environment Government of West Bengal, December 10, 2009) Circular	<p>West Bengal Pollution Control Board conducted a study with the help of the Asian Development Bank and it is revealed that the contribution of the construction activities is one of the sources of air pollution in Kolkata and its surroundings and also suggested some guidelines to minimize such impacts</p>

No - EN/3170/ T-IV-7/ 001/ 2009.	
Workmen Compensation Act, 1923	Provides for compensation in case of injury by accident arising out of and during the course of employment.
The Building and Other Construction Workers (BOCW) Act 1996	Labour Department, Go WB has adopted proactive approach and initiated necessary steps to implement the provisions of the BOCW Act for the welfare of construction workers
The inter-state migrant workmen (regulation of Employment and Conditions of service) act, 1979.	Provides for welfare measures to be provided by the Contractor to contract labor and in case the Contractor fails to provide, the same are required to be provided by the Principal Employer by Law. The principal employer is required to take Certificate of Registration and the Contractor is required to take a License from the designated Officer. The Act is applicable to the establishments or Contractor of principal employer if they employ 20 or more contract labor. The inter-state migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home up to the establishment and back, etc.,

## **11. PROJECT SCREENING:**

The project screening has also been carried out to understand the nature, scale and magnitude of potential environmental and social impacts associated with the proposed project. The screening activities have been conducted as per the guidelines provided in Environmental and Social Management Framework of NGRBA (NGRBA, 2020) and on the basis of secondary data analysis, field assessments and stakeholder interactions/consultations.

The screening checklist provided in Annexure 1 detailed out the impact level of various activities during the construction phases. The criteria included environmental factors, such as the presence of eco-sensitive region in and around the project area, clearance of tree cover, improper storage of excavation spoils, flooding of adjacent areas, elevated noise and dust levels, damage to existing utilities, etc. Social criteria included factors, such as requirement of land purchase, displacement of tribes, loss of any livelihood and gender issues.

## **12. BASELINE ENVIRONMENTAL AND SOCIAL FEATURES OF PROJECT AREA**

The baseline data serves as the foundation for evaluating the potential impacts of the proposed project in relation to the existing environmental and social conditions of the study area. Information on the current environmental quality and social characteristics—covering physico-chemical, ecological, socio-economic, and cultural aspects—was compiled from various secondary sources and published literature. In addition, baseline details of environmental and social conditions were obtained through primary surveys conducted at

selected locations, considering project components such as sewer line installation, This baseline assessment highlights the prevailing status of climate, geology, water quality, air and noise levels, as well as the existing green cover within the study area.

□ **Climate :** The climate of Kolkata is predominantly tropical wet and dry type and is highly influenced by the Bay of Bengal. There are three seasons' namely - Summer, Monsoon and Winter. The climate is hot and humid from March to October. It is somewhat cool from November to February. Rains are received principally from June to September with frequent pre monsoon showers and nor'westers during April and May. The winter season begins in November and continues to February, followed by the summer season which continues until mid-June. The monsoon starts in mid-June and goes up to mid-September, sometimes extending up to October.

□ **Topography:** General topography is flat having slope towards north to south and from west to east. The elevations ranges from 1.9 to 3.5 m above MSL. Low lying areas are predominant within the subproject areas; therefore, the area regularly experiences water logging during monsoon even with moderate rainfall.

□ **Geomorphology:** Being a neighbourhood of Kolkata, Ajay Nagar is effectively within the alluvial plain environment — flat terrain, low elevation, high water table, and influenced by wetlands and canals.

Because of the underlying thick sediments and the deltaic environment, the ground is relatively soft and compressible in places — important for construction, foundation design.

□ **Drainage:** Being in Kolkata, many natural drainage channels may have been modified, and old wetlands / marshy zones may have been filled in. Any development must check for past wetlands, subsidence risk.

□ **Elevation & flood risk:** The terrain is near sea- level; many parts of Kolkata, including eastern suburbs and low- lying areas, are flood- prone during heavy rains or high tides.

□ **Seismic Hazard:** the city is located in between seismic zone III and IV indicating moderate to high seismicity.

□ **Hydrology/Drainage Condition:** Kolkata has a combined sewerage and drainage system. An organized S&D system (Town System) was first introduced in 1859 covering 19.13 sq. km area. For the fringe areas(covering wards 101 to 144) annexed to KMC in 1984 & subsequently in 2012, the existing drainage network was grossly inadequate, before development of S&D system in KEIP & ongoing KEIIP. The present subproject area is a part of the 'Added areas' but not covered under the KEIP & the ongoing KEIIP. The area is partially covered by S&D network, except few segregated parts. However, due to, proper drainage outlet, undersized size sewer line and sewers being laid at a shallow depth, they are not functioning properly which is resulting in waterlogging in different parts of the project area after any event of moderate to high intensity rainfall occurrence. The sub project area depends largely on septic tank arrangement for household sanitary systems and

existing drainage systems for storm water, wastewater, and effluents of septic tanks in many cases the existing lines do not have any proper outlet and terminated into low land/ canal. All these existing practices need to be controlled by providing comprehensive waste water (DWF+ SWF) collection system. This system needs to be proposed for the basin with defined drainage outlet to canal through gravity overflows and pumping of SWF to Tollygunje – Panchannagram (TP) Canal and diversion of the entire quantum of DWF generated to Proposed STPs.

- **Air quality:** Ambient air quality monitoring will be undertaken at least 2 different locations at the proposed S&D 1 (Ajaynagar) sites to evaluate the current air quality of the project area. The data will also help in checking compliance with prescribed air quality standards during both the construction and operational stages.

- **Noise Levels:** Ambient noise levels will be measured around the existing and proposed project sites.

Surface and groundwater quality: Surface water samples collected near the proposed Site S&D- 2 (Ajaynagar) site will be analysed for physico-chemical and biological parameters.

- **Biodiversity:** Proposed project area mostly comprises of urban habitation areas . The nearest protected area, EKW area is within 1 km from the centre point of the proposed project boundary. However, no pipe laying alignment proposed within the designated area of EKW boundary and also the project boundary is outside of demarcated EKW area. Therefore, there is no direct risks or impacts on biodiversity and natural resources. Moreover, linear work is permissible within EKW area

- **Flora and fauna:** Anchored, free floating and submerged hydrophytes like Kachuri pana (Eichhornia crassipes), Azolla (Azolla pinnata), Sagittaria (Sagittaria sp.), Hogla (Typha angustifolia) etc can be seen in many open water bodies in the project area. Such water bodies often contain fishes such as Rohu (Labeo rohita), Catla (Catla catla), and Bata (Labeo bata). Phytoplankton like Spirogyra sp., Zygnema sp., Navicula sp., Nostoc sp., Hydrodistyom sp., etc. and zooplankton like Cyclops sp., Paramecium sp., Euglena sp., Diptomus sp., larvae of culex sp. etc. are ubiquitous. No endangered species of aquatic flora and fauna reported from project area.

- **Conservation Efforts:** KMC and KURIP are focused on pollution control, improving sewage and drainage line. Environmental monitoring, biodiversity studies, and awareness drives are being undertaken to protect aquatic life and reduce contamination from untreated wastewater and solid waste.

- **Economic Importance:** The land use pattern in the subproject area is predominantly residential. However, few commercial activities are also observed in Daspara market area in Ajaynagar zone. There are few waterbodies/ponds located beside the pipe laying alignment (four number in Ajaynagar zone). Urban agriculture is being practiced in Dhaspa area in Kolkata. Seasonal farming is also being

observed in the vacant land beside the EM bypass. However, there is no agriculture land within sub project area.

- **Archaeological sites:** There are no historical or cultural resources within sub project area. Two local temples are located beside the proposed alignment – Daspara Sitala Mandir at Ajaynagar. There are no archaeological sites/monuments within the sub-project area.
  
- **Land Availability:** Subproject components are located in the highly residential and built up area, therefore, there is no natural habitat left around the proposed sites. The proposed sewer network will be laid along existing road owned by KMC/ PWD/KMDA. Land acquisition is not envisaged for proposed subproject component. There is no notable sensitive environmental features and no tree cutting is envisaged for the project. There are no protected areas, forest , mangroves or estuaries in or near the project locations. No notable wildlife is also present.
  
- **Public Consultation:** public consultations were conducted near the locations of proposed S&D networks alignments and outfall locations to access the awareness of general public, present sanitation situations, environmental and health conditions in town, waterlogging problems, solid waste their opinion about the proposed project and suggestions. Local residents, business persons (vendors, hawkers, shopkeepers etc.), Government officials, women and residents were consulted during public consultations from November 2023 to December 2023. Total 7 stakeholder’s consultations were held in which a total of 90 persons (66 male and 24 female) participated .The public participation processes have been undertaken during project preparation stage which ensures that stakeholders are engaged during the preparation of this IEE. Informal and formal consultations were conducted with local population of the area at 7 different places along with proposed alignment in the month of November 2023. Total 90 people were consulted among which 24 (27%) were female attendees. Summary of consultation are given in Table 9 and details of the same along with attendance sheet and photographs is attached in A community consultation with local public and ward representatives wereheld on 10th November 2023 at Ward office of 109 in which project scope and its benefits, type of temporary inconveniences and type of mitigation measures adopted during project implementation were discussed. A total of 21 persons (15 male and 6 female) participated

### **13. ENVIRONMENTAL PLAN**

This Project Environmental Management Plan (PEMP) will establish relevant environmental standards or objectives for each element of the project to be executed. It outlines management strategies and actions to meet the project's environmental objectives and also details how the adverse environmental impacts generated from the various stages of the construction and related activities would be minimized or controlled.

This EMP also explains the possible mitigation measures requires to be taken for minimizing and controlling the potential environmental significant impacts that arises during the execution of the project through appropriately laid down action plans. During developing this EMP, as per General condition of the contract. Environment Management Plan construction activity will be followed in reference to the environment Management Plan as part of IE as per EMP Air and Noise monitoring will be done.

### **14. ENVIRONMENTAL OBJECTIVES AND TARGET**

The Environmental objective and targets are set in line with Traders & Engineers Private Limited Health, Safety and Environmental policy / client's or project environmental policy (if any). The following details shall be followed in the establishment of environmental objectives and targets:

Significant Environmental Aspects

- Legal and other requirements
- Technological options with consideration for financial, operational and business aspects
- To Conserve Resources and Reduce Waste Generation.
- Views of interested parties (Internal and External)
- Commitment to prevention of pollution

To meet the defined objective, targets shall be set in a way such that they are:-

- "SMART" (Specific, Measurable, Achievable, Realistic and Time bound).
- The time frame and responsibility for meeting the objectives and targets are defined. In case of new environmental requirements due to new legislation or amendments in the existing legislation, environmental objectives and targets shall be set and identified appropriately to ensure compliance. If a particular objective/target has been achieved, then investigation shall be done to identify the opportunities / possibilities for new Objectives / Targets.

Project Coordinator and Project In charge shall periodically monitor the progress made towards achieving environmental objectives and targets, co- ordinate and optimize the utilization of

resources, and understand their difficulties in implementation (if any).

In general, objectives shall be set to achieve sustained improvements in environmental performance, rather than to address short term issues, such as small scale failures in equipment or components, which would be dealt at the time of occurrence by the site management.

## **15. ENVIRONMENTAL MANAGEMENT PROGRAMME**

Environmental Management Programme (EMP) describes, how the environmental issues and considerations are being managed for the construction and related activities. Where applicable, EMP also describes the mechanisms used to ensure the implementation and effectiveness of proposed mitigation measures covering.

- Legal requirements;
- Objectives and Targets derived from significant environmental aspects of the project;
- Environmental control measures;

EMP implementation and operation covers

- The structure, roles and responsibilities of employees assigned to implement EMP.
- Develop clear and measurable performance indicators, i.e., indicators are established such that the Traders & Engineers Private Limited performance in achieving its environmental objectives can be measured;
- Monitoring environmental training and awareness programme;
- Organize and control EMP documentation, i.e., audit is carried by means of written evidence;
- Internal operational environmental performance evaluation system.

In simple EMP is a derived action plan developed from the set of objectives and targets or significant environmental aspects explaining the following basics, i.e., who is responsible to achieve, when the plan will be completed, how the project related mitigation measures would be achieved, including time scales and resources required for implementing the same.

## **16. ENVIRONMENTAL CONTROL MEASURES (ECM)**

Environmental Control Measures (ECM) means Operational Control Procedures. This documented procedure shall be established and maintained to cover situations where their absence could lead to deviations from the environmental policy and developed objectives and targets.

ECM maintains the baseline of environmental performance within the organization as opposed to objectives and targets that improves the environmental performance. It is easy to understand that without operational control there could be a chance that organization improves through objectives and targets in some areas and

deteriorates in other areas. Environmental control measures are required to prevent this deterioration in environmental performance and maintain a baseline from where continual improvement in environmental performance can be planned through objectives and targets.

Environmental Control Measures are developed for all of the aspects that have turned out to be significant. All significant environmental aspects over which Traders & Engineers Private Limited has control are listed. Later the number and description of the ECM is determined. Many significant environment aspects may be addressed through one common ECM. For instance, if several departments deal hazardous waste handling, there could be one common ECM procedure on solid waste management. Once the description of the ECM is written, care needs to be taken to cover issues related to operation/maintenance, checking and action if deviation occurs in the text of the ECM. The text shall necessarily include operating criteria for the activity, which can be determined from a variety of sources such as regulatory requirements or equipment standards or previous year's performance or contractual requirements. The Environmental Control Measures to be taken are highlighted below:

## **17. Control of Air Pollution**

### **I. Air pollution control during transportation of construction materials**

- Vehicles with open load carrying area shall not be used for moving potentially dust producing materials. Vehicles shall have properly fitting side and tail-boards.
- Materials having the potential to generate dust shall not be loaded to a level higher than the side and tail-boards, and shall be carried in vehicles covered with cover lids.
- The haulage road at the construction site, if dusty shall be watered regularly.

### **II. Air pollution control during storage of construction materials:**

- Excavated materials shall be placed in the designated dumping / disposal area.
- The materials shall be placed in a manner that will minimize dust generation.
- Excavated materials shall be stabilized during summer season, each day, by watering at regular intervals.
- The heights from which materials are dropped shall be limited to 1.5 meters to limit fugitive dust emission.
- Water spray shall be used to prevent dust generation from piles of raw sand, aggregates and similar materials, during dry and windy weather.
- Cement shall not be stored in an open area; it shall always be stored in a covered shed.

### **III. Air pollution control during construction activities**

- Water spray shall be used during the unloading and handling of raw sand, aggregates and similar materials, when dust is likely to be created.
- All motorized vehicles on temporary roads on the site shall be allowed a maximum speed of 15 km / h.
- Concrete batching plant at the site and ancillary areas shall be cleaned frequently and water shall be sprayed to minimize dust generation.
- Shot blasting and Spray painting shall be done, preferably in an enclosed area.
- Smoke generated from DG Sets shall be tested periodically.
- Particulate Matter, Oxides of Sulphur and Oxides of Nitrogen) and necessary corrective action shall be taken.

### **18. Control of Water Pollution**

#### **Measures for water pollution control during site planning**

- Drainage system shall be constructed to drain off all surface water from the work site into suitable drain outlet.
- Temporary drainage works shall be maintained, removed and reinstated as necessary, and precautions shall be taken for avoidance of damage by flooding and silt.

#### **Measures for minimization of waste water generation**

- Waste water generated due to washing of concrete mixers shall be collected in a sedimentation tank of sufficient capacity, as appropriate. The clear water shall be reused for curing purpose.
- When reuse is not practicable, it shall be disposed off at the nearest landfill site after obtaining permission from an agency owning the landfill site and under the conditions imposed by the agency concerned.

### **19. Control of Noise Pollution**

- Stationary equipment shall be located so as to minimize impact of noise on the neighboring community.

- Equipment and plant shall not be kept idling, when not in use.
- Construction equipment shall be maintained / serviced regularly to control noise and vibration.
- High noise areas and equipment shall be notified as such and earmuffs / ear plugs shall be used by the personnel in such areas / near such equipment.
- All the plants and equipment, specifically Mechanical saw, hammers, mechanical breakers, pneumatic breakers involved in the work shall be maintained properly and periodically to avoid unnecessary noise generation.
- Noise Meters shall be maintained at the site to monitor the same. Wherever possible, Traders & Engineers Private Limited shall use low noise generating equipment. Adequate measures such as barricading the site and/or intermittent use of high noise generating equipment should be practiced.
- Necessary permissions shall be taken from the appropriate authority prior to installation of the high noise generating equipment, as far as practicable.
- Noise monitoring reports shall be maintained at the site jointly with the representative of the PMDSC Staff.

## **20. Waste Management**

- **Construction Materials:**

- This includes concrete lumps, cement lumps, tested concrete cubes, broken asbestos sheets, soil, rock, fibre glass, broken bricks etc. These shall be collected from the site and used as land fill or transported to designated dumping site.
- Paper, Plastics, Rubber and Glass: These shall be collected in the dustbins placed at various points at the site / office. These shall be disposed off to the scrap dealer.

- **Metals:**

- Metal pieces and welding rod stubs etc shall be collected from site and segregated at source. These scrap shall be stored in the scrap yard and disposed off to the scrap dealer.

- **Waste Lubricating Oil:**

Waste lubricating oils and oil filters shall be stored in closed containers. They shall be disposed off to the authorized recyclers.

- **Food Waste:**

- Food waste shall be collected in food waste containers with a lid. They shall be disposed off to municipal collection bins or buried in designated areas for composting.
  - **Waste Lead Acid Battery:**
    - They shall be disposed to the authorized dealers of battery manufacturers.
  - **Disposal of empty Paint containers:**
    - Residual paint in the paint containers shall be kept at the minimum, by extracting the maximum paint by use of thinner. The empty paint container, thereafter, shall be disposed off suitably, in consultation with the Owner.
  - **Electrical waste from the site:**
    - Electrical waste shall be stored at identified location and shall be disposed off to scrap dealer.
  - **Domestic waste at the site:**
    - Domestic waste generated at the site shall be buried in deep pit specifically excavated for the purpose.

## 21. GRIEVANCE REDRESS MECHANISM

The implementation of a project is a complex time and labour-intensive process involving multitude of lifecycle phases and processes. Over the duration of the project, it encounters numerous instances of conflicts, allegation and dissatisfaction within the working and associated human capital and their interactions.

- compensation payment,
- improper estimation of affected assets,
- failure to fulfil commitments,
- poor management of construction activities,
- accidents due to inappropriate planning of vehicle movement, and
- Cultural conflicts between migrant workers and local communities etc.

Most of the conflicts and allegations may not appear to be of serious nature but if not managed appropriately from the beginning may snowball into a bigger issue. In order to manage these risks, an internal mechanism is required to be in place where the aggrieved party(s) can lodge their complaints and get it amicably settled prior to approaching the formal mode of solution available to them i.e. access to legal system through courts. In order to provide a formal forum to the aggrieved party(s) i.e. deal with issues arising out of project, it is

proposed that a joint grievance redress mechanism be instituted for both environmental and social related issues.

### ❖ **Objectives of the Grievance Redressal Mechanism**

The basic objective of the GRM shall be to provide an accessible mechanism for addressing both internal and external grievances. Internal grievances include grievances from both direct and indirect employees such as local workers and migrant workers, through contractors. External grievances include complaints from affected people, community or any stakeholder(s) having a stake in the project. The GRM thus aims to resolve any social (including labour, contractor, and community amongst others) and environmental related grievances locally in consultation with the aggrieved party to facilitate smooth implementation of project related work activities. The other important objective is to democratize the development process at the local level and to establish accountability towards the stakeholders.

The Grievance Redress Mechanism will also cover grievances/concern of the existing workers in relation to the potential loss of employment. All existing workers have the right to initiate the procedures as laid down in the following section. Moreover, the GRM does not prevent the complainant from bringing his/her concerns to the courts or other relevant government bodies.

### ❖ **Process of Grievance Redressal Mechanism**

A project Grievance Redressal Mechanism (GRM) will be established to receive, evaluate and facilitate the resolution of the affected and displaced persons concerns, complaints and grievances. The grievance mechanism will aim to provide a time bound and transparent mechanism to voice and resolve concerns linked to the project.

A Grievance Redress Cell will be established by the concessionaire for reporting and addressing grievances of the affected communities and workers. The Grievance will comprise of key members from Traders & Engineers and KMC officials.

During the project preparation, as part of the public consultation process, information regarding the GRM will be disclosed to the affected persons. Grievances related compensation will be acknowledged, evaluated and responded through the GRM. The GRM will continue to function, for the benefit of the affected person and the community, during the entire life of the project including the maintenance period.

For ensuring the effective implementation of GRM, Traders & Engineers Private Limited will have an Environment & Social (E&S) specialist, who will have the overall responsibility for addressing timely

grievance including keeping and maintaining the complaint and redress records. At the site level the E&S specialists will be supported by site supervisor, site engineer of the respective location for managing grievance.

❖ **A three-tier mechanism have been proposed for addressing grievances: -**

**Tier 1:** The first level and immediate contact for of resolution grievances will be the TEPL site Supervisor of E&S specialists. The complaints /grievances may be received either verbally or through written applications. Prior to construction of any works, the Environment & Social specialists(E&S) should notify the workers and the local residents and community of the projects and the potential impacts and temporary disturbance of the project. In case the aggrieved person/workers has any complaint with he/she can lodge a complaint to the site supervisor which will then be passed on to the E&S specialists. For addressing complaints, the E&S specialists if required, can take the assistance of the local Authority. Grievance can also be registered anonymously in written form to the onsite Construction Manager /E&S specialists. A grievance register will be kept at TEPL site office. At the 1st Level the E&S specialist will make efforts to resolve the grievance/ complaint within a period of 03 days from the date of receipt of the complaint. In case the aggrieved is not satisfied with the solution provided during Tier 1, he may escalate it to Tier 2.

**Tier2:** Complaints and grievances which remain unresolved, will be escalated to the next tier comprising of the Project Manager. Representatives from urban local bodies comprising of both men and women will also be included as members of the committee. Such cases should be resolved within 07 days from the day the escalation of the issue take place. In case the complainants are not satisfied with the decision of the committee, the issue can be escalated to the next Tier.

**Tier 3:** Should the issues remain un resolved, the complaints can be escalated to the third level the Grievances Redress Committee (GRC) Such cases should be resolved within 10 days from the day the escalation of the issue take place. The GRC comprises of the Executive Engineer of KMC. Other members comprise of the following:

1. Project Manager, Traders & Engineers Private Limited.
2. Construction Manager, Traders & Engineers Private Limited
3. Environment Specialist, Traders & Engineers Private Limited
4. Safety Engineer, Traders & Engineers Private Limited

Figure: 1 below presents the three-tier grievance redressal mechanism for addressing external grievances.

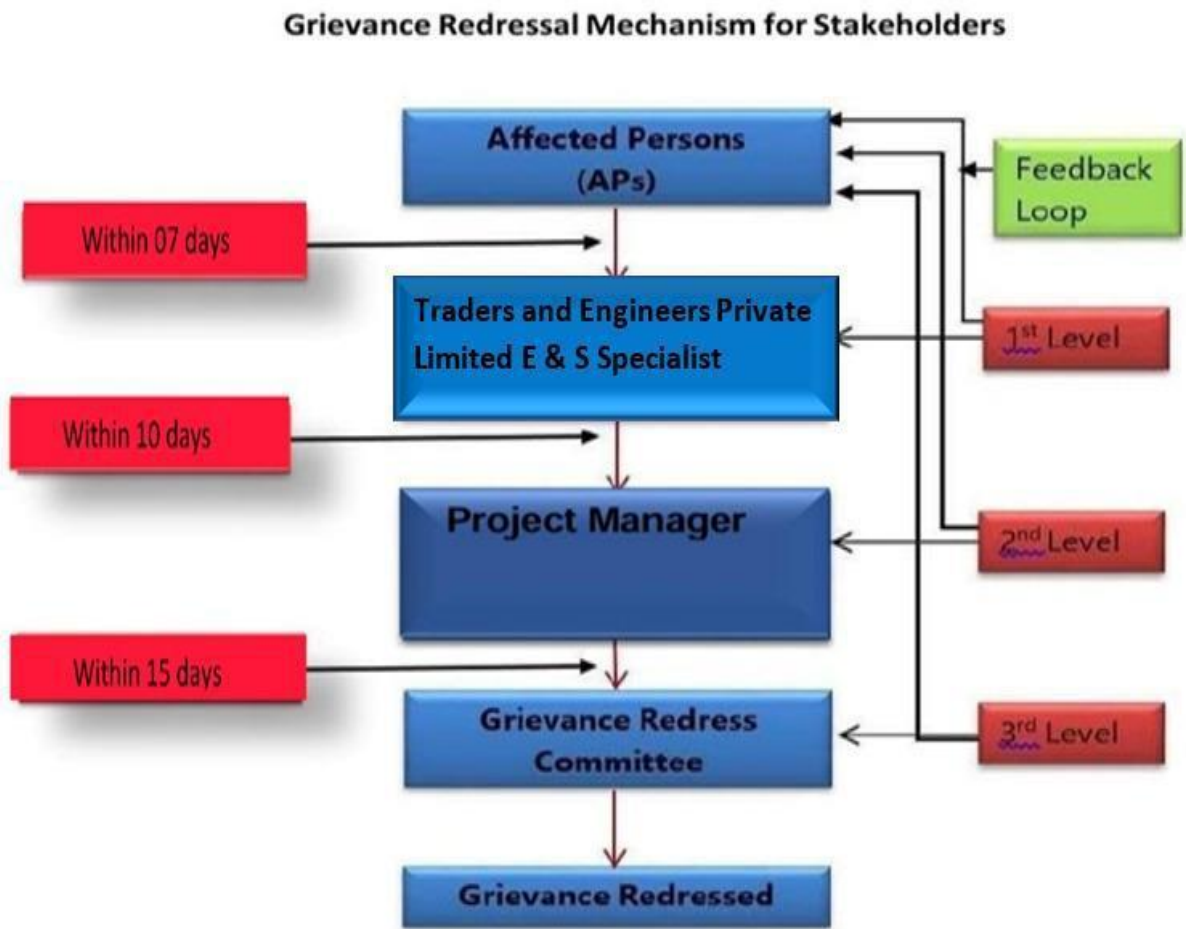


Figure:5 Grievance Redressal Mechanism for Stakeholders

**22. LABOUR MANAGEMENT PLAN:**

Concessionaire shall prepare and submit Worker’s Camp Management Plan to the concerned EA that addresses specific activities that will be undertaken to minimize the impact on the local community, including elements such as worker codes of conduct, worker’s accommodation facilities, training programs on worker’s safety, dengue and also to address pandemic issues. A Workers’ Labour Camp Management Plan addresses specific aspects of the establishment and operation of workers’ camp.

**23. MANAGEMENT OF PANDEMIC AT THE PROJECT SITE:**

Additional measures to address the pandemic situation will be done through a systematic approach and recognizing the challenges associated with rapidly changing circumstances shall be prepared by us. Addressing a pandemic situation at a project site is beyond occupational health and safety and is a broader

project issue which will require a designated team for documentation and discussed at regular meetings to facilitate adaptive management measures.

#### **24. GENDER ASSESSMENT AND DEVELOPMENT:**

According to ESMF, the objective of Gender Assessment and Development is to analyse gender issues during the preparation stage of sub projects, design interventions and primary data collection. The gender analysis shall be carried out based on findings from gender specific queries and requirements during data collection and community consultation process. The quantitative and qualitative analysis shall include sex-disaggregated data, issues related to gender disparity, needs, constraints, priorities and understanding of gender-based inequitable risks, benefits and opportunities as well as gender relevant indicators.

# Project Location



Figure 6

## 25. ADB Assistance

ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB SPS, 2009. This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, and loans involving financial intermediaries, and private sector loans.

A proposed project is classified as category FI if it involves investment of ADB funds to or through a FI

### ○ Primary Aims

- To expand coverage of sewerage and drainage infrastructure in underserved areas of Kolkata, especially newly added or previously informal areas that lacked organised networks. [udma.wb.gov.in](http://udma.wb.gov.in)+2 Asian Development Bank+2
- To improve the quality of service delivery for water supply, sewerage and drainage — ensuring reliable, affordable, safe services for households. Asian Development Bank+1
- To enhance environmental outcomes by reducing pollution of water bodies, controlling wastewater discharge, and improving urban sanitation and hygiene. Asian Development Bank+1
- To promote institutional strengthening and capacity-building — improving the institutions responsible for managing S & D systems, ensuring operations are sustainable, with better governance, financial management and technical standards. Asian Development Bank+1
- To make the services sustainable, meaning they operate efficiently, are maintained properly, and deliver long-term benefits rather than only short-term fixes. Asian Development Bank+1 Strategic Rational ADB recognises that large parts of Kolkata did not have organised S & D systems (especially in areas incorporated into the municipal corporation in later years), so there is a need to remedy that infrastructure gap. [udma.wb.gov.in](http://udma.wb.gov.in)+1

Uncontrolled drainage/wastewater and inadequate sewerage exacerbate environmental degradation (polluting rivers/ponds), public health risks, and reduce living-standards in urban poor areas. The project aims to address this. [keiip.in](http://keiip.in)

By improving urban services (water, sanitation, drainage) the project supports broader urbanisation, economic growth, health, and inclusion objectives.

Institutional reforms ensure that the investment delivers lasting benefits and that public agencies are strengthened to manage the systems.

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Institutional reforms ensure that the investment delivers lasting benefits and that public agencies are strengthened to manage the systems.

- **Specific Targets**

Expand S & D network into remaining areas of Kolkata not yet covered. [udma.wb.gov.in](http://udma.wb.gov.in)+1

Construct or upgrade sewerage mains, drainage systems, sewage treatment plants (STPs) where needed. Asian Development Bank+1

Improve household connections, improve service levels (reduce blockages, overflows, flooding, water contamination).

Strengthen financial, operational, and environmental management of the utility/municipality responsible.

Improve urban environment (reduced flood risk, reduced untreated wastewater release, improved sanitation access for low-income population)

## **26. REVIEW OF AVAILABLE DOCUMENTS AND DATA COLLECTION**

The primary objective in preparing the Environmental and Social Assessment and Management Plan (ESAMP) is to review available documents and compile information from multiple sources, including site inspections and consultations with local communities and key stakeholders, in order to evaluate potential environmental and social impacts of the proposed project. Most of the project-related information has been obtained through discussions with KMC officials and field visits. The Environmental and Social Management Framework (ESMF) has been adopted as the guiding reference for the ESAMP study. In addition, engagement with stakeholders and local residents, along with baseline monitoring data on water quality, ambient air, noise levels, and soil, has informed the development of suitable environmental and social management measures. This process also requires examining relevant policy documents and legal frameworks to understand compliance needs and gauge the degree of environmental and social sensitivity, with particular emphasis on preparing the ESAMP and ensuring adherence to applicable regulations and guidelines for the proposed project.

## **27. DESCRIBING THE PROJECT ACTIVITIES**

With the help of information received mainly from the concerned authority and consultations with stakeholders, a brief description and analysis of the project activities has been established. Based on initial understanding, the list of required information has been drafted before conducting the field survey.

## **28. STAKEHOLDER CONSULTATIONS**

The key stakeholders including the KMC and KURIP were interacted (both formally and informally) during the field visits for ESAMP. Associated government departments were also visited to collect the relevant data and their feedback on the proposed project activities. Also, they were asked about the mitigation plans which have been adopted or planned to be adopted, any suggestions for improvement or public grievances.

## **29. BASELINE ENVIRONMENTAL AND SOCIAL PROFILE OF PROJECT AREA**

With the help of secondary baseline information/data received from the available documents as well as the primary baseline monitoring data collected by an NABL accredited laboratory, a brief description of the baseline environmental and social profile of the project area has been established.

## **30. IDENTIFICATION AND ASSESSMENT OF IMPACTS**

Based on the analysis of the data collected from field surveys, stakeholder consultations and secondary sources, issues related to the environmental and social sectors were identified. Through this assessment, it was envisaged that the project would have few environmental and social impacts, however temporary that can be mitigated by proper implementation of safeguard measures suggested in the EMP and SMP designed for the project along with effective monitoring during implementation.

## **31. DEVELOPING MANAGEMENT ACTION PLAN**

Based on the identified and assessed potential environmental and social impacts, an appropriate mitigation / management action plan has been developed recommending suitable measures needed to prevent, minimize, mitigate or compensate for adverse impacts, if any and to improve the environmental and social performance of the said project. The mitigation plans are suggested for different stages of the project, as applicable: design phase, construction phase, operation and maintenance phase.

## **32. SCOPE OF WORK**

Based on the Environmental and Social Screening carried out as part of this assessment using the screening matrix provided in the Environmental and Social Management Framework of NGRBA (refer Annexure-1), it is concluded that the present project at Ajaynagar can be categorized under 'Low Impact' category. The project components have limited environment and social impacts, which can be mitigated with the adoption of suitable mitigation measures. The scope of the ESAMP that has been finalized on the basis of project screening and categorization are given below:

- ▶ Describe the sub-project and its components;
- ▶ Provide applicable policies and legal guidelines to the proposed sub-project and include specific clearances/approvals that have to be obtained by the executive agency/ concessionaire.
- ▶ Describe the baseline environmental and social conditions of the sub-project areas and the proposed project facilities;

- ▶ Carry out public consultations with and participation of different stakeholder groups at the local, regional and district level.
- ▶ Identification and analysis of key environmental and social issues viz. presence of any ecologically sensitive areas in the vicinity of the project site, as well as land availability issues (if any) associated with the project;
- ▶ Alternative analysis that were examined in the course of developing the proposed project towards selection of project location, design, technology, construction techniques, phasing as well as operation and maintenance procedures.
- ▶ Develop Environmental and Social Management Plan (SSEMP) outlining suitable mitigation and monitoring measures to be adopted by the relevant implementing actor;
- ▶ Suggesting suitable institutional arrangement for the implementation of ESAMP at varied levels, which includes man power requirement, skills and training requirements, organization mechanisms and information dissemination requirements.

The Government of India has laid out various policy guidelines, acts and regulations pertaining to sustenance, protection of environment and its various components. The Environment (Protection) Act, 1986 is umbrella Act for the protection of environment. As per this Act, the responsibility to administer the legislation has been jointly entrusted to the Ministry of Environment, Forest and Climate Change (MoEF&CC) along with Central Pollution Control Board (CPCB) / State Pollution Control Boards (SPCBs).

### **33. COMPLIANCE TO REGULATORY REQUIREMENTS**

- ▶ The project does not require any environmental clearance or forest clearance. At the same time, the project requires to obtain required consents and permissions from competent authorities. The specific requirements are mentioned as under, to which the Concessionaire should comply with before initiating the construction:
  - ▶ Permission for use of water for construction purpose from irrigation department/CGWA (for Surface or Ground Water) respectively;
  - ▶ Labour license required to be obtained by us prior to construction.

### 34. Environmental Monitoring Plan for Construction Stage

#### 34.A. LOCATION OF ENV. MONITORING – GOOGLE MAP (SD -02)



**NOTE: -**

<b>Ambient Air(A1)</b>	<b>22.292352 N</b>	<b>88.242083E</b>
<b>Ambient Air(A2)</b>	<b>22.29587 N</b>	<b>88.24661E</b>
<b>Noise(N1)</b>	<b>22.292352 N</b>	<b>88.242083E</b>
<b>Noise(N2)</b>	<b>22.29587 N</b>	<b>88.24661E</b>
<b>Surface Water(SW1)</b>	<b>22.292160 N</b>	<b>88.24359 E</b>
<b>Surface Water(SW2)</b>	<b>22.29587 N</b>	<b>88.24661E</b>
<b>Sediment (S1)</b>	<b>22.292160 N</b>	<b>88.24359 E</b>
<b>Sediment (S2)</b>	<b>22.29587 N</b>	<b>88.24661E</b>

### 34.B. Monitoring Plan

Nayabad zone : SD 01						
Ambient air quality	At 2 different locations to be decided by the Environment Specialist of	PM10, PM2.5 NO2, SO2, CO	Once before start of construction and quarterly during construction except	Construction Contractor	Cost for implementation of monitoring measures responsibility of contractor (14 samples x	

Monitoring field	Monitoring location	Monitoring Parameters	Frequency	Responsibility
	Specialist of PMDSC.		monsoon period	
Ambient noise	At 2 different locations to be decided by the Environment Specialist of PMDSC.	Day time and night time noise levels	Once before start of construction and quarterly during construction except monsoon period	Construction Contractor
Surface water quality	At 2 different locations to be decided by the Environment Specialist of PMDSC.	pH, TDS, Oil and grease, Cl, F, NO3, TC, FC, Hardness, Turbidity BOD, COD, DO, Total Alkalinity	Once before start of construction and quarterly during construction except monsoon period	Construction Contractor
Sediment Quality	At 2 different locations to be decided by the Environment Specialist of PMDSC.	Heavy metal, oil & grease and other toxic elements	Once before start of construction and quarterly during construction except monsoon period	Construction Contractor

Figure 7

### 35. AMBIENT AIR QUALITY

The concentrations of air pollutants in Kolkata are highly variable over the seasons. They are at their highest during winter months (November to February) and at their lowest during monsoon months (June to September). Seasonal variations in temperature, wind direction, rainfall, and other factors account for this. 58. Ambient air quality level was measured during the construction of Mukundapur PS and laying of sewer line at ward 109, borough XII under KEIIP, Tranche 3 project for the period of April, 2023 (refer 6). When compared with national ambient air quality standard for residential areas the air quality in the nearby areas are found good The concentration of SO2 and NO2 are found well within permissible limit except exceedance of PM10 and PM2.5 when compared with WHO prescribed standard. Detailed study of baseline air quality monitoring shall be conducted during pre-construction phase (service Improvement Period) by the contractor

Monitoring location	Monitoring stage	Date of monitoring	Parameters, µg/m3			
			PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>
Nitai Nagar Road, Mukundapur (ward 109)	Construction Stage of KEIIP	30.04.2022	86	45	8.4	29.2
Mukundapur pump house (ward 109)	Construction stage of KEIIP	02.11.2022	92	48	9.1	31.0
Mukundapur pump house (ward 109)	Construction Stage of KEIIP	18.04.2023	89	50	7.7	32.8
NAAQS standard µg/m3			100	60	80	80
WHO µg/m <sup>3</sup>			50	25	20	-

**Ambient Air Quality Data at Ward 109, Borough XII**

Fig-8

Table 3: Ambient Air Quality Standards

Parameter	Location <sup>a</sup>	India Ambient Air Quality Standard ( $\mu\text{g}/\text{m}^3$ ) <sup>b</sup>	WHO Air Quality Guidelines ( $\mu\text{g}/\text{m}^3$ )	
			Global Update <sup>c</sup> 2005	Second Edition 2000
PM <sub>10</sub>	Industrial Residential, Rural and Other Areas	60 (Annual) 100 (24-hr)	20 (Annual) 50 (24-hr)	-
	Sensitive Area	60 (Annual) 100 (24-hr)	20 (Annual) 50 (24-hr)	-

SO <sub>2</sub>	Industrial Residential, Rural and Other Areas	50 (Annual) 80 (24-hr)	20 (24-hr) 500 (10 min)	-
	Sensitive Area	20 (Annual) 80 (24-hr)	20 (24-hr) 500 (10 min)	-
NO <sub>2</sub>	Industrial Residential, Rural and Other Areas	40 (Annual) 80 (24-hr)	40 (Annual) 200 (1-hr)	-
	Sensitive Area	30 (Annual) 80 (24-hr)	40 (Annual) 200 (1-hr)	-
CO	Industrial Residential, Rural and Other Areas	2,000 (8-hr) 4,000 (1-hr)	-	10,000 (8-hr) 100,000 (15-min)
	Sensitive Area	2,000 (8-hr) 4,000 (1-hr)	-	10,000 (8-hr) 100,000 (15-min)
Ozone (O <sub>3</sub> )	Industrial Residential, Rural and Other Areas	100 (8-hr) 180 (1-hr)	100 (8-hr)	-
	Sensitive Area	100 (8-hr) 180 (1-hr)	100 (8-hr)	-

Source – Asper IEE

Ambient Air Quality Monitoring

Testing to establish existing base and then for monitoring at required intervals will be carried out.

Figure -9

### 36. NOISE QUALITY

Noise in general is sound, which is composed of frequency components of loudness distributed over the audible frequency range. Noise levels are more annoying during the night time particularly in the residential areas. The environmental impact of noise can have several effects varying from annoyance to hearing loss depending upon loudness of noise levels. The main objective of the noise level monitoring is to assess the background noise levels in different zones/areas in and around the proposed project sites. The ambient noise levels were measured by the consultant at one location, in the proposed S&D 1 site at Ajay Nagar for 24 hours. Since the proposed site is in the area close to habitation, the noise levels were detected.

**Table 6 : Ambient Noise Level Standards**

Receptor/ Source	India National Noise Level Standards <sup>a</sup> (dBA)		WHO Guidelines Value For Noise Levels Measured Out of Doors <sup>b</sup> (One Hour LA <sub>q</sub> in dBA)		Applicable Per ADB SPS <sup>c</sup> (dBA)	
	Day	Night	07:00 – 22:00	22:00 – 07:00	Day time	Night time
Industrial area	75	70	70	70	70	70
Commercial Area	65	55	70	70	65	55
Residential Area	55	45	55	45	55	45
Silent Zone	50	40	55	45	50	40

Figure-10

- a- Noise Pollution (Regulation and Control) Rules, 2002 as amended up to 2010.
- b- Guidelines for Community Noise. WHO. 1999
- c- Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

➤ **Ambient Noise Quality Monitoring**

**Testing to establish existing base and then for monitoring at required intervals will be carried out**

**37. SURFACE WATER HYDROLOGY**

Ajaynagar in South Kolkata is a very low-lying part of the Ganges delta, so rainwater does not drain naturally and instead depends mainly on man-made drains and pumping stations. Surface water from houses and roads flows through local street drains into underground ward drains and is finally pushed out toward the East Kolkata Wetlands, which act as the natural outlet. Because the ground slope is minimal and drains often get clogged with silt or waste, the area experiences frequent waterlogging during heavy monsoon rains. Urban construction has reduced natural infiltration, and the groundwater level becomes shallow in rainy months, making the area even more prone to standing water. Infrastructure upgrades—especially new sewer lines and pumping stations in Ward 109—have been developed to reduce flooding, but monsoon inundation still occurs in many pockets of Ajaynagar.

□ **Surface Water Sampling Testing:**

**To establish existing base and then for monitoring at required intervals will be carried out.**

## Standard Parameter of Ground Water Quality

Designated-Best-Use	Class of Water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6 mg/L or more Biochemical Oxygen Demand 5 days 20°C 2mg/L or less
Outdoor bathing (Organized)	B	Total Coliforms Organism MPN/100ml shall be 500 or less pH between 6.5 and 8.5 Dissolved Oxygen 5mg/L or more Biochemical Oxygen Demand 5 days 20°C 3mg/L or less
Drinking water source after conventional treatment and disinfection	C	Total Coliforms Organism MPN/100ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4 mg/L or more Biochemical Oxygen Demand 5 days 20°C 3 mg/L or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4 mg/L or more Free Ammonia (as N) 1.2 mg/L or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25°C micro mhos/cm Max. 2250 Sodium absorption Ratio Max. 26 Boron Max. 2 mg/L

Source: Central Pollution Control Board  
mg/L = milligram per liter, ml = milliliter, MPN = Most Probable Number

Figure-11

### 38. GROUND WATER HYDROLOGY

Ajaynagar lies in a shallow groundwater zone typical of the eastern part of Kolkata, where the water table is generally high because of the deltaic soil and proximity to wetlands. During monsoon months, the groundwater level rises close to the surface, making the soil saturated and reducing the effectiveness of infiltration methods like soak pits. The subsurface mainly consists of soft alluvial clay and silt layers with pockets of sand, which hold water but drain slowly. Because the natural drainage gradient is very small, groundwater moves sluggishly toward the East Kolkata Wetlands and nearby tidal channels. The area's high degree of urbanization has also restricted natural recharge, so most recharge occurs from rainfall and seepage from surface-waterlogged areas. In some pockets, excessive extraction for domestic use can cause temporary lowering of the water table, but it usually recovers quickly due to the region's naturally high replenishment. Overall, Ajaynagar has a shallow, slow-moving groundwater system strongly influenced by rainfall, wetlands, soil type, and urban development.

Group	National Standards for Drinking Water <sup>a</sup>			WHO Guidelines for Drinking-Water Quality, 4 <sup>th</sup> Edition, 2011 <sup>b</sup>
	Parameter	Unit	Max. Concentration Limits <sup>d</sup>	
Physical	Turbidity	NTU	1 (5)	-
	pH		6.5 – 8.5	none
	Color	Hazen units	5 (15)	none
	Taste and Odor		Agreeable	-
	TDS	mg/l	500 (2,000)	-
	Iron	mg/l	0.3	-
	Manganese	mg/l	0.1 (0.3)	-
	Arsenic	mg/l	0.01 (0.05)	0.01
	Cadmium	mg/l	0.003	0.003
	Chromium	mg/l	0.05	0.05
	Cyanide	mg/l	0.05	none
	Fluoride	mg/l	1 (1.5)	1.5
	Lead	mg/l	0.01	0.01
Ammonia	mg/l	0.5	none established	
Chemical	Chloride	mg/l	250 (1,000)	none established
	Sulphate	mg/l	200 (400)	none
	Nitrate	mg/l	45	50
	Copper	mg/l	0.05 (1.5)	2
	Total Hardness	mg/l	200 (600)	-
	Calcium	mg/l	75 (200)	-
	Zinc	mg/l	5 (15)	none established
	Mercury	mg/l	0.001	0.006
	Aluminum	mg/l	0.1 (0.3)	none established
	Residual Chlorine	mg/l	0.2	5
	Micro Germs	E-coli	MPN/100ml	Must not be detectable in any 100 ml sample
Total Coliform		MPN/100ml		

<sup>a</sup> Bureau of India Standard 10200: 2012.

<sup>b</sup> Health-based guideline values.

<sup>c</sup> Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

### 39. PUBLIC CONSULTATIONS

Consultations will be carried out with the Officials of various departments including the EAs with special note of the following: -

- ▶ Excavation works on roads should be done with proper planning in order to avoid or minimize the disturbance to local residents.
- ▶ Restoration of excavated roads/sites should be carried out on priority basis.

Standard  
Parameter of  
Ground Water  
Quality

Figure- 12

- ▶ Excessive amount of noise during excavation works should be avoided. No work at night time as far as practicable.
- ▶ Appropriate measures should be adopted for dust suppression during construction works.
- ▶ Construction works should be regulated especially in the adjacent areas of residential and educational institutions.
- ▶ We will make sure that the respective ward members to be intimated before initiating the S&D activities at the project sites.

#### Traffic Congestion:

Due to the excavation work carried out on main roads for laying the pipeline, there may be obstruction in the free movement of the traffic and the problem may aggravate during peak hours.

#### 40. TRAFFIC MANAGEMENT PLAN

- **PURPOSE:** To provide a clear and simply worded procedure to be understood by most employees on preventing injury to persons and damage to property arising from site traffic and site transport.
- **SCOPE:** Excavation for Laying of Pipes.
- **RESPONSIBILITY:** It is the responsibility of the Project In charge and Departmental Head to implement this procedure and ensure that delegated staff under their supervision carries it out.
- **DEFINITIONS:** Project In charge: Person responsible for the execution of the project. LEGAL
- **REQUIREMENT:** The Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act 1996 and Central Rule 1998 Rule 48, 88 and 95, Motor Vehicle Act 1988.
- **GENERAL:** All road works create inconvenience and are a potential hazard to the safety of all road users and those employed in carrying out the work. \* All the effects should be mitigated or reduced to the minimum, and to ensure that the works are properly guarded, lighted and signed. \* A clear and early warning of any obstruction to all road users should be provided. \* All areas where work is going on should be clearly demarcated by barricading and entry into these areas should be restricted to only.
- **PLANNING STAGE:** Project Engineer should be consulted as regards the execution of the works and the safety measures which would be put in place. Particular attention should be given to : \* traffic signs; cones; barriers; information boards; and
  - ✓ **Site lighting:** Consider necessity of traffic control systems such as temporary traffic lights or Stop/Go boards. Access should be planned to eliminate dangerous movements of site traffic (e.g. reversing of vehicles) and personnel (e.g. crossing dual carriageways). Provision of adequate lighting. All persons working on or near the road shall wear high visibility jackets or a cross belt.

✓ **On site:** The working area in the live road/footway shall be defined. The working space shall be defined – this includes the area of storage of tools and equipment and space to move around the job. Provision of safety zone- it shall be kept clear of all work, material storage and people and shall be clear of working radius of all plant.

✓ **OPERATOR/DRIVER:** \*Experienced operators and drivers with valid licensed has been appointed.  
\* One copy of license has been collected by Safety Department. **EQUIPMENT:** \* Drivers are made a daily inspection of their vehicles include steering, brakes, mirrors, lights, horn, tyres and windshield wipers. \*Safety Department along with Plant department has been checking the vehicles monthly basis. \* All vehicles have reverse horns and it is in working properly. \* All vehicles, periodical maintenance has conducted. **ROAD:** For safe operation we are following the bellow safety measure: \* Safe width will be provided.\*. \* Speed limit is not greater than 15km/hr within the site. \* Safe walkway with proper guard to be provided. \*Caution board has been placed in every location within the site. \* During night alert light to be provided. \* Workers will be provided with reflective jacket as well as required PPE's. \*Conduct Toolbox training as regular basis \* Road to be closed with proper permission. \*Reflective type Diversion board to be placed in required place. \* Road diversion drawing to be submitted.

✓ **LOADING AND UNLOADING:** \* Only authorised persons will be engaged for loading / unloading.  
\* Materials loaded will be within the permitted safe weigh limit of trucks.  
\* Dimensions of loads carried on a vehicle will be in strict accordance with relevant provisions.  
\* A red flag will be used at the rear extremity of an overhanging load.  
\* During the hours of darkness or in poor visibility conditions, a white light showing ahead at each side of the front extremity and a red light showing to the rear extremity of the hanging load are to be provided.  
\* During Toolbox talks Intimation has been delivered to all drivers/operators that when the driver leaves the driving seat, the engine of the truck shall be switched off, the gear engaged and parking brakes applied. On slopes, wheel blocks shall be applied.  
\*Helper has been provided with all vehicles.

□ **WORKING AREA:** The working area in the live road/footway has defined and barricaded. The working area has been restricted from unauthorized entry. The working space has been defined – this includes the area of storage of tools and equipment and space to move around the job. Particular attention has been

taken in working area : \* traffic signs; cones; barriers; road hazard warning lights ; information boards; and site lighting Adequate lighting has been provided. All persons.

Mitigation Measure: Re-route traffic whenever possible and employ traffic police to manage the traffic movement.

For the convenience of the society, re-routing of the traffic in this case can be adopted to be one of the mitigation measures. Also, proper hoardings and signage regarding the proposed project along with detailed information on the dates and duration of road closure and which detours to be taken should be displayed clearly much before executing the task. All these measures should be taken well in advance of the actual construction work so that residents can plan accordingly.

□ **Impact on Livelihood:**

The rehabilitation / desilting work will lead to road blockage and as a result the residential/ commercial establishments and vendors will temporarily have some trouble in operating their business on daily basis. But there will be no loss of livelihood. No ambulatory vendors are located near the STP site. So overall, no loss of livelihood is expected to be reported due to the proposed project.

□ **Mitigation Measure:**

Sewer constructions will invariably lead to road closures, which will adversely affect shops on those streets. The first priority is for us to take the necessary measures to ensure that pedestrians always have access to shops, vendors, etc. For mobile vendors, this may include adjusting the location of the cart, etc. to a similar location in the immediate vicinity of the original location for the duration of the project. Projects should also proceed on schedule so as to minimize disruption. Additionally, clean-up of debris and clearance of blockages should commence immediately after project completion so as to remove any potential obstacles that might prevent customers from accessing businesses or other disruptions.

In the event that we, despite best efforts, is unable to avoid blockages of the roads and/or disruption of local businesses, some assistance is necessary. Additionally, no regulation, policy, guideline, etc. exist which can provide precedent or guidance in this instance. ESMF clearly states that mobile/ambulatory.



**Hawkers:** fruit cart vendors, etc. who can easily relocate fall into this category. These vendors are most eligible for a temporary relocation just outside the construction area, and will thus not be eligible for compensation as is the case for this proposed project.

However, if during the construction of the project any party faces livelihood loss due to the proposed project, then that party should be compensated according to the entitlement matrix given in the ESMF report.

□ **Impact on Existing Utilities:**

The road opening activities may damage the underground water supply pipelines, electricity poles or telephone cables in the vicinity of the site due to the proposed sub-projects. This may lead to water supply interruptions, disruption in electricity supply, interrupted telephone connectivity and involve expensive repair costs. Flooding of areas could also occur.

□ **Mitigation Measure:**

- ▶ Circulating the layout plans of the existing underground alignment near the work site.
- ▶ Contacting the relevant departments in case there is any damage to any of the utility services and ensuring prompt fixing/replacing of damaged infrastructure.

All construction personnel must receive detailed layout plans of existing underground structures to prevent accidental water/electricity supply disruptions. The relevant departments should also be made aware of the timing and location of digging near supply lines so that they can make necessary preparations to swiftly respond to disruptions.

□ **Safety Hazards**

There are potential hazards for the bikers, workers as well as for the pedestrians. Safety equipment for workers is provided as part of the project. Safety equipment for O&M requirement, such as half & full-face masks, gumboots, safety lamps, harnesses, hard hats and communication systems are to be provided.



**Mitigation Measure:** Fencing of the excavation site and providing proper caution sign boards

As mentioned above, fencing should be erected around construction sites and appropriately marked with caution signage. These fences/signs should remain in place even if construction is not active, so long as a hazard (e.g. open pit) remains.

□ **Elevated Noise Levels**

Increased noise level (continuous Siren from bikers) was observed during the site assessment due to congested traffic on narrow roads. This will be further aggravated to the residential areas, especially sensitive areas, like schools and hospitals during construction period.



**Mitigation Measure:**

According KMC/KURIP , construction will take place during the daytime to avoid the noise during the night time due to proximity to residential area. Beyond that, construction must simply proceed in a deliberate and judicious manner to avoid unnecessary noise pollution.

**Failure to Restore Temporary Construction Site**

Excessive debris, trash or construction remnants (e.g. dirt piles) would create problems related to drainage, unhygienic conditions and poor aesthetics, however clean-up and clearance of debris will have to be taken care of by the concessionaire.



**Mitigation Measure:** The provisions to rehabilitate roads and clear debris should have to be included within the DPR itself and further implemented properly.

**Affect daily life:**

Some inconvenience in accessibility to the road may be caused to the local residents during pipeline laying, road opening task and other construction related activities.



**Mitigation Measure:** A prior notice should be served to each and every locality, which is anticipated to be impacted by the project. The notice should contain the details of the project, street wise start date of construction and street wise end date of construction etc. This information would help them to get better accustomed to the situation and make necessary adjustments and arrangements.

**Damage to buildings and assets**

The task of correctly identifying the vulnerable parties is virtually impossible. Thus, the best mitigation measure is to plan laying of sewage lines in such a way that minimum damage is caused to any building, house or trees. The mitigation plan for this social concern proceeds in the following steps:

- ▶ Redirecting sewer lines around those houses that rely on the sewage lines for foundation.
- ▶ If that is not possible, then identification and categorization of affected houses into their different levels (permanent, semi-permanent, etc.) to determine possible compensation.

**Health Programs for Workers**

If un-sanitary conditions prevail at worker's camp, health programs for their well-being should be implemented.



manage labour at standards, and g conditions, and

**GOVERNMENT OF WEST BENGAL**

**OFFICE OF THE LABOUR COMMISSIONER EL & MW SECTION, KOLKATA**

**6, Church Lane, 3rd Floor, Kolkata-700001 Telefax: (033) 2248-5721/(033) 2262-7827 Email: dlcelmw@gmail.com**

**FORM - VI**

[ See Rule 25 (1) ]

**Licence No. :KOL01/CLL/003120**

**Date : 27th Jan, 2026**

Lic Fees	₹ 250
S.Deposit	₹ 10000

*Licence*

**Licence is hereby granted to M/s Traders and Engineers Private Limited at 16A, LAKE VIEW ROAD, Ward.86, PS - Rabindra Sarobar, Kolkata, Pin Code - 700029 under Section 12(1) of the Contract Labour (Regulation and Abolition) Act, 1970 subject to the conditions specified in Annexure**

**The Licence shall remain in force till: 26th Jan, 2027.**



Signature and Seal  
of  
Licensing Officer

**Establishment Information:**

**KMC-SHARP [KOL01/CLL/001454]**

**206 AJC BOSE ROAD, BUSINESS TOWER,**

**Ward.69, PS - Beniapurkar, Kolkata, PIN- 700017**

**Work Site :**

**DEVELOPMENT OF S&D NETWORK IN NAYABAD AND ADJOINING AREAS..... PACKAGE NO.**

**KURIP/OCB/SD01/2023-24.**

**Ward.109, PS - Taitala, Kolkata- 700150**

**\*\*This is system generated certificate and does not require any signature. For authenticity, please scan the QR Code.**



### **Objectives**

- Ensure compliance with national labour laws and project requirements
- Promote safe, healthy, and fair working conditions
- Prevent child labour, forced labour, and discrimination
- Establish grievance redress mechanisms for workers
- Maintain harmonious employer–worker relations



### **Scope**

This plan applies to:

- Direct workers (company-employed staff)
- Contracted workers (subcontractors, suppliers)
- Skilled, semi-skilled, and unskilled labour
- Migrant and local workers



### **Applicable Laws & Standards**

The LMP shall comply with:

- The Factories Act, 1948
- The Building and Other Construction Workers (BOCW) Act, 1996
- Minimum Wages Act, 1948
- Employees' Provident Fund (EPF) Act
- Employees' State Insurance (ESI) Act
- Contract Labour (Regulation & Abolition) Act
- Occupational Safety, Health and Working Conditions Code, 2020
- Project-specific ESMP / ADB / World Bank requirements



### **Labour Categories**

- Management Staff:** Engineers, supervisors, safety officers
- Skilled Workers:** Electricians, masons, welders, operators
- Semi-skilled Workers:** Helpers, fitters
- Unskilled Workers:** Loaders, cleaners, general labour



### **Recruitment & Employment Conditions**

- Workers shall be recruited through authorized contractors

- Employment shall be voluntary, with no forced labour
- Workers must be **18 years or above**
- Wages shall be paid as per Minimum Wages Act
- Working hours: 8 hours/day (with overtime as applicable)



#### **Prohibition of Child & Forced Labour**

- No worker below 18 years shall be employed
- Age verification through Aadhaar/Voter ID
- No bonded, trafficked, or forced labour permitted
- Immediate termination and reporting if violation is found



#### **Occupational Health & Safety (OHS)**

- Mandatory PPE for all workers
- Site induction and toolbox talks
- First aid facilities and trained first-aiders
- Emergency response plan and mock drills
- Safe access, barricading, signage, and lighting
- Drinking water, sanitation, and rest areas



#### **Workers' Welfare Facilities**

- Drinking water (potable)
- Toilets (separate for men & women where applicable)
- Rest shelters
- First aid kits



### Accommodation

- Locally Available accommodation will be rented to have small groups of workers with toilet, water, electricity, cookies facility and necessary ventilation.
- Photos of such rented accommodation will be share once the workers are mobilised.



पश्चिमबङ्ग पश्चिम बंगाल WEST BENGAL AM 297735



BEFORE THE NOTARY PUBLIC  
GOVERNMENT OF INDIA  
ALIPORE POLICE COURT

**LEAVE & LEASE AGREEMENT**

**THIS AGREEMENT IS EXUCUTED ON 1st DAY OF JANUARY 2026, BY AND BETWEEN**

**MR. PRASENJIT SINHA RAY S/O MR. BIDYUT SINHA RAY**, residing at –  
Abha Residency, A-77, Lane -4, Arjun Park, Mukundapur, Kolkata -700099.  
(Hereinafter referred to as the **“LESSOR”**, (which expression shall mean and include her heirs, administrators, legal representatives, executors and assigns) of the ONE PART having PAN number –CHHPS4288J.)

**AND**



09 JAN 2026

Page 1 of 7





**TRADERS & ENGINEERS PVT LTD** PAN NO : AABCT8363K\* having its registered office at 16A, LAKE VIEW ROAD, KOLKATA-700029, represented by its GM-Finance & Legal, **MR. LOKENATH SAHA**,\* having PAN BFBPS3727M, S/O Late Kanai Lal Saha, Resident of Shibangan, 240, Pullin Avenue, P.S. Airport, P.O. Rajbari, Kolkata- 700081, hereinafter referred to as the **“LESSEE”** ((which expression shall mean and include her heirs, administrators, legal representatives, executors and assigns) of the SECOND PART

**WHEREAS** the Lessor is the lawful owner of 6/C 275, Flat No. 1A, 1<sup>st</sup> Floor Mukundapur, Kolkata-700099, which is owned by him (hereinafter referred to as the **“PREMISES”**)

AND WHEREAS the Lessee has requested the Lessor to allow the Lessee to occupy and use the **schedule property** on leave and Lease basis for Residential/Official purpose. Be it mentioned that the leased portion is the consisting of **2 bedrooms, 1 no dining space, 1 Kitchen, 2 toilets, and 1 Balconies** measuring more or less 1000 sq. ft.

AND WHEREAS the **Lessor** has agreed to allow **Lessee** as a tenant on leave and Lease basis and the Lessee to occupy and use the said schedule property for monthly rental basis by mutually agreed terms and conditions of this Lease as hereinafter.

**NOW THEREFORE, THIS AGREEMENT WITNESSES AS FOLLOWS:**

That, the LESSOR shall handover to the LESSEE with on 2 no rooms, 1 no dining space with a kitchen area, 2 no bathroom & 1 no balcony measuring more or less 1000 sq.ft., at 1st floor of the SCHEDULE PROPERTY, on the terms and conditions hereinafter contained.

1. The LESSEE shall pay a sum of Rs 10,000/- (Rupees ten thousand only) as a monthly rent (advance mode) within the 10<sup>th</sup> day of each English calendar month to the LESSOR.



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2. That the LESSEE shall pay Interest Free Security Deposit of Rs 20,000/- (Rupees twenty thousand only) as advance to the LESSOR and the same will be refundable upon peaceful vacation of the premises by the Lessee.

3. The lease of the SCHEDULE PROPERTY shall be for a period of **11 months**, commencing from 1<sup>st</sup> January 2026.

4. That, the SCHEDULE PROPERTY proposed for rent to the LESSEE is confirmed by the LESSOR that it's not under any litigation and it's free and clear from all kind of encumbrances.

5. The lease of the SCHEDULE PROPERTY may be extended for a further agreed period on mutually agreed terms and the said mutually agreed terms shall be settled between the parties in writing at least one month before the expiry of the lease period and renewed period as aforesaid and in the event of the parties not mutually agreeing for the terms for extension of lease etc. The LESSEE agrees to vacate and deliver back vacant possession of the SCHEDULE PROPERTY on the expiry of lease agreement.

6. The **LESSEE / LESSOR** hereby agree that there will be no lock in period and this agreement can be terminated before the expiry of the lease by lessee by giving one month (30 days) notice.

7. That, LESSEE shall have no right to sublet/assign/transfer/grant license to use or part with the possession of the above on 2 no rooms, 1 no dining space with a kitchen area ,2 no bathroom & 2 no balcony measuring more or less 1000 sq.ft., at 1st floor of the SCHEDULE PROPERTY without the written consent of the LESSOR.

8. The LESSEE may renovate or decorate the above premises with the prior permission of the LESSOR.

The LESSEE for its residential/official purposes is entitled to furnish the SCHEDULE PROPERTY with air conditioners, fixtures, fittings, and furniture's inside the SCHEDULE PROPERTY without endangering the building in SCHEDULE PROPERTY. On the expiry of lease period or on early termination of lease, the LESSEE shall remove the same without causing any damage to the SCHEDULE PROPERTY. If any asset/s provided by the LESSOR, the LESSEE will have to pay extra amount for the said asset/s to the LESSOR as per the agreed value.

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17. Subject to the foregoing, the courts at Alipore only shall have exclusive jurisdiction in all matters arising out of this Deed or any arbitration as provided herein.

**SCHEDULE OF PROPERTY**

2 no rooms, 1 no dining space with a kitchen area ,2 no bathroom & 2 no balcony measuring more or less 1000 sq.ft., at 1<sup>st</sup> floor of the premises at Mukundapur, Kolkata: 700099

One set in original of this Lease Deed will be with the Lessor and another original set with the Lessee.

IN WITNESS WHEREOF THE PARTIES TO THIS DEED HAVE SIGNED AND EXECUTE THIS LEASE DEED ON THE DAY, MONTH AND YEAR FIRST ABOVE WRITTEN

**SIGNATURE OF THE LESSOR**

*Prasenjit Sinha Ray*

Name:- Prasenjit Sinha Ray  
Address:- Abha Residency  
Arjun Park, Kolkata - 700099

**SIGNATURE OF THE LESSEE**

*Mr. Lokenath Saha*

Name:- Mr. Lokenath Saha  
**For Traders & Engineers Pvt Ltd.**  
Address:- 16A, Lake View Road  
Kolkata : 700029

Signature Attested on Identification

*T.K. Das*

T. K. Das, Notary  
Alipore Judges' Court, Cal-27  
Reg. No. 1527/2000, Court of India

Identified by me

*Dilip Das*

**DILIP DAS**  
B. Com., LLB  
Advocate  
Alipore Police Court  
Kolkata-700 027  
/B - 525 / 1979

09 JAN 2026

**Agreement Copy of Labour Accommodation of Package SD01**

❖ **Code of Conduct**

All workers shall:

- Follow site safety rules
- Avoid alcohol, drugs, and violence at site
- Respect local communities
- Prevent harassment, abuse, or discrimination
- Protect project assets and environment

(Code of Conduct may be provided in **English, Hindi, and Bengali**)



### **Grievance Redress Mechanism (GRM)**

- Workers can raise grievances verbally or in writing
- Complaint register maintained at site
- Grievances resolved within **7 days**
- No retaliation against complainants
- Escalation to Project Manager if unresolved



### **Training & Awareness**

- Induction training for all new workers
- Regular safety training
- Awareness on labour rights and welfare
- HIV/AIDS & health awareness (if required)



### **Monitoring & Reporting**

- Daily attendance and wage records
- Monthly labour compliance checks
- Safety audits and inspections
- Reporting to Client/Engineer as per ESMP



### **Roles & Responsibilities**

#### **Project Manager**

- Overall implementation of LMP

#### **HSE Officer**

- Safety, health, and welfare compliance

#### **Contractor/Subcontractor**

- Ensure legal employment and wage payment

#### **Labour Supervisor**

- Attendance, discipline, and grievance support



### **Non-Compliance & Corrective Action**

- Immediate corrective action for violations
- Penalties or termination of defaulting contractors
- Reporting serious violations to authorities



### **Conclusion**

The Labour Management Plan ensures ethical labour practices, safe working conditions, and legal compliance throughout the construction period.

## 42. Management of Pandemic at the Project Site

A systematic approach to planning and recognizing the challenges associated with rapidly changing circumstances with regard to a pandemic shall be prepared by us. Addressing pandemic at a project site is beyond occupational health and safety issue and is a broader project issue which will require a designated team for documentation and should be discussed at regular meetings to facilitate adaptive management measures. Good workplace management relevant in preparing a response to pandemic are:

- ✓ We shall prepare a detailed profile of the workforce, key work activities, schedule period of such activities etc. Worker's accommodation should be kept with minimum contact with people near the site and regular contact should be avoided with the local communities.
- ✓ Entry/exit to the work site should be controlled and documented for all the local workers (who return home daily), staff and suppliers. It should be confirmed that workers are fit for work prior to their entry into the site.
- ✓ A general awareness and training should be imparted to the workers on the symptoms and dispersal mode of pandemic and precautions to be taken against it, like hand washing, social distancing, sanitizing etc. Additionally, proper care has to be taken to ensure availability of hand washing facilities filled with soap, disposable paper napkins/towels, closed dust bins etc. at all the sites.
- ✓ Placing posters and signs around the site, with images and text in the local language.
- ✓ Regular cleaning of all site facilities including offices, accommodation, canteen and common spaces.
- ✓ Providing all the workers appropriate PPE kits (masks, gloves, eye protection, boots etc.).
- ✓ Expanding medical infrastructure facilities, if a worker is ill and unable to breathe properly on his/her own, they should be referred immediately to the local hospital. Agreeing with local medical services / facilities, the scope of services to be provided.
- ✓ If any symptom of pandemic is noticed in a worker, then he / she should be required to stop work, immediately quarantined / isolated and transported to local health facilities for further tests. Family member and the people came in contact should also require to be quarantined even if they don't have any symptom. i) Training and monitoring should be conducted regularly and procedures should be documented. If project representatives, concessionaire or workers are interacting with the community, they should maintain proper protocol as per latest guidelines.
- ✓ In practice, workers may be our employees, or they may be informal, casual hires on a short-term basis. Many are also migrant workmen. concessionaire can be advised to continue the employment of all workers during the period of pandemic.

#### □ **Monitoring of pandemic by the Executing Agency (EA)**

The executing agency shall monitor the pandemic issues at the project site and we make sure to take adequate precautions to prevent or minimize the outbreak of pandemic. The following suggestions to deal are set out as below:

The EA, either directly or through the supervising consultant, should keep track of the measures being taken to address the risks by the main concessionaire. Monitor health and safety requirements addressed by us, which can be used as the basis for identifying and implementing pandemic specific measures. The EA should ensure that we convenes regular meetings with the project health and safety specialists, medical staff or local health authorities and take their advice in designing and implementing the agreed measures.

- ❖ Wherever possible, a senior person should be identified as a focal point to deal with pandemic issues. This can be a work supervisor or a health and safety specialist. This person can be responsible for coordinating the preparation of the site and making sure that the measures taken are communicated to the workers, those entering the site and the local community. It is also advisable to designate at least one back-up person so that if the focal person becomes ill, then that person should be aware of the arrangements that are in place.
- ❖ In many cases, the EA can play a valuable role in connecting project representatives with local Government agencies. To be most effective, project authorities should consult and coordinate with relevant Government agencies and other projects in the vicinity.

### **43. GENDER ASSESSMENT, DEVELOPMENT**

According to ESMF, the objective of Gender Assessment and Development is to analyse gender issues during the preparation stage of sub projects, design interventions and primary data collection. The gender analysis shall be carried out based on findings from gender specific queries and requirements during data collection and community consultation process. The quantitative and qualitative analysis shall include sex-disaggregated data, issues related to gender disparity, needs, constraints, priorities and understanding of gender-based inequitable risks, benefits and opportunities as well as gender relevant indicators.

### **44. GENDER BASED VIOLENCE (GBV)**

GBV is a holistic term used to indicate any harmful act that is perpetrated against a person's will and that is based on socially ascribed gender differences. GBV includes acts that inflict physical, mental, sexual harm or suffering; threats of such acts; and coercion and other deprivations of liberty, whether occurring in public or in private life. The project site includes both the actual locations where civil works are conducted and also

the associated areas such as the locations of workers' camps, quarries, etc. These GBV risks need to be assessed throughout the project's life by monitoring the situation, assessing the effectiveness of risk mitigation measures, and adapting them.

Since a sub project involves construction work that will demand a constant supply of labourers, the influx of migrant workforce can be a potential risk for the host population. The influx of labour force can lead to the risk of Gender-Based Violence.

The interventions will be at quarter levels, that of KMC , EA and us. According to guidelines of ESMF on GBV, prevention has been prepared to define the roles and responsibilities at all levels. Robust measures shall be prepared and implemented to address the risk of gender-based violence in the project and adjoining communities.

- ▶ Sensitization of concessionaire and laborers by nodal officers
- ▶ Strengthening of Grievance Redress Mechanism
- ▶ Strengthening of infrastructure on camp sites from a safety perspective.

The GBV assessment and action plan prepared in 2019 had identified several actions to be taken for GBV prevention and risk mitigation in NGRBP. Furthermore, sensitization and awareness on GBV for labourers to be done during tool box talks and safety induction trainings.

There are certain mitigation measures to be adopted are:

- ▶ Registration of labourers: The state agencies should undertake registration of labourers in collaboration with the labour department. This initiative covers migrant labourers as well and is beneficial for them to access health benefits, pension and several other safety nets deployed by the government. Additionally, it helps the state agencies to keep track of labourers on-site.
- ▶ Separate toilets: Camp-sites should have separate toilet facilities for men and women labourers.
- ▶ Grievance redress mechanism on-site: An established procedure to address complaints has to be in place across all the sites.
- ▶ Safety information on-site: Project sites will be required to prominently display safety related information for labourers.
- ▶ Awareness amongst communities: The project related information, general helpline number as well as contact details of junior/field engineers should be displayed prominently along with a community level

consultation so that any instance involving laborers may come to the forefront and reported to the concerned authority.

▶ We should have a corporate sexual harassment policy, which should be written in local language and displayed at all the project sites.

We should display the board with emergency contact numbers at all sites and labour camps, the safety procedures and processes such as: worker’s code of conduct, a strict no alcohol, no smoking and no drug policy should be in place.

▶ Regular orientations and spot checks should be carried out for all the workers for strict

**Performance;**

▶ The EA will plan and implement the activities/investments and put in place arrangements for satisfactory and sustainable operation and maintenance of the assets created. The EA will be responsible for all contract management, including preparation of feasibility reports and DPRs along with seeking the necessary approvals. We shall be responsible to implement the EMP primarily in assistance with the Project Executing Agency. The Environmental Engineer/Specialist from us and Independent Engineer/Supervision Consultant shall implement and monitor the compliance of the EMP and all the design drawings of various civil structures shall be implemented after his approval. Also, to assist to the respective project managers to ensure socially and environmentally sound and safe construction practices. The state and local Government will be responsible for coordination, monitoring and evaluation of the Environment Management Plan. It should ensure all the safeguarding plans are in line and acted upon. We shall report the implementation of the Environment Management Plan to the Environmental Expert and to EA through monthly reports. Feedback from the residents can also be taken from time to time to cross check our report. KMC and KURIP officials should make inspection visits at the construction site to check the implementation of Environment Management Plan as per the contract.

**45. Spoil Management Plan for On-Road Pipeline Works**

➤ Objective

To ensure safe, environmentally responsible, and efficient management of excavated spoil generated during pipeline installation along road corridors.

➤ Scope

This plan covers handling, storage, transportation, reuse, and disposal of spoil generated from trenching, manhole, and catch-pit works on public roads.

- Key Principles
- Minimize Generation – Optimize trench dimensions to reduce excess excavation.
- Reuse Wherever Possible – Backfilling with suitable excavated material.
- Safe Handling & Storage – Prevent obstruction, accidents, and environmental hazards.
- Environmentally Compliant Disposal – Spoil disposal only at authorized locations.

➤ Spoil Handling Procedure

✓ Excavation & Collection

- Excavated spoil shall be stockpiled on one side of the trench, away from traffic.
- Proper barricades and reflective tapes to be installed around spoil heaps.
- Water sprinkling to control dust emissions.

➤ Temporary Storage

- Stockpiles not to exceed 1.5 m height.
- Covered with tarpaulin during rain or when kept >24 hours.
- Avoid blocking storm water drains, pedestrian paths, or property access.

➤ Transportation

- Only covered trucks/tippers or Tractor to be used.
- Spoil material to be transported during non-peak hours to reduce traffic disruption.
- Vehicles shall not be overloaded, and wheels cleaned before leaving site to avoid mud on roads.

➤ Reuse & Disposal

✓ Reuse

- Suitable spoil (sand, gravel, selected soil) to be reused as backfill material after compaction.
- Topsoil (if available) to be separately stored and reused for landscaping or surface reinstatement.

➤ Disposal

- Unsuitable spoil (sludge, debris, mixed waste) to be sent to municipal/authorized dumping ground.
- Hazardous material (e.g., tar-contaminated soil, asbestos pipes, oily waste) to be handled as per Hazardous Waste Rules, through licensed agencies.

➤ Environmental & Safety Controls

- Dust suppression by water sprinkling.
- Cover spoil heaps with tarpaulin sheets.
- Ensure pedestrian safety with barricades and signage.
- Fire safety measures if spoil contains flammable material.
- Periodic inspection by site engineer/ESHS officer.

➤ Monitoring & Record Keeping

- Daily record of spoil generated, reused, and disposed.
- Trip sheets for spoil transported to disposal sites.
- Photographic evidence of disposal at approved locations.

## **46. CONCLUSIONS**

The Environmental and Social Impact Assessment study for the proposed sub-project of the proposed Sewerage and Drainage Network System for the KMC and KURIP has concluded that the overall project impact falls in the 'low impact category' and will have positive benefits on lifestyle and environment. People living there. The proposed sewerage project mainly involves setting up of treatment plants, which does not result in any loss of income, livelihood or relocation of households. Environmental and Social Management Framework, Environmental and Social Assessment along with a Common Safety Management Plan was conducted and prepared to address potential issues/concerns arising from the proposed project. Impacts of activities identified during the assessment fell under two separate categories of Construction and Operation. Although no such permanently negative or adverse environmental or social impacts were identified, there were certain temporary impacts, for which appropriate mitigation plans have been suggested. The environment management plan brings forth appropriate mitigation measures against the issues/ concerns identified during environmental and social analysis. All the social and environmental issues were appropriately studied and have been substantiated using appropriate pieces of evidence, to ascertain the magnitude of their impacts. The report also ensures that well defined institutional mechanism is in place to monitor and evaluate the progress of the project during construction, implementation and operation phases. It was also understood and mentioned that the improvement in the quality of life, human dignity and increased productivity greatly outweigh the temporary inconveniences faced during the implementation stages.

## 47. ANNEXURES

### 1. HSE POLICY

## Traders & Engineers Private Limited

### Occupational Health and Safety Policy

We, at Traders & Engineers Private Limited, are committed to executing projects by avoiding injury to ill health of our employees, workmen and all other stakeholders.

The following policy reflects our dedication to maintaining a safe and healthy work environment and is to be strictly followed by all associated with our works: -

1. **Compliance with Legal and Other Requirements:** Ensure adherence to all applicable legal and other requirements related to occupational health and safety.
2. **Preventive Measures:** Take every reasonable precaution to protect our workers and ensuring that machinery and equipment are safe.
3. **Training and Awareness:** Provide adequate training to workers in their specific tasks to protect their health, safety, and the environment.
4. **Continual Improvement:** Regularly review occupational health and safety objectives to ensure continual improvement in line with the latest standards and best practices.



Authorized Signatory

Traders & Engineers Private Limited

Date: 12.10.2025

## 2. SITE LAY OUT PLAN



### 3. SAMPLE GREIVANCE REGISTRATION FORM

GRIEVANCE REGISTER									
NAME OF WORK / PROJECT									
TENDER NO :				NAME OF AGENCY :					
SL N O	ISSUE/TY PE OF PROBLE M	LODQU ED BY	TYP E OF ISSU E	IMPA CT	RECOMMENDA TION	TARG ET DATE	COMPLI ED ON	SITE REPRESENTA TIVE	SIGN OF KMC/KU RIP