

DRAFT ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK Volume I

**(Including Resettlement Policy Framework and
Scheduled Tribe Participation Framework)**

**Jharkhand Urban Infrastructure
Development Company Limited (JUIDCO)
Jharkhand Municipal Development Project
(JM DP)**

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ACRONYMS & ABBREVIATION

AMRUT	Atal Mission for Rejuvenation and Urban Transformation
ARAP	Abbreviated Resettlement Action Plan
BSR	Basic Schedule Rate
CBO	Community Based Organisation
CBULB	Capacity Building for Urban Local Bodies
CPCB	Central Pollution Control Board
CPHEEO	Central Public Health and Environmental Engineering Organisation
CRZ	Coastal Regulation Zone
CSQC	Construction Supervision and Quality Control
CTE	Consent to Establish
CTO	Consent to Operate
DG	Diesel Generator
DMC	Dhanbad Municipal Corporation
DRDA	District Rural Development Agency
EA	Executing Agency
EIA	Environmental Impact Assessment
ESMF	Environmental and Social Management Framework
FSI	Forest Survey of India
GDI	Gender Development Index
GEM	Gender Empowerment Measure
GIS	Geographical Information System
Gol	Government of India
GRM	Grievance Redress Mechanism
GSDP	Gross State Domestic Product
IBRD	International Bank for Reconstruction and Development
IEC	Information Education and Communication
INTACH	Indian National Trust for Art and Culture Heritage
JMDP	Jharkhand Municipal Development Project
JNA	Jamshedpur Notified Area
JSPCB	Jharkhand State Pollution Control Board
JUIDCO	Jharkhand Urban Infrastructure Development Company Limited
KII	Key Informant Interview
MHUPA	Ministry of Housing and Urban Poverty Alleviation
MLD	Millions of Liters Per Day
MNA	Mango Notified Area
MoEF&CC	Ministry of Environment, Forest and Climate Change
MoUD	Ministry of Urban Development
NGO	Non-government Organisation
NOC	Non-Objection Certificate
NP	National Park
NULM	National Urban Livelihoods Mission
OBC	Other Backward Caste
PAH	Project Affected Household
PAP	Project Affected Person
PDO	Project Development Objective
PHE	Public Health Engineering
PIU	Project Implementing Unit
PM	Particulate Matter
PMU	Project Management Unit
PUC	Pollution Under Control
PWB	Public Works Department
RAP	Resettlement Action Plan
RCD	Road Construction Department

RFCTLARR	Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement
RMC	Ranchi Municipal Corporation
RoW	Right of Way
RTP	Rapid Training Programme
SBM	Swachh Bharat Mission
SC	Schedule Caste
SEIAA	State Environment Impact Assessment Authority
SIA	Social Impact Assessment
SPV	Special Purpose Vehicle
SSZ	Singhbhum Shear Zone
ST	Scheduled Tribe
STP	Sewage Treatment Plant
SUDA	State Urban Development Agency
TDP	Tribal Development Plan
TKF	Tamar – Khatra Fault
ToR	Terms of Reference
UD&HD	Urban Development & Housing Department
ULB	Urban Local Body
WLS	Wildlife Sanctuary
WTP	Water Treatment Plant

EXECUTIVE SUMMARY

1. Jharkhand Municipal Development Project (JMDP) has been formulated to improve the municipal infrastructure in selected cities in Jharkhand. The Project has been aligned with India's development outlined in the 12th Plan (2012-17), which requires for faster, sustainable and more inclusive growth. The urban sector priorities of the Government of India (GoI) are detailed below (as per 12th plan):

- ▶ Increasing investment in urban infrastructure
- ▶ Strengthening urban governance and institutional capacity, and improving long-term urban planning for sustainable and inclusive urban development
- ▶ Improving environment sustainability
- ▶ Improving financial sustainability of Urban Local Bodies (ULBs)

The proposed project includes three components:

- ▶ **Component 1: Urban Infrastructure Improvement**
- ▶ **Component 2: Policy and Institutional**
- ▶ **Component 3: Project Management and Technical Support**

2. The Environment and Social Management Framework (ESMF) document has been prepared with an objective to manage the social and environment impacts through appropriate measures during the planning, design, construction and operation of various sub-projects of JMDP. The framework identifies the level of safeguard and due-diligence required for all categories of sub-projects and provides specific guidance on the policies and procedures to be followed for environmental and social assessment along with roles and responsibilities of the implementing agencies.

3. The preparation of this ESMF is an attempt to:

- ▶ Support the integration of environmental and social aspects with the decision-making process at all stages related to planning, design, execution, operation and maintenance (O&M) of sub-projects, by identifying, avoiding and/or minimising adverse environmental and social impacts early-on in the project cycle
- ▶ Support affected people to restore or improve their livelihoods and living standards and compensate any loss of livelihood or asset that may occur due to execution of sub-projects
- ▶ Enhance the positive/sustainable environmental and social outcomes through improved/ sensitive planning, design and implementation of sub-projects

- ▶ Minimise environmental degradation that may occur as a result of either individual sub-projects or through their indirect, induced impacts
- ▶ Protect human health
- ▶ Minimise impacts on cultural properties, sensitive areas and natural habitats.
- ▶ Introduce higher standards of labour management which includes, camp site management, occupational health and safety management, and construction safety standards.

- ▶ Project investments are expected to contribute to positive environmental enhancements in the participating ULBs, particularly with the new focus on urban environment improvements. The basic services include rehabilitating and extending existing water supply, drainage and sewerage systems, improved vehicular and pedestrian movement by provision of paved roads and footpaths and storm water surface drainage. These urban upgrading activities will contribute to positive environmental and social impacts especially in terms of improving public health and living conditions. The portfolio of projects to be implemented under the JMDP across several cities and/or towns in Jharkhand is listed below:
 - ▶ Water Supply Scheme
 - ▶ Storm Water Drainage
 - ▶ Strengthening, Development and Beautification of Arterial, Sub-arterial and Collector Streets
 - ▶ Sewerage Schemes
 - ▶ Municipal Buildings

Regulatory Framework

4. Several national and state-level environment and social laws will be applicable to JMDP projects, including the Environment (Protection) Act, 1986; Water (Prevention and Control of Pollution) Act, 1974; Forest (Conservation) Act, 1980; Air (Prevention and Control of Pollution) Act 1981; Solid waste (Handling and Management) Rules, 2016; Country Labour laws¹; Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013; Jharkhand Right to Fair Compensation, Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2015; and Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014. In addition, a set of

¹ Contract labour (Regulation and Abolition) Act 1970; Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013; Employees P.F and Miscellaneous Provision Act, 1952; Child labour (Prohibition and Regulation) Act 1986; Inter-State Migrant Workmen's (Regulation of employment and Conditions of service) Act, 1979; The Building and Other Construction Works (Regulation of Employment and Conditions of Service) Act 1996; Minimum Wages Act 1948; Equal Remuneration Act 1976; Weekly Holidays Act 1942; Employer's Liability Act 1938; Bonded Labour System (Abolition) Act 1976 etc.

operational policies laid down by the World Bank will also be applicable to the project. The operational policies applicable for the sub-projects are OP 4.01 —Environmental Assessment; OP 4.04 — Natural Habitats; OP 4.36— Forests; OP 4.12— Involuntary Resettlement; OP 4.10— Indigenous People; OP 4.11 — Physical Cultural Resources; OP 4.37 — Safety of Dams; and World Bank Policy on Access to Information and Disclosure. The ESMF also recommends following of WBG EHS Guidelines, and WBG Industry Sector Guidelines applicable to the sub-projects such as Industry Sector Guidelines for Waste Management Facilities and Water and Sanitation.

Key Environment and Social Issues

5. The key social issues anticipated during the lifecycle of the project include laying of infrastructure and utilities resulting in land acquisition, loss of structures, loss of livelihood and loss of common property resources (CPRs). The local population, in particular ST population, may be adversely affected by loss of natural resources such as land, water and forest. Further, the impacts during construction include loss of access to houses, CPRs and urban infrastructural facilities. About, 90% of labour under the project will consist of local population with only 10% labour/technicians coming from outside; therefore, chances of conflict between immigrant labour force and local community are rare. In this regard, directives will be issued to the contractor to manage the migrant labour. In addition to the above, there may be issues relating to child labour and safety and security of women. A committee will be set up in each sub project district to look after the issues pertaining to child labour and ensure that children below 14 years are not employed in any of the sub-projects.
6. While the sub project ESIA's would require to assess such potential issues linked to temporary project induced labour influx, the specific impacts can only be assessed once the contractor is appointed and decides to outsource labour. Contractor ESMP shall include a labour management Plan. Relevant clauses shall be included in the bid documents and provisions shall be made in the sub project specific ESMP.
7. Environmental impacts on sensitive areas will be minimised to the extent possible but not be ruled out, this could include diversion of land from sensitive environmental areas, and impacts to urban environmental quality due to construction related activities. The project will cause general construction stage impacts which include (i) increase in noise, dust, and impacts on air quality (ii) temporary water quality impacts resulting from possible drainage and sewage pollution; and (iii) increased congestion and obstructions in traffic and pedestrian movements due to excavation, movement of construction vehicles. (iv) hindered access/temporary changes in access to, and the use of, public spaces during construction/excavation works (v) public health risks due to improper waste/debris

- management; and (vi) generation of hazardous waste which may cause risks to peoples' health and the environment if construction waste and debris are disposed of improperly.
8. If sub- project investments are not appropriately designed, executed or operated, or they could lead to adverse environmental impacts. These impacts could be due to a variety of reasons, including: (i) improper site selection of physical investments; (ii) absence of sludge/waste disposal and management facilities in the proposed WTP/STP facilities; (iii) inadequate maintenance of assets such as roads and drains, leading to deterioration of urban environment quality; (v) impacts to cultural properties and local water bodies, (vi) inappropriate disposal of silt material from existing drains. The ESMF prepared for the JMDP Program acknowledges these issues and integrates the measures for addressing them in the project implementation process.
 9. The project would also need to manage labour health and safety and quality of camp sites to avoid any impacts such as (i) increased risk of spread of communicable diseases (ii) illegal waste disposal sites, poor hygiene standards in camps, wastewater discharges, (iii) camp related construction noise and (iv) illegal access roads and land use issues and (v) other impacts due to increased pressure on public infrastructure such as local social and health services, utilities such as water and electricity, housing and social dynamics and thus impact on local communities.

Environmental and Social Management Framework (ESMF)

10. The ESMF lays out the framework to identify and address environment and social impacts across screening, ESIA preparation, ESMP implementation, and site decommissioning. The specific detailed guidance on content and completeness for an ESIA and ESMP have been provided in annex III, IV, V, and VIII).
11. In addition, specific guidelines have been provided in Annex XII- XIV and XVII for all sub projects for preparation for the ESIA consultant firms to prepare (i) labour camp site and management plan (ii) Occupational Health and Safety management plan and (iii) archaeological chance find procedure; which forms an integral part of all sub projects ESIA's falling in E1, E2 category.
12. The document also provides the guidances for JUIDCo and the civil works contractors to develop site- specific plans for waste and debris management, and borrow area management as required. (these have been provided in Annex XVIII & XIX.)
13. As per the ESMF, the first step will be to conduct screening exercise, where the environmental and social issues will be identified through filling of Environmental & Social (E&S) Screening Checklist for the potential sub-projects. The objective of filling this checklist will be to collect basic information on environmental and social baseline

parameters, issues, and potential impacts. Based on this, the sub-projects will be categorised.

14. JUIDCO has categorised the sub-projects into three categories on the environment and social aspects considering the severity of impacts, impact magnitude and significance of the impacts and regulatory requirements. In the environment aspect, the sub-projects have been categorised into E1, E2 and E3 and in the social aspect, the sub-projects have been classified into S-1, S-2 and S-3. Projects categorised as E1, will follow the requirements of Bank OP 4.01 Category A projects requirements, and E2, E3 projects will follow the requirements of Bank OP 4.01 Category B project requirements.

Table 1: Environmental and Social Categorisation of Projects

Category	Description	Criteria	Actions
Environmental			
E-1	Significant adverse environmental impacts over the lifetime of the project; likely need for significant mitigation.	<ul style="list-style-type: none"> ▶ Significant adverse impacts that are sensitive, diverse, or unprecedented, or that affect an area broader than the sites or facilities subject to physical works. ▶ Projects impacting sensitive environmental components². ▶ Projects involving STPs and dam safety due diligence measures. ▶ Projects requiring environmental clearance as per EIA notification of MoEFCC. 	<p>For E1 category sub-projects, full, comprehensive ESIA is required following all the requirements specified in OP 4.01 for Category A.</p> <p>JUIDCO will engage an independent agency different from DPR consultant to carry out an ESIA and ESMP.</p> <p>The ESMF will be shared with the independent ESIA consultants for following the procedures and using the relevant information in their assessment</p>
E-2	Moderate impacts; straight forward issues; likely need for	▶ Project is categorised as E-2 if its potential adverse environmental impacts are	Preparation of environmental impact assessment and management plan,

²Projects impacting sensitive environmental components include protected areas, forest areas.

Category	Description	Criteria	Actions
	some easily implemented mitigation.	<p>less severe than those of E-1 projects.</p> <ul style="list-style-type: none"> ▶ E2 projects are expected have less adverse and more limited, fewer, site-specific, likely reversible environmental impacts. ▶ Mitigation measures can be more easily designed/implemented. 	<p>corresponding the type of environmental impacts of the project and the anticipated relatively straightforward mitigation</p> <p>ESIA, ESMP will follow all the requirements specified in OP 4.01 for Category B project.</p>
E-3	Few direct or indirect minor environmental impacts.	<ul style="list-style-type: none"> ▶ Projects with minor, transient environmental impacts which are easily and fully mitigated through routine measures. ▶ 	<p>A standalone ESMP may be sufficient for Category E3 projects. This will also follow the requirements specified in OP 4.01 for Category B project, including consultations and disclosure. The ESMP needs to be included in the bid document.</p>
Social			
S-1	Significant with adverse irreversible social impacts	<ul style="list-style-type: none"> ▶ If it involves acquisition of private land and affects more than 200 persons or 50 households ▶ If it involves physical displacement. 	<p>Comprehensive environmental and social assessment and prepare a resettlement action plan (RAP), through an agency independent of design consultants. RAP to be part of Bid document in case of Design Review Built contract.</p>
S-2	Moderate with minimised social impacts	<ul style="list-style-type: none"> ▶ If impacts are of a minor nature or fewer than 200 	<p>Prepare abbreviated Resettlement action plan (ARAP) based</p>

Category	Description	Criteria	Actions
		persons or about 50 households are affected	on environmental and social assessment. ARAP to be part of Bid document in case of Design review Built contract.
S-3	Minor with temporary impacts or indirect social impacts.	▶ Temporary disruption to income activities that can be resumed after construction and other construction-linked social impacts	A standalone ESMP will be prepared for the construction and operation phase and will be a part of the bid documents.

15. A resettlement policy framework and scheduled tribe (ST) participation framework have been prepared as part of the ESMF to guide the preparation of resettlement plans and scheduled tribes participation plan. The resettlement policy framework (RPF) provides the principles, definition and entitlements of the project affected persons (PAPs). Similarly, the scheduled tribe participation framework provides the process of identification of ST with unique characteristics and ensure their participation and access to benefits in the urban infrastructure development and service delivery sub-projects.

16. Environment and Social Impact assessment will be carried out as an integrated activity using the ToR attached in Annex VII, using the guidance for content in Annex III, IV, V and Annex VIII for ESMP preparation. All the safeguard documents applicable to sub-projects, ESIA/ESMP/RAP/ARAP/Scheduled Tribe Participation Plan (STPP) will be reviewed and cleared by Bank and before they will be publically disclosed. The applicable ESMPs will be made part of the bid documents and would be updated during the sub-project implementation phase, as required. This ESMF applies to all the components under the project along with its linked activities irrespective of Bank financing and will be subject to Bank supervision.

Gender Issues, Action Plan and Monitoring Indicators

17. The main gender issues in the project are inequality in accessibility to urban infrastructure and services, safety and security of the women, inequality in participation of women workforce and awareness of women about their rights.

18. The project will ensure easy accessibility to improved urban infrastructure and services through 24x7 domestic water supply for households and better roads. Proper street lighting will increase the safety and security of women. There will also be a provision for the

contractor to employ local people, preferably women. The implementing consultant/NGO would increase the awareness among the women regarding their rights and opportunities available from the project.

19. The monitoring indicators are the number of connections of water supply points to the vulnerable population particularly women headed households in the sub-project area, contractor's progress report shall include number of women employed and their wages and monthly status of the grievance redressal mechanism (GRM).

Stakeholder Consultation

20. Public consultations with the stakeholders were carried out at different levels during preparation of the ESMF and ESIA of sub-projects of known investments at the social screening and feasibility study stages. Details of the consultations are given below:

- a) Public consultation was conducted at the state level with a range of stakeholders such as the officials of line departments, technical experts and leaders of Community Based Organisations (CBOs), local bodies and NGOs. During consultations, the scope of the work and the objectives were discussed with the stakeholders prior to the session.
- b) At the City level (Dhanbad and Khunti), public consultation was carried out with ULB representatives and officials/representatives of different line departments (UD&HD, Labour Department, Welfare Department, JSPCB, Drinking Water and Sanitation Department, Water Resource Department, RRDA and Forest Department) focusing on specific infrastructure and benefits to the communities. A wide range of topics related to the environment and social aspects of JMDP were discussed as part of project information sharing and soliciting views and concerns on environmental and social management.
- c) At the Local level, public consultations were carried out with PAPs at the sub-project sites/locations. The major findings from impact assessment and mitigations, project entitlements, eligibility of PAPs etc. were discussed as project information sharing. Subsequently, feedback from PAPs was sought and noted and relevant points discussed were considered while preparing/finalising detailed design of the project.

21. The major outcomes of stakeholder consultations were as follows:

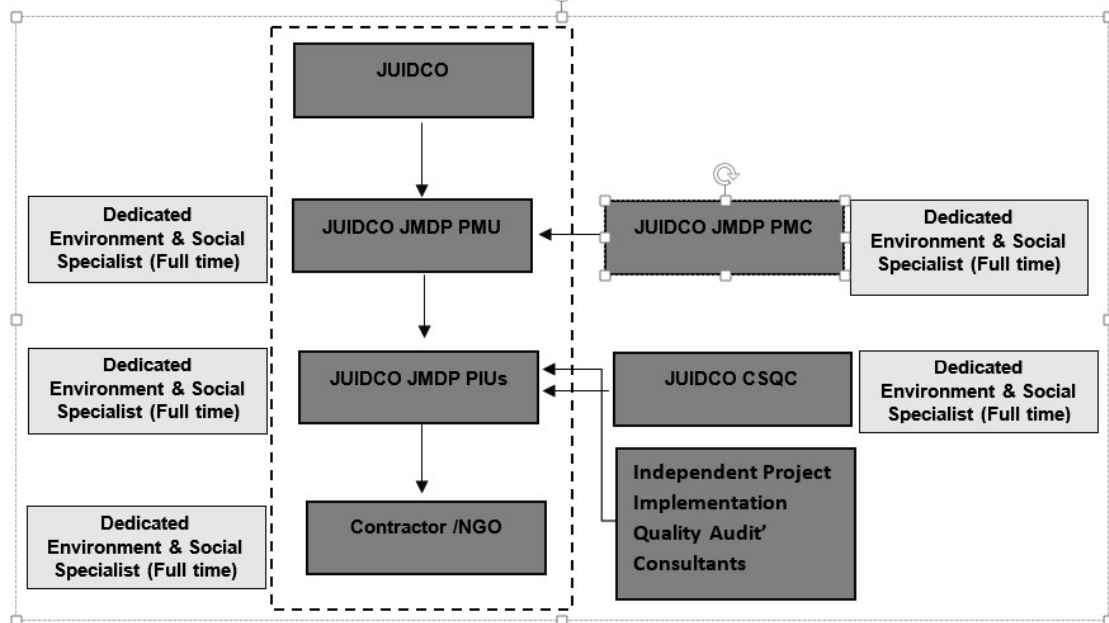
- a) Stakeholders acknowledged the positive impacts that the project will have on the society like improved water supply, reduced hardship faced by people to fetch water, reduced traffic congestion due to widening of arterial and sub-arterial roads, and reduced chances of water stagnation due to improvement of drainage system.

- b) Major issues raised by stakeholders due to project activities were on land acquisition, tree felling, impacts to temporary vendors, impacts on surface water bodies on which the community depends and blockage of access road due to construction activities.
- c) The stakeholders suggested mitigation measures that are to be implemented to reduce the negative impacts of the project. Some of the key recommendations were incorporation of ESMP in the bid documents, assessment of impacts within the project area, labour permit before construction activity, alternate access road, communication/notice of minimum 2 weeks before construction activity and temporary suspension of construction activity during the time of key festivals or pilgrimages season.

Institutional Structure for Project Implementation

22. JUIDCO will set up a three-level project monitoring and implementation mechanism. At the State level, overall oversight will be ensured by JUIDCO, headed by the Chairman cum Managing Director. The second level will consist of a Project Management Unit (PMU) of JUIDCO-JMDP for the project at Ranchi. The PMU is headed by a Project Director assigned from the State Government, who will report to the Principal Secretary, Urban Development and Housing Department (UDHD). In addition, a full-time Deputy Project Director has been put in place who will lead all day-to-day decision meetings of the PMU. The PMU is already staffed with the following key positions by hiring from the open market (i) Deputy Project Director, (ii) Environmental Safeguards Specialist and (iii) Social Safeguards Specialist among others. The third level consists of a Project Implementation Unit (PIU) of JUIDCO-JMDP and will support the implementation of sub-projects at the ULB level. PIUs will hire a full-time environment and social specialist, and will be fully operational before contractors' teams are on board. To support safeguards implementation capacity, Project Management Consultants are in the process of being hired to provide the necessary technical and project management support at both the PMU level and will have environment and social specialists as part of core team. The entire implementation setup will be exclusive to the JMD project, hired on a full-time basis. Construction Supervision and Quality Control Consultants are also in the process of being hired, and will contain a dedicated Environment, Social, Health and Safety officer to look at ESMP implementation, labour management and occupational health and safety risks. The institutional arrangement of JUIDCO-JMDP has been provided in figure below.

Figure 1: Institutional Arrangement



Role of JUIDCO-JMDP PMU

23. The PMU has been fully established, and is staffed with environment and social specialist who are responsible for the following, the details of supervision requirements have been included in Annex XV.
- a) Stakeholder consultations and public engagement
 - b) Coordination with the line agencies in approval of DPR, ESIA, designs, preparing of bidding documents, tendering schedules, etc.
 - c) Preparation of sub-project DPR, ESIA's and ESMPs along with RAP/ARAP and STPP as applicable
 - d) Ensure approval of all safeguard reports from World Bank and public disclosure
 - e) Site visits and inspection of projects under implementation
 - f) Appointment of technical assistance consultants and others safeguards management support to the implementing agencies
 - g) Quality assurance through third-party audits
 - h) Maintaining MIS and quarterly reporting
 - i) Ensuring compliance with agreed implementation procedures and other World Bank requirements, etc.
 - j) Attaining all NOCs and clearances needed for sub-projects

JUIDCO-JMDP- PIU

24. The PIUs will be established in the ULB where project financed investments are being carried out, and will be fully operational before the contractor team is on board. an

Environment and Social specialist will be hired within the PIU and responsible for the following and will function at the ULB level:

- a) Carry out inspection visit to sub-project sites and submit monthly sub project ESMP compliance checklist as per Annex XXIV.
- b) Submit the monthly progress report to PMU on ESMP implementation by contractor
- c) Submit progress report on /RAP/ARAP/STPP implementation by NGO/district R&R authority.
- d) Safeguards compliance during implementation and operation phase
- e) Progress and expense reporting to the PMU
- f) Coordination with district-level coordination committees, etc.

ULBs

25. The responsibilities of ULBs during the preparation and implementation phases are mentioned below:

Preparation Phase

- a) Carry out the social outreach and necessary information, education and communication (IEC) activities to ensure adequate social acceptability through citizen participation.
- b) Setting up a grievance redressal mechanism
- c) Identification of projects and making arrangements for required land
- d) Obtain relevant approvals from ULB Board
- e) Assistance in obtaining necessary approvals and orders from stakeholder departments for implementation of project

Implementation Phase

- a) Obtain feedback from citizens on the services provided and take necessary mitigation actions accordingly
- b) Ensure effective implementation of safeguards
- c) Monitor dayday-to-day activities
- d) Take part in the implementation of all community awareness and participation activities
- e) Maintain account for R&R activities
- f) Submission of progress report to JUIDCO on monthly basis

Project Management Consultant (PMC)

26. PMU will hire technical support and project management consultants which include a full-time environment and social specialist to support the PMU in the following areas:

- a) Technical support and Advice on project design and construction methodology
- b) Environment and social safeguards support, specifically ESIA review and appraisal, sub project ESMP compliance monitoring.
- c) Result monitoring and impact evaluation, etc.
- d) Support to quarterly project reporting.

Construction Supervision and Quality Control Consultant (CSQCC)

To support the PIU at the site, a CSQCC will be hired, and will contain an Environment, Social, Health and Safety Specialist for day-to-day supervision of the work performed by the contractor on the following aspects, though detailed scope of work has been prepared in Annex XX.

- a) Checking and certifying the claims of the contractor
- b) Monitoring ESMP compliance, and compliances with waste management, OHS management, and labour management plans.
- c) Reporting monthly on ESMP progress and expenses to the PIU
- d) Controlling the quality of construction

Implementation of sup project RAP, STPP, ESMP and Contract Management

27. Under the overall supervision of JUIDCO, the sup project specific RAP/ARAP and STPP shall be implemented by PIU with the help of NGO specifically hired for the project, and ESMP shall be implemented through civil contractors under the direct supervision of CSQC and PIU. Services of the District Collector office will be utilised for Land Acquisition, verification of land ownership, valuation of structures etc from time to time.

Roles and Responsibilities of Environment and Social Specialists - PMU

28. The key responsibilities of the environment and social specialists include:
- a) Lead and management overall environment and social management under JMDP
 - b) Orientation and training of implementing agency teams and the contractors on environmental and social management
 - c) Hiring of ESIA and Safeguards Audit consultant.
 - d) Leading/ providing oversight on the EIA/SIA process and its outputs
 - e) Review of monitoring reports submitted on /ESMP/RAP/STPP implementation
 - f) Conducting regular visits to project sites to review ESMF compliance during sub-project planning, design and execution.

- g) Providing guidance and inputs to the implementing agency teams on environment and social management aspects
- h) Reporting to JUIDCO and the World Bank as specified in the ESMF
- i) Coordinating with the Quality Audit Consultants

Monitoring and Supervision

29. In order to achieve the objectives of this ESMF and to ensure the safeguards are implemented in a proper manner, the following provisions are made in this ESMF:

- a) sub project ESMP supervision by PIU
- b) Exclusive environmental specialist and social specialist at PMU for overall ESMF implementation coordination and reporting
- c) Concurrent environmental and social monitoring and evaluation and quarterly environmental and social monitoring reports to the World Bank
- d) Independent safeguards audit (ISA): yearly environmental and social audit of ESMP, RAP and STPP implementation by independent consultants as per ESMF.
- e) Environment and social management capacity building of JUIDCO, PIU and implementing agencies including consultants, contractors and CBOs, community members

30. The key performance indicators to be monitored for successful implementation of ESMF will be the following:

- a) Implementation of ESMP and RAP in time-bound manner
- b) Number of accidents during the construction phase
- c) Status of compliances with regulatory requirements and clearances
- d) Labour management standards as per IFC guidelines
- e) Number of complaints handled within the scheduled time
- f) Disclosure of project information and public consensus on the project and locations/sites involved.

GRM

1. GRM is a process that enables any stakeholder to make a complaint or a suggestion about the way a project is being planned, constructed or implemented.
2. The Deputy Project Director (JUIDCO, PMU) will be responsible for ensuring that each sub-project establishes an effective multi-level GRM to handle all grievances related to sub-project activities. The GRM will function at 2 levels: at the community/sub project

level, where every effort will be made to resolve the issue; through establishment of GRC and as an appeal mechanism at state level. The sub-project level GRC shall be constituted with five persons including a female member.

- ▶ One from the ULB/executing agency
- ▶ Any one elected representative (local project area; preferably female)
- ▶ Representative of a community-based group of women such as Mahila Samakhya/Mahila Mandal
- ▶ A person who is publicly known and accepted by the locals (in the project area) to speak on their behalf (to be identified by the elected representatives of the ULB)
- ▶ Community development officer from PIU
- ▶ Medical officer
- ▶ Officer from concerned department such as police, transport and labour

31. ULB-level community organiser or Chief Municipal Officer's representative The PAP (or his/her representative) may submit his/her complaint in a number of ways: by written letter, phone, and email to the GRC or, alternatively, raise his/her voice in a public or individual meeting with the project staff. A very simple grievance form in local language will also be available at each project site to be filled in by the complainant. Also complaint boxes shall be placed at ULB office, PIU office and Contractors campsite/office. One person in PIU and contractor office will be designated as complaint officer responsible for receiving all the grievances (oral or written) and maintaining the log of such complaints and action taken. This complaint officer shall facilitate filling the grievance form in case of illiterate complainants. NGO engaged for RAP implementation shall act as facilitator in ensuring that all the complaints/suggestions reach the attention of PIU head especially of the PAPs and local community. The effectiveness of the GRM shall be tracked through progress report of CSQC and NGO facilitating RAP implementation.

32. The contact details of the registering complaints/suggestions are given below:

Grievance Redressal Cell (GRC)
Jharkhand Urban Infrastructure Development Company Ltd. (JUIDCO)
III Floor, Pragati Sadan
Kutchery `Chowk
Ranchi 834001
Jharkhand
Ph: 0651-2243203
Email Id: grc.jmdp.juidco@gmail.com

Public Consultation during Sub-Project Implementation

33. During sub-project preparation and implementation, besides the primary stakeholders, ULBs, NGOs and the general public will also be involved. Project monitoring reports would be disseminated in the public consultation meetings where any EHS and social issues pertaining to the sub-project will also be discussed. Bi-annual consultation meetings shall be organised at the project site and at ULB levels during the sub project design phase. Further, recommendations will also be collated for improving the current and future project design. In addition, stakeholder consultation workshops with the participating departments and other stakeholders will be held regularly during implementation. The project monitoring/progress reports should also be placed on the ULB website and project website.

ESMF Budget

34. The estimated budget for environmental and social management activities under the JMDP has been worked out as 5% of the total project cost (Rs. 1,00,00,00,000) Hundred Crores only.

1 INTRODUCTION

3. In the last decade, India's outlook on urbanisation has undergone a paradigm shift, with urban planning being brought to the forefront of development policymaking. The view that cities are central to the country's economic growth and development is gaining wider acceptance, strengthened by the increasing contribution of the urban sector to India's GDP. The provision of basic urban services such as water, sanitation, drainage, sewerage and transportation has already become a major development challenge in most urban centres.
4. To expedite investment and effective planning in urban areas, the GoI launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in 2005. JNNURM is the first large-scale central assistance urban development programme of the country. During 2014–15, the Central Government launched four new schemes to expedite urban infrastructure and service provision and replace JNNURM. These schemes are (1) the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), focusing on water supply and sewerage improvement; (2) Smart Cities Mission (SCM), aimed at developing smart solutions for selected urban areas; (3) Swachh Bharat Mission (SBM), focused on waste management and sanitation; and (4) Heritage City Development and Augmentation Yojana (HRIDAY), for addressing the development of heritage cities.

1.1 URBAN SCENARIO AND STATUS OF URBAN BASIC SERVICES IN JHARKHAND

5. The state of Jharkhand was established on 15 November 2000 in India through bifurcation from Bihar state. It comprises 24 districts with a total geographic area of about 79,700 square kilometres. Jharkhand is surrounded by five states: Bihar in the north, West Bengal in the east, Orissa in the south, and Chhattisgarh and Uttar Pradesh in the west.
6. As per State Urban Development Agency (SUDA), Jharkhand³, out of the total population of 3,29,66,238 (2.72% of the country's total population), about 55,61,095, i.e., around 16.87%, is urban population. The share of Scheduled Castes (SCs) and STs of Jharkhand is 12% and 26.3%, respectively. Jharkhand's urbanisation rate is lower than the national average; however, it is projected to ratchet up in the next 15 years (by 2042).
7. Currently, the urban population is concentrated majorly in the big cities. More than half of the urban population of Jharkhand (54.6%) resides in its 10 major Class-I cities, which have

³<http://amrut.gov.in/writereaddata/saap/Jharkhand2016-17.pdf>

populations of 1,00,000 and above. The share of urban population in these cities increased by 32.6% during 2001-2011. On the contrary, the share of urban population in the large towns, i.e., the Tier-II towns with a population of 50,000-99,999, has declined considerably (-51.7%). According to the 2011 Census, 11.1% of Jharkhand's urban population resides in these large towns, which has also decreased in numbers (18% in 2001 to 12% in 2011 Census), as compared to 23.1% a decade ago. Distribution of urban population in Jharkhand by town size has been presented in Table 2.

Table 2: Distribution of Urban Population in Jharkhand by Town Size

Size class of towns		Number of towns		Urban population	
		2001	2011	2001	2011
Class I	(1,00,000 and above)	7	10	24,65,317	43,28,014
Class II	(50,000 - 99,999)	18	12	13,81,825	8,82,716
Class III	(20,000 - 49,999)	37	39	12,27,809	12,82,052
Class IV	(10,000 - 19,999)	35	48	541,085	6,74,280
Class V	(5,000 - 9,999)	45	90	336,624	634,552
Class VI	(Fewer than 5,000)	10	29	41,081	131,447
All classes		152	228	59,93,741	79,33,061

Source: Computed from Town Directory, Jharkhand, Census of India, 2011

8. The proportion of urban population has also declined in the Medium towns, i.e., Class-III and Class-IV towns. The Small towns (Class-V and Class-VI towns), however, have doubled in numbers and due to the emergence of these new small towns, their share of the urban population has also increased noticeably. The trend of distribution of urban population by town-size in Jharkhand over the century (1901 to 2011 Censuses) depicts a continuous rise of the Cities (Class-I towns) and Large Towns (Class-II towns). The Cities and Large Towns have increased their share of the urban population by leaps and bounds, while the Medium towns are persistently declining ever since 1961 Census and small towns have suffered from utter stagnation. Table 3 below presents the share and growth of urban population in towns by Size class.

9. The share of urban population in Class-I cities has increased from 41.1% during the 2001 Census to 54.56% in 2011 census. Ranchi and Jamshedpur were the two major cities during the 2001 census together comprising of 24.35% of Jharkhand's urban population, while in the 2011 Census Dhanbad and Ranchi emerged as the major cities with a share of about 28.18 % of Jharkhand's urban population (Table 4). Dhanbad and Ranchi also emerged as the two million-plus cities in the 2011 Census. Dhanbad registered a massive 483% decadal growth in its urban population followed distantly by Deoghar (106.5%).

Dhanbad and Deoghar along with Adityapur (46.2%), Chas (45.7%) and Mango (34.7%) recorded higher decadal growth rates than the state's average (32.36%).

Table 3: Share and Growth of Urban Population in Towns by Size Class

Size class of towns	Share of urban population (in %)		Change in share of urban population 2001-11	Decadal growth rate of urban population (in %) 2001-11
	2001	2011		
Class I (1,00,000 and above)	41.1	54.6	32.6	75.6
Class II (50,000 - 99,999)	23.1	11.1	-51.7	-36.1
Class III (20,000 - 49,999)	20.5	16.2	-21.1	4.4
Class IV (10,000 - 19,999)	9	8.5	-5.8	24.6
Class V (5,000 - 9,999)	5.6	8	42.4	88.5
Class VI (Less than 5,000)	0.7	1.7	141.8	220
All classes	100	100	0	32.4

Source: Computed from Town Directory, Jharkhand, Census of India, 2011

Table 4: Share and Growth of Urban Population of Jharkhand, 2001 and 2011 Census

City name	City population		Share of urban population (%)	Decadal growth rate of urban population (%)
	2001	2011		
Dhanbad (M Corp.)	1,99,258	11,62,472	3.32	483.40
Ranchi (M Corp.)	8,47,093	10,73,427	14.13	26.72
Jamshedpur (NAC+ OG)	6,12,534	6,12,534	10.22	10.58
Bokaro Steel City (CT)	3,93,805	4,14,820	6.57	5.34
Mango (NAC)	1,66,125	1,66,125	2.77	34.72
Deochar (M Corp.)	98,388	2,03,123	1.64	106.45
Adityapur (NP)	1,19,233	1,74,355	1.99	46.23
Hazaribag (NP)	1,27,269	1,42,489	2.12	11.96
Chas(NP)	97,221	1,41,640	1.62	45.69
Giridih (NP)	98,989	1,14,533	1.65	15.70
All Class-I cities	24,65,317	43,28,014	41.13	75.56
All Class - II towns	7,82,342	8,82,716	13.05	12.83
Jharkhand (Urban)	59,93,741	79,33,061	100	32.36

Source: Computed from Town Directory, Jharkhand, Census of India, 2011 Note: * Class - II towns of 2001 became Class - I cities in 2011 Census

10. The spatial distribution of the Class-I cities illustrates heavy concentration of city population in mainly two areas. Dhanbad, Bokaro Steel City have together formed a major urban core along with Jamshedpur, Mango and Adityapur constituting the other core. Such restricted spatial spread of urban population into compact urban areas is one of the major causes of urban problems such as congestion and lack of housing as well as other amenities, ultimately leading to the growth of slums and squatters.
11. The share of urban population in large towns, i.e. Class-II towns, decreased from 13.05% during 2001 Census to 11.13% in 2011 Census. The pull factors of the big cities such as better employment opportunities, availability of basic amenities and physical as well as social infrastructure development has resulted in a shift of the urban population from large and medium towns to Class-I cities. Such a shift has visibly disturbing effects on the distribution of the urban population, which in its stride has, on one hand, led to a decline and stagnation of large and medium towns and, on the other, resulted in growth of Class-I cities.

1.1.1 Status of Urban Basic Services in Urban Areas of Jharkhand

12. The state of Jharkhand has 43 ULBs with a total population of 32.96million (2011 Census). These include 6 Municipal Corporations, 19 Municipal Councils, 15 Nagar Panchayats, 2 Notified Area Committees, and 1 Municipality. ULBs have the statutory responsibility to provide civic and infrastructure services in areas under their jurisdiction. The provision of urban services in Jharkhand is limited. Currently, the major urban infrastructure issues observed in Jharkhand include the absence of adequate civil infrastructure, poor network coverage as well as weak O&M of existing utilities, leading to poor supply of water, sanitation and solid waste management.

Roads⁴

13. Roads are integral to providing physical connectivity in an urban sphere. Higher road density indicates higher connectivity within the urban centre. As per Jharkhand Economic Survey report, 2016-17, the roads under the Road Construction Department(RCD) consist of state highways (91231.90 km), major district roads (4845.70 km) and other RCD roads (3673.80 km).
14. Jharkhand state has an average urban road density of 3.05 km pucca road per sq. km of the urban area. Total road density of Jharkhand is 119.77 (road km/1,000 sq. km), which is below the national average of 182.40(road km/1,000 sq. km).

⁴ As per Jharkhand –economic survey report,2016-17 ,Planning Cum Finance Dept,GoJ

15. Class-I cities have a higher urban road density of 4.7 km/sq. km area, while Class-II towns also have above-average road density of 3.43 km/sq. km urban area. The mining industrial sites of Dhanbad (28.45 km/sq. km) followed by Jamshedpur (11.54 km/sq. km) have the highest urban road densities among the major cities of Jharkhand. Ranchi, despite being the administrative capital city, has extremely low urban road density of mere 1.98 km/sq. km area. Deoghar (0.74 km/sq. km), Hazaribagh (2.24 km/sq. km), Bokaro Steel City (2.55 km/sq. km) and Adityapur (2.55 km/sq. km) too have below average urban road densities among the major cities. Among Class-II towns, Sahibganj (29.41 km/sq. km) and Saunda (26.55 km/sq. km) have very high urban road density, which is even higher than what most cities of Jharkhand have. But on the other end of the spectrum, Lohardaga (0.80 km/sq. km), Phusro (1.42 km/sq. km), Ramgarh Cantonment (2.28 km/sq. km) and Chakradharpur (2.67 km/sq. km) have poor road densities.

Street lighting facility

16. The availability of facilities of street lighting is determined through number of streetlights per kilometre of pucca road. The average number of streetlights per km pucca road in urban Jharkhand stands at 10.7. While the Class-I cities have better street lighting facility with 15.09 streetlights per km pucca road, Class-II towns have only 7.73 streetlights for the same stretch. Giridih (45.48 lights per km pucca road) and Deoghar (41.84 lights per km pucca road) have good street lighting facility. Adityapur (4.58 lights per km pucca road) and Dhanbad (4.96 lights per km pucca road) on the other hand have low street light densities. Such inverse picture of more street lights in less developed towns may be due to larger stretches of pucca roads in less developed town such as Deoghar as compared to developed town such as Dhanbad.

Access to drinking water and sanitation

17. As per Census 2011 data, Jharkhand had a population of 32.96 million. Due to paucity of surface sources and shallow aquifers, drinking water supply in present times primarily depends on ground water sources. Piped water supply, tube wells, wells and open water reservoirs are some of the major sources of drinking water. Across India, 50% of the households have access to piped water facility. However, in Jharkhand, the piped water supply coverage is around 13% to 15%, with 10% from treated sources and 5% from untreated sources.

18. The people of Jharkhand are largely dependent on hand pumps. Approximately 43.8% of the population in Jharkhand uses hand pumps against the national average of 33.55%. Out of

the remaining population in Jharkhand, 37% use wells and the rest depend on other open sources.

19. As per 2011 Census data, around 23.2% have drinking water facility within the premises and 44.9% have the facility near the premises, whereas 31.95% have water facility away from the premises. Only around 30% of the habitations have partial facility of safe drinking water. However, the remaining population has access to water which contains traces of arsenic, fluoride and iron contamination. The availability of safe drinking water, therefore, is a significant challenge faced by the people in the state of Jharkhand.

Urban drinking water and sanitation

20. The Census 2011 data shows that most of the Class-I cities of the State have provisions for the supply of protected water through tap water from treated sources. The exceptions are Mango, Deoghar, and Chas, where the main source of safe water supply is hand pump and Giridih where uncovered wells are the main source of water supply. Uncovered wells are not considered as a source of safe drinking water. However, uncovered wells along with hand pumps are the main sources of water supply in the Class-II towns. Among the large towns, only Phusro and Saunda have provisions for tap water from treated source as their main source of protected water supply system. In terms of sewerage and drainage, most of the Class-I cities of Jharkhand have a combination of both open and closed drainage system with the exception of Adityapur, which has provision for only open drainage network. The condition of Class-II towns is also not good as more than half of these towns have open drainage networks. Phusro, Ramgarh Cantonment, Saunda, Chaibasa, Lohardaga, and Chakradharpur are large towns with no provision for a closed drainage system. Availability of flush or pour flush toilets is regarded as an improved sanitation facility. Class-I cities overall present a better picture as compared to the State's average, which equals the condition in Class-II towns. Among Class-I cities, Dhanbad and Bokaro Steel City fall below the State's average availability of improved sanitation in the form of flush toilets. About half of the Class-II towns have below average availability of improved sanitation, among which Jhumri Tilaiya, Sahibganj are on the lower ranks.

1.2 CURRENT URBAN DEVELOPMENT SCHEMES IN INDIA AND JHARKHAND

21. The Central Government has launched various schemes to expedite urban infrastructure and service provision and strengthen JNNURM. During 2014–15, the GoI launched four new schemes to expedite urban infrastructure and service provision and replace JNNURM. The major schemes rolled out by the Central Government are (i) the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), (ii) Smart Cities Mission (SCM), (iii)

Swachh Bharat Mission, (iv) Pradhan Mantri Awas Yojana and (v) National Urban livelihood.

1.2.1 AMRUT Scheme in Jharkhand

22. AMRUT was launched on 25th June 2015 with the aim of providing basic services to households and building amenities in urban areas to improve the quality of life for all the residents, especially the poor and disadvantaged. Seven cities (Table 5) based on Census data of 2011 of the State of Jharkhand have been identified by the Ministry of Urban Development to be covered under this scheme.

Table 5: Cities of Jharkhand covered under AMRUT Scheme

S.no.	Name of city	Population
1	Ranchi	10,73,427
2	Dhanbad	11,62,472
3	Deoghar	2,03,123
4	Chas	1,56,888
5	Adityapur	1,74,355
6	Hazaribagh	1,97,466
7	Giridih	1,14,533

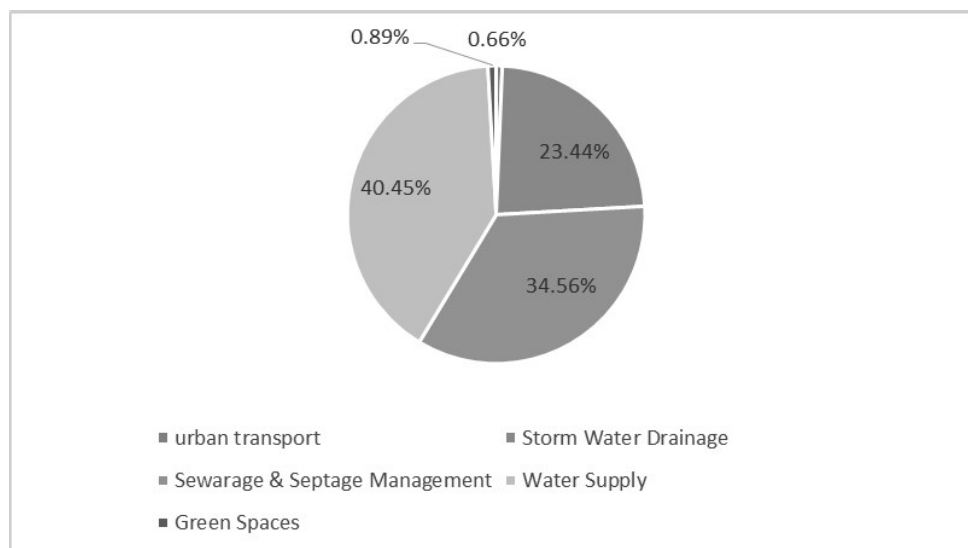
Source: Computed from Town Directory, Jharkhand, Census of India, 2011

23. Key focus areas under this scheme are listed below:

- a) Water supply
- b) Sewerage facilities and septage management
- c) Storm water drains
- d) Pedestrian, non-motorised and public transport facilities, and parking spaces
- e) Enhancing amenity value of cities by creating and upgrading green spaces and parks
- f) Recreationcentres, especially for children.

24. Total Rs. 3918.58 crore has been allotted under AMRUT Mission. The breakup of the fund allocation has been presented in Figure 2.

Figure 2: Fund Allocation under AMRUT Mission in Jharkhand



Source: State Annual Action Plan of Jharkhand (FY 2016-17)

1.2.2 Smart City Scheme in Jharkhand

25. Golinitiated the Smart City Mission with the purpose of creating 100 smart cities in the country in upcoming years. In a typical 'smart city', the economic developmental activity is proposed to be sustainable and rationally incremental by virtue of being driven by market factors. MoUD has selected Ranchi city in the list of 98 cities of India in the Fast Track round of the Smart City Challenge. For successful and timely execution of this important project, a special purpose vehicle (SPV) named Ranchi Smart City Corporation Limited has been constituted. The Government of Jharkhand (GoJ) has proposed a Greenfield project and committed for the 441 acres of land where all basic amenities, security, skill development, health, transportation etc. will be provided using innovative and modern technology. Ranchi Smart City Corporation Limited is authorised to take appropriate steps towards the development of Ranchi as a smart city.

1.2.3 SBM (Urban)

26. The Gol launched the SBM on 2 October 2014, with a cleanliness target to be achieved by 2019. All 4,041 statutory towns as per Census 2011 have been included in this mission. The mission describes a comprehensive set of actions that can deliver the goals of social transformation through elimination of open defecation and manual scavenging, solid waste management and sanitation through change in behaviour and attitude, and a rise in the consciousness about the adverse health effects of poor sanitation and waste management.

27. As per the Department of Planning cum Finance, GoJ, the state witnessed 3,750 MT/D of solid waste production from its urban areas during 2016-17.⁵ Solid waste management encompasses aspects such as collection, segregation, transportation and proper disposal of wastes as well as framing a suitable infrastructure to support these activities.

1.2.4 PRADHAN MANTRI AWAS YOJANA

28. The Central Government launched a comprehensive mission Housing for All by 2022 on 25 June 2015. To implement this program in Jharkhand, the Urban Development & Housing Department (UD&HD) has selected all the 41 ULBs and made a Memorandum of Agreement (MoA) through the Ministry of Housing and Urban Poverty Alleviation and Jharkhand State. Under the PMAY programme, the GoI has already approved Detail Project Report (DPR) for 14 towns during December 2015, which includes all the 10 Class-I cities (Ranchi, Dhanbad, Jamshedpur Urban Agglomeration [which includes Jamshedpur, Aditiyapur, Mango and Jugsalai], Chas [including Bokaro], Giridih, Hazaribagh and Deoghar) and Class-II towns Phusro, Ramgarh Urban Agglomeration, Medininagar, Gumla and Lohardaga. The two medium-sized towns included are Dumka and Chirkunda. For financial year 2015-16, construction of 16,416 dwelling units was approved.

1.2.5 National Urban Livelihoods Mission (NULM)

29. The NULM was launched by the Ministry of Housing and Urban Poverty Alleviation (MHUPA), the GoI, on 23 September, 2013. The primary target population group of NULM is the urban poor including the urban homeless. The NULM is focused on organising urban poor in their strong grassroots level institutions, generating skill development opportunities linked to market-oriented employment and promoting self-employment by ensuring easy access to credit. The Mission also aims to provide shelter to the urban homeless along with basic services in a phased manner. The Mission is also directed towards tackling the livelihood concerns of the urban street vendors.

1.2.6 Integrated Housing and Slum Development Programme (IHSDP)

30. At state level, there is no specific scheme on slum improvement. However, IHSDP, a centrally assisted housing scheme, is being implemented under MHUPA for the construction of houses and infrastructures in Class-II towns and smaller towns. It is operational in 10 cities of Jharkhand: Chaibasa, Chatra, Medninagar, Giridih, Gumla, Hazaribagh, Lohardaga, Mihijam, Phusro and Saria Khela. Under this programme⁶, construction of 7,593 dwelling units has been allotted for these cities, out of which 4,618 dwelling units had been constructed till December 2015.

⁵https://finance-jharkhand.gov.in/hlink.aspx?fn=%5Coth_updates%5C2112017_263.pdf

⁶As per Jharkhand –economic survey report,2016-17 ,Planning Cum Finance Dept,GoJ

1.3 ULB STRENGTHENING PROGRAMS IN INDIA

31. Capacity-building measures most commonly are concentrated at the central level and state level. The key programmes undertaken towards the capacity building efforts at the central level are highlighted below:

- a) PHE Training Programme by MoUD
- b) Training of elected representatives by MoUD
- c) Urban water supply and sanitation sector programme by Central Public Health and Environmental Engineering Organisation (CPHEEO)
- d) Programme on formulating Master Plans, urban design projects, tourism development plans, regional plans, empirical research studies in topical areas, manuals and guides on various aspects of planning and development, monitoring and evaluation of central sector schemes, information system, urban mapping, urban and regional development policies, development law etc. by Town and Country Planning Organisation under MoUD
- e) Rapid Training Programme (RTP) by MoUD to upgrade the skills of municipal and para-states staff involved in service delivery in 56 cities
- f) Peer Experience and Reflective Learning programme fosters peer to peer learning, identifies knowledge gaps, promotes replication of best practices
- g) National Mission Mode Project on E-Governance in Municipalities-Implementation of E- Governance solutions which will cover eight modules as envisaged in
- h) Capacity Building for Urban Local Bodies (CBULB) programme through Centres of Excellence in 10 institutes. The programme included Septage Management, Rain Water Harvesting, implementation of 24 X 7 water supply, Municipal and Financial Management, decentralized waste water management systems, curriculum for a post graduate course in Green Buildings, exposure to Urban Sector related issues to senior urban managers in the Government sector, specific issues related to urban transport, etc.
- i) MoUD through four Centres of Excellence in Urban Transport at CEPT University, Ahmedabad, IIT Delhi, IIT Madras and NIT Warangal provides programme to build the Technical and Knowledge Management Capacity in Urban Transport.

1.4 JHARKHAND MUNICIPAL DEVELOPMENT PROJECT

32. Objective: The project development objective of the proposed JMDP is be to improve access of urban service delivery and urban management capacity in participating state and local government agencies. The total estimated cost of the proposed project is US\$300 million out of which US\$210 million is sought as funding assistance from the World Bank

and the remaining US\$90 million (30%) will be counterpart funding from GoJ. The urban sector priorities of the GoI are detailed below.

- a) Increasing investment in urban infrastructure
- b) Strengthening urban governance, institutional capacity, improve long-term urban planning for sustainable and inclusive urban development
- c) Improving environment sustainability
- d) Improving financial sustainability of ULBs

33. The linkage of other schemes of the GoI currently under implementation could be considered appropriately for financial support for some of the components of JMDP.

34. The proposed project includes three components:

Component 1: Urban Infrastructure Improvement (US\$260 million)

The component will finance: (i) improvement of municipal infrastructure (including expansion of coverage, and construction and rehabilitation of basic infrastructure systems in participating municipalities/ULB and (ii) O&M support for five years, on a declining basis, for design built operation transfer (DBOT) type of sub-projects. While investments under this component will address serious deficiencies in basic infrastructure services, including water supply, sewerage, drainage, roads, and buildings, it will use the operational systems set-up for the project to build institutional capacities of ULBs to identify and develop priority city-level investment projects, understand and manage implementation challenges, and undertake O&M under JUIDCO's guidance. The component will also build operational capacity of JUIDCO to prepare good quality investment proposals, and set-up standardised mechanisms for project supervision and O&M that can be replicated for other urban infrastructure investments in the state. Investments will be identified by ULBs based on in-city exercises and will be posed to JUIDCO for consideration.

Component 2: Policy and Institutional (US\$30 million)

This component will aim at strengthening the overarching local governance architecture in the state setting up systems and strengthening institutions covering resources, capacities and accountabilities. This will be done through the following two subcomponents.

Subcomponent 2.1: Strengthening ULB Revenue Base and Public Financial Management Systems. This subcomponent will look at strengthening the revenue base of ULBs to create greater autonomy for local government institutions, and institutionalising sound public financial management systems in ULBs towards achieving improved creditworthiness. This will include (i) improving coverage and efficiency of property tax system and targeted non-tax revenues

particularly user charges and advertisement tax, (ii) supporting development of a rational and predictable system for devolution of grant-in-aid and performance grants, (iii) institutionalising sound public financial management systems focusing on budgeting and accounting systems, and asset and liabilities management and (iv) supporting select ULBs in implementing credit rating improvement plans. Support under this subcomponent will include (i) hands-on implementation support to participating and AMRUT ULBs, (ii) providing quality assurance support to ULBs across the state and (iii) providing policy, regulatory and institutional interventions support at the state level.

Subcomponent 2.2: Policy and Institutional Support to State Agencies. This subcomponent will look at identifying and overcoming functional gaps and multiplicities at state-level urban institutions, and building institutional capacities of key state institutions aiming to create a stronger urban governance architecture in the state. It will target building institutional capacities of state-level institutions towards strengthening planning, implementation and management capacities of the urban sector of Jharkhand. This will include (i) organisational strengthening of JUIDCO, (ii) rejuvenating the Directorate of Municipal Administration (DMA), and (iii) supporting UDHD in improving institutional efficiency of related urban agencies.

Component 3. Project Management and Implementation Support (US \$ 10 Million)

The component will finance: (i) project management, construction supervision and implementation support to JUIDCO and ULBs, (ii) preparation of select detailed project reports (DPR) and (iii) incremental operating costs of JUIDCO, including equipment.

1.5 SECTORS OF INVESTMENT

35. The sectors of investment under the JMDP is given in **Table 6**. The implementation of these sub-projects is spread across several cities and/or towns within Jharkhand. The multi-sectoral nature of JMDP will cover urban infrastructure development and improvement of services, strengthening of policy and institutions and provision for technical support and project management.

Table 6: Sectors of Investment Sub-projects under JMDP

S. no.	Sectorsportfolio of investment sub-projects	Sub-project portfolio components
1	Water supply scheme	<ul style="list-style-type: none"> ▶ Water supply distribution lines ▶ Upgradation or new mainwater pipeline ▶ Elevated storage reservoir ▶ Water treatment plants ▶ River intake works

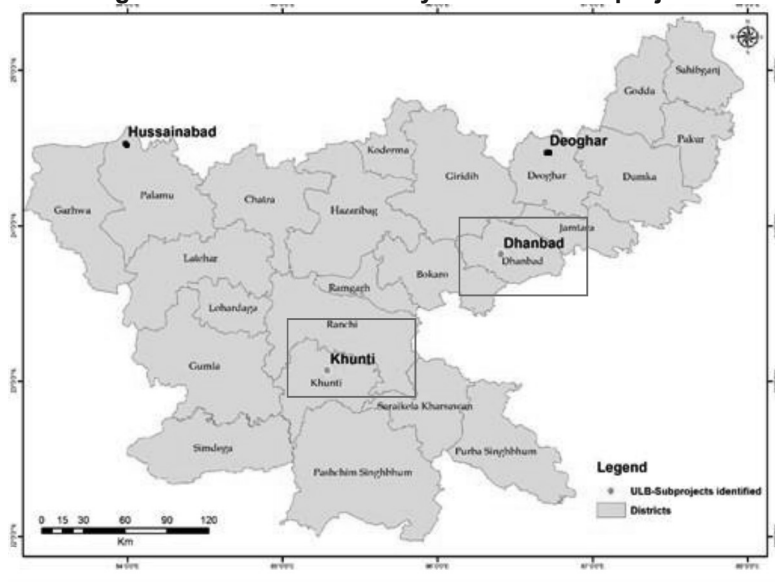
S. no.	Sectors portfolio of investment sub-projects	Sub-project portfolio components
2	Storm water drainage	<ul style="list-style-type: none"> ▶ Open drains and closed/underground drains ▶ Provision for an entirely new drainage network for cities and towns ▶ Development or extensions to existing drainage networks in some parts of cities/towns to include areas with no drainage network or to newly developed areas in the recent years ▶ Drain outfalls and receiving water bodies
3	Strengthening, development and beautification of arterial, sub-arterial and collector streets	<ul style="list-style-type: none"> ▶ Development of new roads and beautification, widening of road network in some parts of cities/towns ▶ Street furniture ▶ Roadside drainage ▶ Improvement of road surface ▶ Non-motorised vehicle lanes ▶ Traffic island and junction development ▶ Cycle tracks, footpaths, street lighting and signage ▶ Foot-over bridge
4	Sewerage scheme	<ul style="list-style-type: none"> ▶ Provision for an entirely new sewerage network including individual house connections ▶ Provision of STPs ▶ Pumping stations ▶ Trunk sewers and outfalls ▶ Extensions to existing sewerage networks in some parts of cities/towns to include areas which do not have sewerage network or to newly developed areas in the recent year
5	Building	<ul style="list-style-type: none"> ▶ Construction of new or existing municipal buildings

1.6 NEED FOR ESMF

36. The project is likely to identify several sub-projects from the sectors of investments listed in Table 6; the location of all of these sub-projects is not known as of now. The sub-projects which are known at the appraisal stage for which draft ESIA's have been prepared based on the information presented in the detailed project report and this ESMF are:

- a) Water Supply Scheme in Khunti
- b) Strengthening, development and beautification of arterial, sub-arterial and collector streets in Dhanbad
- c) Storm water drainage system in Dhanbad

Figure 3: Location of Initially Identified Sub-projects



37. The current ESMF document is intended to help manage the social and environmental impacts through appropriate measures during the planning, design, construction and operation of various sub-projects of JMDP. The framework identifies the level of safeguard due-diligence required for all categories of sub-projects and provides specific guidance on the policies and procedures to be followed for environmental and social assessment along with roles and responsibilities of the implementing agencies.
38. As project investments and locations are not known, and specific projects to be prepared will only be identified during implementation, JUIDCO through independent consultants has prepared an ESMF for the project. The ESMF document is intended to help manage the social and environmental impacts through appropriate measures during the planning, design, construction and operation of various sub-projects of JMDP. The framework identifies the level of safeguard due-diligence required for all categories of sub-projects and provides specific guidance on the policies and procedures to be followed for environmental and social assessment along with roles and responsibilities of the implementing agencies.
39. The ESMF will apply to all investments supported under this project along with its ancillary facilities and linked activities, as required under World Bank Safeguard Policies.

1.7 OBJECTIVE OF THE ESMF

40. The objective of the ESMF is to ensure that environmental and social management is integrated in the sub-project planning and execution process such that impacts are avoided and mitigated:
- a) Support the integration of environmental and social aspects into the decision making process of all stages related to planning, design, execution, O&M of sub-projects, by identifying, avoiding and/or minimizing adverse environmental and social impacts early-on in the project cycle
 - b) Support affected persons in their efforts to restore their livelihoods and living standards and compensate any loss of livelihood or asset that may occur due to project execution
 - c) Enhance the positive/sustainable environmental and social outcomes through improved/ sensitive planning, design and implementation of sub-activities
 - d) Minimise environmental degradation as a result of either individual sub-projects or through their indirect, effects
 - e) Prevent health impacts on workers and community
 - f) Minimise impacts on cultural properties, forests, eco-sensitive areas, air quality and water bodies
 - g) Establish clear procedures and methodologies for environmental planning, review, approval and implementation of sub-projects
 - h) To provide practical guidance for planning, designing and implementing the environmental and social management measures
 - i) Specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and related social concerns of the sub-projects
 - j) Determine the institutional arrangements, including those related to training, capacity building and technical assistance (if required) needed to successfully implement the provisions of the ESMF
41. The implementation of the ESMF will also support and assist in the achievement of compliance with applicable laws and regulations of the GoI and GoJ and with the relevant Bank policies on environment and social aspects.

2 METHODOLOGY

42. This section describes the approach and methodology adopted for preparation of the ESMF. It has been divided into two major sections: (i) preparation of the ESMF and (ii) disclosure and finalisation of the ESMF. Further, the major sections are divided into sub-activities detailing out the key activities undertaken under each of the above mentioned sections.

2.1 ACTIVITY 1 - PREPARATION OF THE ESMF

Sub-activity 1.1: Policy Review

- a) Conduct review of environmental and social policies as well as regulations with specific focus on Jharkhand.

Sub-activity 1.2: Stakeholder Mapping and Consultation

- a) Structured interviews with representatives of Department of Welfare, Jharkhand State Pollution Control Board (JSPB), Department of Labour, Employment Training & Skill Development, Department of Forest, Environment and Climate Change, Drinking Water and Sanitation Department, Water Resource Department and the ULBs of Dhanbad and Khunti
- b) Stakeholder consultations through participatory meetings, interviews and focus group discussions (FGDs)
- c) Socio-economic survey at household level with local residents
- d) Information from local ULBs pertaining to current use of government land, status of water quality, vendor details etc.
- e) Discussion on potential environment and social impacts of project implementation

Sub-activity 1.3: Institutional Mapping

- a) Mapped roles and responsibilities and reporting structure necessary for implementation of JMDFP
- b) Defined disclosure and monitoring mechanism to be followed for fulfilling safeguard categories requirements
- c) Finalised training requirements and schedule as well as budget for building and enhancing the capacity of PMU and PIU for implementing the JMDFP project

Sub-activity 1.4: Collection of Social and Environmental Baseline Data

- a) Collected the following data pertaining to Jharkhand:
 - Physical, climatological and geological features
 - Land use, soil quality, seismicity and surface water bodies
 - Flooding, ground water quality, air and noise quality

- Forest and protected areas
- District-wise wetlands, ecological baseline, cultural resources and urban area statistics
- Census 2011 data and poverty data

Sub-activity 1.4: Impact Assessment

- a) Identified environment and social impacts based on typology of investment and analysis of baseline parameters
- b) Based on impact analysis, (i) developed E&S screening checklist for sub-project screening and subsequent categorisation by JUIDCO, (ii) Developed standardised methodology for assessment of the potential impacts that may arise during construction, operation and decommissioning phase (iii) prepared sector-specific environmental and social management plan for guidance to future sub-projects and (iv) developed resettlement policy framework (RPF) and Scheduled Tribes Participation Framework (STPF) for future sub-projects

Sub-activity 1.6: Institutional Arrangement for Safeguard Supervision and Monitoring

- a) Based on institutional analysis and stakeholder consultation with the Government, finalised the institutional arrangements and staffing at the ULB/PIU and PMU level to enable effective supervision, monitoring and reporting on safeguard performance

Sub-activity 1.5: Preparation of Terms of Reference

- a) Prepared typical terms of reference for conducting ESIA and E&S Audit as well as for NGOs implementing RAP

Sub-activity 1.6: Grievance Redressal Mechanism

- a) Developed a grievance redressal mechanism for JMDF that will enable stakeholders to make complaints or suggestions

Sub-activity 1.7: Documentation of ESMF

- a) Compiled and analysed the information collated in the previous steps; based on the information collated, drafted ESMF document for presentation to stakeholders

2.2 ACTIVITY 2 – DISCLOSURE AND FINALISATION OF ESMF

- a) After the finalisation of the draft ESMF, the draft document will be disclosed to a wider spectrum of stakeholders for review using appropriate channels. Stakeholders will be provided 120 consecutive days to review and validate findings.
- b) Based on feedback from the stakeholders, the ESMF will be revised and finalised.

3 REVIEW OF LEGAL FRAMEWORK AND SAFEGUARDS

43. The national, state and local environmental and social regulatory requirements that are applicable to the sub-projects proposed under JMDP are discussed in this section. As the applicability of these legal requirements would depend on the location, nature and components of the specific projects, the extent of applicability cannot be determined at this stage.

3.1 APPLICABLE LAWS AND REGULATIONS

44. The following are the laws and regulations that are applicable to the environmental and social aspects of the projects to be implemented under JMDP:

- a) Policy and regulatory framework of the GoI
- b) Environmental policy and regulations of the GoJ
- c) Legislations and permits applicable to construction projects

3.1.1 Key Environmental and Social Laws and Regulations

45. The key environmental and social laws and regulations as relevant to the projects under JMDP are given in **Table 7**.

Table 7: Key Environmental And Social Laws And Regulations

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
Environmental Regulations					
1.	Environment Protection Act-1986 The Environment (Protection) Rules, 1986	It provides for the protection and improvement of environment and the prevention of hazards to human beings, other living creatures, plants and property.	Yes	As most environmental notifications, rules and schedules in India are issued under this Act, an Environmental Statement has to be submitted annually by the entity to whom Consent to Establish and Consent to Operate have been granted by the state Pollution Control Board. STPs and WTPs should be designed and operated to meet disposal standards Compliance with emission and disposal standards during construction (http://www.moef.nic.in/sites/default/files/eprotect_act_1986.pdf)	MoEF&CC, Govt. Central Pollution Control Board (CPCB), Jharkhand State Pollution Control Board(JSCB)
2.	Air (Prevention and Control of Pollution) Act, 1981 and Air (Prevention and Control of Pollution) Rules, 1982	To control air pollution by controlling emission of air pollutants as per the prescribed Standards. All activities that are being developed, established, and/or operational that emit any air pollutant should take cognizance of this Act/Rule and take required consent to establish/operate from the State Pollution Control Board/Committee.	Yes	This act will be applicable during the construction and operational phases of the project. Applicable for equipment and machines potential to emit air pollution. The application for CTE will be submitted to regulatory authority before establishment of equipment. The application for CTO will be submitted to regulatory authority before operation of equipment.	JSPCB
3.	Water Prevention and Control of Pollution) Act,	To control water pollution by controlling discharge of pollutants as per the prescribed standards. It provides for the	Yes	This act will be applicable during the construction, and operation phases. CTE and CTO from JPCB for the construction and operation of STP.	JSPCB

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
	1974- Water (Prevention and Control of Pollution) Rules, 1975	prevention and control of water pollution and themaintaining or restoring of water for any establishment.All activities that are beingdeveloped, implemented,established, and/or operational, that would lead to the generation, treatment of sewage or effluent and further discharge into a stream or well or sewer or land, should take cognizance of the provisions or this Act/Rules and take required consent to establish or operate from the State Pollution Control Board/Committee		Compliance with conditions and disposal standards stipulated in the CTE and CTO. The application for CTE will be submitted to the regulatory authority before the establishment of equipment. The application for CTO will be submitted to the regulatory authority before operation of equipment. (http://www.envfor.nic.in/legis/water/wat1.html) (http://www.moef.nic.in/sites/default/files/fellowships/GSR%2058%20E.pdf)	
4.	The Forest (Conservation) Act, 1980	The Forest Conservation Act aims to check deforestation and the use of forest land for non-forest purpose and applies to all forest irrespective of the nature of ownership for classification thereof. The term "forest land" includes any area recorded as forest in the Government record irrespective of the ownership. The act places restrictions on the power of the State Government concerning preservation of forests or use of forest land for non-forest purposes.	Yes	Applicable if forest land is required for non-forest activities, i.e., forest land is required for future sub-projects. Prior approval of the Central Government is essential for diversion of forest lands for the non-forestry purposes. If required, the clearance documents will be submitted to regulatory authority before 6 months-1 year of start of construction. (www.forestclearance.nic.in)	Forest Department, State Government and Ministry of Environment and Forests, GoI

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
5.	Wild Life (Protection) Act, 1972	The Wildlife Protection Act, 1972 is enacted for protection of plants and animal species. The Act establishes schedules of protected plant and animal species and hunting or harvesting of these species	Yes	This act will be applicable if potential proposed projects are located in or within the buffer zone of protected areas and national parks or if there are points of wildlife crossings in proximity to project locations. If required, the clearance documents will be submitted to the regulatory authority before 6 months-1 year of start of construction.	Chief Conservator Wildlife, Wildlife Wing, State Forest Department and Ministry of Environment and Forests, Government of India
6.	Indian Forest Act, 1927	Necessary permissions and specific procedures are to be followed in case of tree felling. In Jharkhand, it is mandatory to acquire permissions from the concerned Divisional Forest Officer (DFO) and Principal Chief Conservator of Forests (PCCF).	Yes	Applicable if sub-projects involve felling of trees. The requisite permissions for tree felling will be taken prior to the activity taking place. If required, the clearance documents will be submitted to the regulatory authority before 3 months of start of construction.	Jharkhand Forest Department
7.	Environmental Impact Assessment (EIA) Notification, 2006 Amendment S.O. 3999(E) dated December 2016	It sets out the procedure of conducting EIA for projects and activities covered under the Notification to Obtain Environmental Clearance	Yes	Most projects planned under JMDP do not feature in the Schedule of the EIA Notification. However, since the JMDP project may include construction of buildings, the Notification is applicable for any building development whose built up area is $\geq 20,000$ sq. m and for building category 1 – between 5,000 and 20,000 sq. m , a self-declaration form will be required to be submitted for these and environment conditions as per Appendix XIV will apply.	MOEF&CC/ SEIAA
8.	Solid Waste (Handling and Management) Rules, 2016	It lays down the methods of handling MSW and its scientific disposal.	Yes	The provisions will be applicable to the labour camp, staff quarters,	JSPCB

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
9.	Construction and Demolition Waste Management Rules, 2016	Every waste generator shall primarily be responsible for collection, segregation of concrete, soil and others and storage of construction and demolition waste generated and deposition to collection centre or handover to authorised processing facilities. It stipulates the method of segregating, storing managing and disposing hazardous and other wastes regulated under the Rules.	Yes	Applicable as construction waste will be generated during the construction phase. Some of the projects involve dismantling / demolition of existing infrastructure such as intake wells, etc.)	JSPCB
10.	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.	It stipulates the method of segregating, storing managing and disposing hazardous and other wastes regulated under the Rules.	Yes	Applicable to the hazardous waste (waste oil from diesel generator sets, oil soaked cotton, used oil filters) generated during the construction and operational phases.	JSPCB
11.	Biological Diversity Act 2002 and Biological Diversity Rules 2004	The Biological Diversity Act, which came into force in February 2003, aims to promote conservation, sustainable use and equitable sharing of benefits of India's biodiversity resources. It provides for the establishment of a National Biodiversity Authority at the national level, State Biodiversity Boards at the state level and Biodiversity Management Committees at the level of Panchayats and Municipalities. The standards for noise for day and night have	Yes	To be ascertained for each sub-project during the screening/preparation process. None of the known sub-projects are located in proximity of any ecologically sensitive areas.	Forest Department, State Government and MoEF&CC
12.	The Noise Pollution	The standards for noise for day and night have	Yes	Applicable standards of noise levels have to be complied by all noise-	JSPCB

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
13.	(Regulation and Control) Rules, 2000 Ancient Monuments and Archaeological Sites and Remains Act, 1958	been promulgated by the MoEF&CC for various land uses. This is an act of the Golthat provides for the preservation of ancient and historical monuments and archaeological sites and remains of national importance, for the regulation of archaeological excavations and for the protection of sculptures, carvings and other like objects.	Yes	generating construction activities and construction equipment deployed at worksite. This act will be applicable if any of the investments invested within the prohibited area (100m from protected monuments) of any Centrallyprotected monument or within the regulated area (200m) after obtaining permission from the Competent Authority on the recommendation of the National Monuments Authority. If required, the clearance documents will be submitted to the regulatory authority before two months of start of construction.	Archaeological Dept. Gol, Indian Heritage Society and Indian National Trust for Art and Culture Heritage (INTACH)
14.	Public Liability and Insurance Act, 1991	It aims to provide protection fromhazardous materialsand accidents.	Yes	Will apply as there will be usage and storage for construction of infrastructure projects.	JSPCB
15.	Eco-sensitive Zone Notifications	The activities in areas around wildlife sanctuaries and national parks are regulated from the perspective of conservation of wildlife.	Maybe	Applicable only if the urban area being developed is located in the ESZ.	Monitoring Committee for ESZ in the State
16.	The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989	It provides measures, regulations and controls so as to reduce environmental, safety and health risks while manufacturing, handling and storage of hazardous chemicals.	Yes	Applicable as during construction phase, sub-projects may have to store hazardous chemicals at site.	JSPCB
17.	Jharkhand Minor Mineral and Concession Rules	It regulates prospecting of minerals including minor minerals such as building stones, gravel, ordinary clay and ordinary sand.	Yes	Building materials such as sand, aggregate and good earth may be obtained from quarries/ borrow areas.	District Collector State Department of Mining

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
18.	River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016	<p>The orderspecifies that:</p> <ul style="list-style-type: none"> ▲ no person shall construct any structure, whether permanent or temporary for residential or commercial or industrial or any other purposes in the River Ganga, Bank of River Ganga or its tributaries or active flood plain area of River Ganga or its tributaries. ▲ No person shall do any act or carry on any project or process or activity which, notwithstanding whether such act has been mentioned in this Order or not, has the effect of causing pollution in the River Ganga. ▲ No person shall discharge, directly or indirectly, any untreated or treated sewage or sewage sludge into the River Ganga or its tributaries or its bank 	Yes	Applicable as Jharkhand is a part of Ganga basin and has River Son as tributary.	National Mission for Clean Ganga(State Ganga Committee and the District Ganga Committee)
19.	Jharkhand State Water Policy	The policy for domestic water aims at ensuring drinking water for all. It provides for adequate domestic water facilities for the entire population, both in urban and in rural areas, to meet their needs. The Government also intends to work out a time-bound action plan to augment the live capacity of existing reservoirs by de-siltation or use of other water efficient technologies and management options	Yes	Applicable as the JMDP project aims to provide water supply to urban areas.	WRD, GoJ

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
20.	Fly Ash Notification, 2009	The notification states that every construction agency engaged in the construction of buildings within a radius of hundred kilometers (by road) from a coal or lignite based thermal power plant shall use only fly ash based products for construction, such as: cement/concrete, fly ash bricks or blocks or tiles or clay fly ash bricks, blocks or tiles or cement fly ash bricks or bricks or blocks or similar products or a combination or aggregate of them in every construction project.	Yes	Applicable, as JMDP aims to undertake construction activities of roads and buildings and the construction locations may be present within 100 km of coal/lignite based thermal power plant.	JSPCB
21.	Factory Act 1948	The Act is applicable to any factory whereon 10 or more workers are working, or were working on any day of the preceding 12 months, and in any part of which a manufacturing process is being carried on with the aid of power, or is ordinarily so carried on, or whereon 20 or more workers are working, or more were working on any day of the preceding twelve months.	Yes	Applicable as JMDP will have water treatment plant and STP and will be carrying out pumping of water and sewage.	Factory Inspector
Occupational health and safety					
22.	Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996	It regulates the employment and conditions of service of building and other construction workers and provides for their safety, health and welfare.	Yes	Applicable if any building or other construction works employ 10 or more workers.	District Labour Commissioner and Buildings Inspector

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
23.	Central Motor Vehicle Act, 1988	It aims to check vehicular air and noise pollution.	Yes	Applicable to vehicles deployed for construction activities as well as construction machinery.	Motor Vehicle Department
24.	Explosive Act, 1984	It aims at safe transportation, storage and use of explosive material.	Yes	Applicable as the project may require transporting and storing diesel, oil and lubricants etc.	Chief Controller of Explosives
25.	Gas Cylinder Rules, 2016	It stipulates conditions on import, transport, storage, use, filling and possession of any compressed gas cylinders so as to reduce associated risks and hazards to the environment, health and safety.	Yes	Oxygen or oxyacetylene gas will be used for cutting during construction activities. LPG cylinders may also be used	Chief Controller of Explosives
26.	Jharkhand Building Bye-Laws, 2015	It stipulates conditions that have to be followed for: a) planning, design and construction of building in case of erection of a building. b) all parts of the building whether removed or not, and in case of removal of whole or any part of the building.	Yes	Conditions stipulated under this law have to be followed for planning, designing and construction of municipal buildings.	Ranchi Regional Development Authority/Urban Local Bodies (ULB)
27.	The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013	The act states prohibition of employment as manual scavengers, rehabilitation of manual scavengers and their families.	Yes	Applicable as JMDP will have drainage and sewerage sector projects. As per the act, JMDP will not employ and engage manual scavengers in any of its sub-projects.	National Commission for Safai Karamcharis
Labour Welfare					
28.	Workmen Compensation Act, 1923	It provides for payment of compensation by employers to their employees for injury by accident, i.e., personal injury or occupational disease.	Yes	Construction workers will be involved in the sub-projects.	District Labour Commissioner

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
29.	Inter-state Migrant Workers Act, 1979	It protects workers whose services are requisitioned outside their native states in India. Contractors who employ or who employed five or more inter-state migrant workmen need to obtain registration under this act.	Yes	Construction workers will be involved in the sub-projects	District Labour Commissioner
30.	The Child Labour (Prohibition & Regulation) Amendment Act, 2016	It prohibits employment of children in certain specified hazardous occupations and processes and regulates the working conditions in others.	Yes	Construction workers will be involved in the sub-projects. As per the Act, JMDP will not employ children below 14 years in any of its subprojects.	District Labour Commissioner
31.	Minimum Wages Act, 1948	Payment of minimum rate of wages as fixed and periodically revised by the State Government.	Yes	Construction/daily wage workers will be involved in the sub-projects.	District Labour Commissioner
32.	Building and Other Construction Workers Welfare Cess Act, 1996	It is an Act to provide for the levy and collection of a cess on the cost of construction incurred by employers.	Yes	Sub-projects will involve construction workers	District Labour Commissioner
Resettlement and Rehabilitation					
33.	Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act -2013 and Jharkhand Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules-2015	It provides for fair compensation for: (i) acquisition of land and other immovable assets. (ii) resettlement of displaced population due to land acquisition. (iii) economic rehabilitation of all those who are affected due to land acquisition. The Act also covers lease holders, share croppers and tenants.	Yes.	This rule is applicable as land acquisition may be required in future sub-projects. Currently, in the 3 initially identified sub-projects, land acquisition is not required.	Revenue Department under the respective District Collector.

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
34.	The Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	It grants legal recognition to the rights of traditional forest dwelling communities.	Yes	This rule is applicable as land acquisition may be required in potential sub-projects and it may affect the rights of forest dwelling ST and other traditional forest dwelling communities. Currently, the raw water mains of the Khunti water supply project would require to pass through forest areas belonging to forest dwelling ST and other traditional forest dwelling communities.	Ministry of Tribal Affairs, GoI and Department of Tribal Welfare of various State Government, District/Deputy Commissioner, Tribal Advisory Council
35.	Panchayats (Extension to Scheduled Areas) Act, 1996	It aims at ensuring self-governance through traditional Gram Sabha for people living in the scheduled areas of India.	Yes	May be applicable as many areas of Jharkhand come under Schedule-V areas and in potential sub-projects there may be scope of land acquisition. Currently, the Khunti water supply sub-project partially falls in Schedule-V area.	State Government through Gram Sabhas
36.	The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014. Jharkhand Street Vendor (Protection of Livelihood and Regulation of Street Vending), Rules 2014.	The Act aims to protect the rights of urban street vendors and regulates street vending activities. It provides for survey of street vendors and their protection from eviction or relocation; issuance of certificate for vending; provision of rights and obligations of street vendors; development of street vending plans; and organising of capacity building programmes to enable the street vendors to exercise the rights contemplated under this Act.	Yes	Applicable as the potential sub-projects may likely impact street vendors, kiosks and hawkers. The initial identified sub-projects identified will impact street vendors, kiosks and hawkers.	ULBs and State Government.
37.	Chota Nagpur Tenancy Act, 1908.	The Act provides for rights of tribal communities/indigenous people in the Chota Nagpur Plateau area.	Yes	The sub-projects may be located in the tribal belt of the Chota Nagpur Plateau	Land Revenue Department, District

S. no.	Act/Rules	Purpose	Applicable Yes/ No	Reason for applicability/non-applicability	Authority
		The basic objective of the Act was to restrict the transfer of tribal land to non-tribal. But in case of development project, section 46 allows for transfer of land only with the permission of District Commissioner		area of Jharkhand and may involve land acquisition.	Commissioner/Collector.
38.	Santhal Parganas Tenancy (Supplementary Provision) Act, 1949	STs and non-tribals can only transfer their land to people belonging to their caste only and that also within their police station (the seller and buyer must be under same police station) with prior permission. Thus, the people have occupancy rights with the right to inheritance.	Yes	The current set sub-projects does not anticipate taking any land from any tribal or non-tribal in the Santhal Pargana area. However, the future potential sub-projects maybe developed in the Santhal Parganas area where this act may be applicable.	Land Revenue Department, District Commissioner

3.1.2 Safeguard Policies of the World Bank

46. The safeguard policies of the World Bank, which are applicable to the sub-projects under JMDP, are presented in Table 8. The environmental requirements of the World Bank are specified in detail in its Operational Policy (OP) 4.01 and other related Operation Policies. In instances where the procedural and regulatory requirements differ, the stringent ones are considered as applicable.

Table 8: Applicability of WB Safeguard Policies for Projects under JMDP

WB Safeguard Policy	Key features	Applicability for sub-projects under JMDP	Safeguard requirement
OP 4.01- Environmental Assessment	<p>Potential environmental consequences of projects identified early in project cycle. The objective of this policy is to ensure that Bank financed projects are environmentally sound and sustainable.</p>	<p>Applicable, as JMDP includes infrastructure investments in water supply, wastewater collection and treatment, storm drainage, roads, and municipal buildings which may give rise to environmental impacts in construction and operational phase if the requisite mitigation is not implemented.</p> <p>The ESIA process will determine impacts related to the implementation of works during the construction and operation phases.</p>	<p>OP 4.01 requires the project to screen sub-projects early in the project cycle for potential impacts. Thereafter, commensurate ESIA as per Bank approved terms of reference to assess, minimise, enhance and mitigate potentially adverse impacts is prepared.</p> <p>Depending on nature and scale of project, and subsequent categorisation the ESIA needs to be integrated in the project development process such that timely measures can be applied to address identified impacts. The policy requires consultation with affected groups and NGOs to recognise community concerns and the need to address the same as part of ESIA. JMDP has adopted the principles of the this policy and has evolved a management framework to address the environmental issues in its lending operations</p>
OP 4.04- Natural Habitats	<p>Prohibits financing of projects involving 'significant conversion of natural habitats unless there are no feasible alternatives'.</p> <p>Requires environmental cost benefit analysis. Requires EA with mitigation measures.</p>	<p>Applicable in cases where the sub-projects or their components would be located within or in close proximity of natural habitats⁽¹⁾.</p> <p>The State of Jharkhand contains one national park and 11 wildlife sanctuaries which are critical natural habitats. In addition it contains nearly 30 small sacred groves. In addition to this, the state contains a number of wetlands,</p>	<p>Projects involving infrastructure components on non-critical and critical habitats may be supported, if no alternatives are available and if acceptable mitigation measures are in place.</p> <p>There will be no significant conversion of natural habitats, or forest areas as projects are primarily confined within urban areas, it is unlikely that infrastructure components would</p>

⁽¹⁾Natural habitats¹ are land and water areas where (i) the ecosystems' bio-logical communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the area's primary ecological functions have important biological, social, economic, and existence value. Important natural habitats may occur in tropical humid, dry, and cloud forests; temperate and boreal forests; Mediterranean-type shrub lands; natural arid and semi-arid lands; mangrove swamps, coastal marshes, and other wetlands; estuaries; sea grass beds; coral reefs; freshwater lakes and rivers; alpine and sub alpine environments, including herb fields, grasslands, and paramos; and tropical and temperate grasslands.

WB Safeguard Policy	Key features	Applicability for sub-projects under JMDP	Safeguard requirement
		<p>lakes and dam reservoirs which are identified as wetland areas which are not legally protected but can be defined as non-critical.</p> <p>This policy is triggered due to the siting and location of sub-project components which may be located close to the critical and non-critical natural habitats with the potential to cause adverse impact or degradation of natural habitats whether directly (through construction) or indirectly (through human activities induced by the project).</p>	<p>require land from natural habitats, sensitive areas; however, this can be the case for development of water sources from very long distances. In such situations, the first principle would be avoidance of these areas. In case they are unavoidable, sub-projects shall be categorized as E1 and commensurate ESIA shall be carried out to mitigate the impacts of the project on these areas. The ESIA needs to present (i) there are no other feasible alternatives, (ii) comprehensive analysis demonstrates that the overall benefits from the project substantially outweigh the environmental costs of using the sensitive area /forest land; and (iii) the project includes mitigation measures acceptable to GoJ and the World Bank. A separate natural habitat management plan would need to be prepared based on strong analysis of impacts on biodiversity.</p>
OP 4.36 - Forest	<p>Requires that all relevant types of projects must ensure that they avoid causing significant, unmitigated harm to natural forests or other natural habitats. (OP 4.36, paragraph 5, prohibits World Bank support for projects that would involve the significant conversion or degradation of critical forests or other types of critical natural habitats).</p>	<p>Applicable in case any components of the sub-projects require forest ^[2] land. Although all measures will be taken to avoid diversion of forest land, for major infrastructure components such as STP and WTP. However, in case, unavoidable, for the laying of pipelines, the necessary mitigations measures will be integrated in the project design and permissions will be taken from appropriate authorities.</p> <p>As far as possible, trees, if any, present in the sites for sub-project investments will be saved</p>	<p>The project will avoid significant damage/conversion to critical forests and other critical natural habitats. In case where a project may involve land from forest and natural habitat, these may only be small components of infrastructure, and which may already be existing, would need to be rehabilitated, there will be no dumping of debris on degraded forest lands, scrub lands. If forest land is required, all necessary permissions under the GoJ for diversion of forest land for non-forest purpose will be obtained prior to project execution. The</p>

WB Safeguard Policy	Key features	Applicability for sub-projects under JMDP	Safeguard requirement
		<p>by careful site planning. The project will not (i) include any logging, (ii) impact the health or quality of any forest, (iii) either increase or decrease access or rights of communities to forests or (iv) propose to bring about any changes in management, protection and utilization of forests in the basin.</p>	<p>EIA needs to present (i) there are no other feasible alternatives (ii) comprehensive analysis demonstrates that the overall benefits from the project substantially outweigh the environmental costs of using the forest land; and (iii) the project includes mitigation measures acceptable to GoJ and the World Bank.</p>
OP 4.09- Pest Management	<p>Supports environmentally sound pest management, including integrated pest management, but does not prohibit the use of highly hazardous pesticides. Pest management is the borrower's responsibility in the context of a project's EA.</p>	<p>Not Applicable. Project activities do not support significant procurement, use and storage of pesticides.</p>	<p>Not applicable</p>
OP 4.12 - Involuntary Resettlement	<p>It requires to avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs.</p> <p>It intends to assist displaced persons in improving their former living standards; community participation in planning and implementing resettlement; and providing assistance to affected people regardless of the legality of title of land.</p>	<p>Applicable as the proposed infrastructure improvement activities under the project are likely to require land acquisition in certain cases and displacement of occupants of the public land/right of way resulting in loss of livelihood and involuntary resettlement.</p>	<p>Conduct impact assessment and prepare Resettlement Action Plan/Abbreviated Resettlement Action Plan based on census and socio economic surveys of all adversely affected persons. Disclose in a place easily accessible to public and language understood by them</p>
OP 4.10 Indigenous People	<p>Its purpose is to ensure indigenous peoples benefit from Bank-financed development and to avoid or mitigate</p>	<p>Applicable in case the presence of STs are identified in the project influence area of the sub-projects with unique features and</p>	<p>A separate ST participation plan is to be prepared.</p>

WB Safeguard Policy	Key features	Applicability for sub-projects under JMDP	Safeguard requirement
	<p>adverse effects on indigenous peoples. It applies to projects that might adversely affect indigenous peoples or when they are part of project beneficiaries. It requires the participation of indigenous peoples in design and delivery of urban infrastructure and services.</p>	<p>attachment of natural resources such as land, water and trees.</p>	<p>Consultation is to be carried out to ensure (a) community's support and (b) equal opportunities for STs from the project.</p>
<p>OP 4.11 Physical Cultural Property</p>	<p>Its purpose is to assist in the preservation of cultural property, such as sites having archaeological, paleontological, historical, religious and unique cultural values. It generally, seeks to assist in their preservation and avoid their elimination. It discourages financing of projects that will damage cultural property.</p>	<p>Applicable as Jharkhand contains a number of sites of religious, historic and cultural significance within its towns/cities. Cultural properties and natural heritage will be preserved while planning and implementing all sub-projects, and this concern will be prominently included in the design of the sub-projects.</p> <p>Ranchi, Dumka and Sahibganj have got state protected monuments. The state also contains 13 protected sites listed by the Archaeological Survey of India (ASI) in Ranchi, East and West Singhbhum and Lohadaga and Saraikela Kharsawan Districts. In addition to this, the state and urban areas within the state contain a number of physical and natural heritage sites which have local, cultural significance.</p> <p>Although no major construction is envisaged up to 200 metre of the protected sites, laying of pipelines of smaller diameter may require excavation works within RoW of the existing roads. In case of any construction or such activity within the prescribed limits by</p>	<p>Required permissions from the Department of Archaeology are to be obtained prior to commencement of construction if the project construction activities are located within the influence zone of 200metre of a protected site. However, construction activities within the influence zone will be as far as possible avoided, by identifying this early through screening process.</p> <p>Necessary precautions will be taken during the construction phases to ensure no harm through access, air, noise, vibration and pollution impact to unprotected cultural, historic and religious properties.</p> <p>Chance find procedures will be integrated into the contract documents, and in case fossils, coins, articles of value of antiquity, structures and other remains or things of geological or archaeological interest are discovered on the site or during excavation works, the procedures outlined in Annex XIV will be followed.</p>

WB Safeguard Policy	Key features	Applicability for sub-projects under JM DP	Safeguard requirement
<p>OP 4.37 Safety of Dams</p>	<p>Applies to large dams (15 metre or more in height). Requires review by independent experts throughout project cycle. Requires preparation of EA and detailed plans for construction and operation, and periodic inspection by the Bank.</p>	<p>ASI, permission of ASI will be obtained before start of works.</p> <p>Applicable. JM DP will not support projects which will involve new construction of water storage structures, wires, barrages, dams. This has been included in the list of ineligible sub-projects. However the policy is applicable as there may be water supply sub-projects which may involve existing dam reservoirs to establish an intake, these reservoirs could be located upstream of dams with 15m height or above.</p>	<p>If the DPR and ESIA screening confirms that the selected water supply sub-project would rely on the performance an existing dam- If this is a large dam (with a height of more than 15 m) the dam safety due diligence process would need to be followed as per OP 4.37. If it is a small dam below that threshold, the environmental assessment process need to ensure that the ESIA/E MPs will include the standard dam safety engineering measures approved by a qualified engineer.</p> <p>Specifically for large dams (as defined in OP 4.37) JU IDCO will arrange for one or more independent dam specialists to (a) inspect and evaluate the safety status of the existing dam, its appurtenances, and its performance history; (b) review and evaluate the owner's O&M procedures; and (c) provide a written report of findings and recommendations for any remedial work or safety-related measures necessary to upgrade the existing dam to an acceptable standard of safety.</p> <p>Previous assessments of dam safety or recommendations of improvements needed in the existing dam the JU IDCO provides evidence that (a) an effective dam safety</p>

WB Safeguard Policy	Key features	Applicability for sub-projects under JMDP	Safeguard requirement
			<p>program is already in operation, and (b) full-level inspections and dam safety assessments of the existing dam, which are satisfactory to the Bank, have already been conducted and documented. If substantial remedial work is needed, the Bank requires that (a) the work be designed and supervised by competent professionals, and (b) the same reports and plans as for a new Bank-financed dam be prepared and implemented.</p>
OP7.60 - Projects in Disputed Areas	<p>Applies to projects where there are territorial disputes present. Allows Bank to proceed if governments agree to go forward without prejudice to claims. Requires early identification of territorial disputes and descriptions in all Bank documentation.</p>	Not Applicable	Not Applicable
World Bank Policy on Access to Information and Disclosure	<p>World Bank safeguards policy requires consultation with PAPs during planning and implementation of resettlement action plan and tribal development plan and public disclosure of drafts.</p>	Applicable	<p>Once the draft reports are prepared, they are made available at a place accessible to and in a form and manner, understandable to the displaced or affected people and local NGOs.</p>

3.1.3 IFC EHS Guideline

47. The OP 4.01 on Environmental Assessment refers to the World Bank Group's Environmental, Health and Safety (EHS) Guidelines. There are general IFC EHS guidelines that are applicable to all projects and sector guidelines that are applicable in addition to the general guidelines.

Safeguard Policies	Objective	Applicability	Safeguard
IFC: General EHS Guidelines	The (EHS) guidelines contain performance level and measures on environmental, occupational health and safety for construction, community health and safety to be followed during the construction, operation and decommissioning phases.	Applicable, as the sub-projects will involve construction, operational and de-commissioning activities.	The sub-projects will adhere to the performance level and measures provided in the IFC general EHS guidelines, Environmental quality standards as per IFC general EHS guidelines which are applicable to JMDP sub-projects have been presented in Annexure XVI.
IFC Industry Sector Guidelines for Water and Sanitation ⁷	This industry sector EHS guideline is to be used together with the general EHS guidelines document, which provides guidance on EHS issues potentially applicable to Water and sanitation. recommendations for the management of EHS issues associated with construction activities as would typically apply to these types of civil works are provided in the general EHS guidelines	The guidelines for water and sanitation include information relevant to the O&M of (i) potable water treatment and distribution systems, and (ii) collection of sewage in centralised systems (such as piped sewer collection networks) or decentralized systems (such as septic tanks subsequently serviced by pump trucks) and treatment of collected sewage at centralized facilities.	The sub-projects will make use of these industry specific guidelines as applicable.
IFC Industry Sector Guidelines for Waste Management Facilities ⁸	The guideline document provides a summary of the most significant EHS issues associated with waste Management, which occur during the operational and decommissioning phases, along with recommendations for mitigating these impacts.	The guidelines for waste management will cover facilities or projects dedicated to municipal sewage management.	The sub-projects will make use of these industry specific guidelines as applicable.
IFC Workers' Accommodation:	This Guidance Note addresses the processes and standards that	Applicable, as the sub-projects will involve setting	The guidelines to be followed for setting up labour

⁷ (<http://www.ifc.org/wps/wcm/connect/e22c050048855ae0875cd76a6515bb18/Final%2B-%2BWater%2Bband%2BSanitation.pdf?MOD=AJPERES>)

⁸ (<http://www.ifc.org/wps/wcm/connect/1cd72a00488557cfbdf4ff6a6515bb18/Final%2B-%2BWaste%2BManagement%2BFacilities.pdf?MOD=AJPERES&id=1323162538174>)

Processes and Standards: Guidance Note ⁹	should be applied to the provision of workers' accommodation	up of labour camp during construction phase.	camps and facilities to be provided in the labour camps for sub-projects of JMDP. The guidelines for labour camp have been developed based on this guideline and have been provided in Annexure XIII.
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3.1.4 List of Other Statutory Clearance/s Required

48. Sub-projects need to comply with the various existing statutory requirements and it is envisaged that certain permission/s and clearance/s will be obtained from the competent authority/authorities as part of sub-project preparation and/or execution. This will depend mainly on the area, type, size and scope of the sub-project. These broad requirements envisaged at this point of time are summarised below in Table 9.
49. The process of obtaining major environmental and social licenses has been presented in Annexure-II.

⁹ (http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_gpn_Workersaccommodation)

Table 9: Key Regulatory Clearances Required

S.no	Sub-project	Clearance/Authorization
1	Water Supply Scheme	<p>Pre-construction stage</p> <ul style="list-style-type: none"> ▶ Obtain NOC from WRD for withdrawal of water for water supply scheme ▶ Tree cutting permission from State Forest Department if any trees are felled ▶ If forest diversion is required, obtain forest clearance from regulatory authority ▶ Obtain NOC for utility shifting from concerned departments ▶ Obtain NOC from WRD/ Irrigation Department/any regulatory authority, if any existing barrage (less than 15 metre) is present ▶ Obtain NOC from competent regulatory authority for laying pipelines RoW of the roads ▶ NOC from the Gram Panchayat/local body for area designated for disposal of construction waste ▶ Approved land acquisition plan and R&R plan from the District Collector where land is being acquired, structures are affected etc. ▶ Obtain NOC for WTP sludge disposal area from the concerned regulatory body governing the land obtained for sludge disposal ▶ NOC from ASI if construction activities are undertaken within 200m of ASI-protected sites <p>Construction stage</p> <ul style="list-style-type: none"> ▶ CTE and CTO from JSPCB for batching plant and DG set(15 kVa) and for less than 15 kVa ▶ Labour license from the Department of Labour ▶ Contractors who employ or who employed five or more inter-state migrant workmen need to obtain registration of interstate workmen migrant license from the Labour Commissioner ▶ Approval from regulatory authority for withdrawal of water for construction purpose ▶ Obtain NOC for transporting and storing diesel, oil and lubricants etc. from Chief Controller of Explosives ▶ PUC for construction vehicles from the Motor Vehicle Department, Jharkhand
2	Road	<p>Pre-construction stage</p> <ul style="list-style-type: none"> ▶ Tree cutting permission from State Forest Department ▶ If forest diversion is required, obtain Forest Clearance from regulatory authority ▶ If EC not available for borrow areas , obtain EC for borrow areas from DEIAA ▶ Obtain NOC for utility shifting from concerned departments ▶ NOC from the Gram Panchayat/local body for borrow area ▶ Obtain NOC for borrow areas from the Department of Mining, Jharkhand ▶ NOC from the Gram Panchayat/local body for area designated for disposal of construction waste ▶ NOC from Airport Authority of India if applicable ▶ NOC from ASI if construction activities are undertaken within 200 metre of ASI protected sites ▶ Approved land acquisition plan and R&R plan from District Collector where land is being acquired, structures are affected etc.

S.no	Sub-project	Clearance/Authorization
		<p>Construction stage</p> <ul style="list-style-type: none"> ▶ Contractors who employs or who employed five or more Inter-State migrant workmen need to obtain registration of interstate workmen migrant license ▶ Approval from regulatory authority for withdrawal of water for construction purpose ▶ Obtain NOC from JSPCB for Storage, handling and transport of hazardous material ▶ Obtain NOC for transporting and storing diesel, oil and lubricants etc. from Chief Controller of Explosives ▶ Labour license from Department of Labour ▶ CTE & CTO from JSPCB for batching plant, hot mix plant, DG set (.15 kVa) and for less than 15 kVA ▶ PUC for construction vehicles from Motor Vehicle Department, Jharkhand
3	Storm Water Drainage	<p>Pre-construction stage</p> <ul style="list-style-type: none"> ▶ Tree Cutting Permission from State Forest Department if any trees are felled ▶ If Forest diversion is required, obtain Forest Clearance from regulatory authority ▶ Obtain NOC for utility shifting from concerned departments ▶ Obtain NOC from competent regulatory authority for constructing drain in RoW of the roads ▶ NOC from the Gram Panchayat / Local body for area designated for disposal of construction waste ▶ Approved Land Acquisition Plan and R&R Plan from District Collector, where land is being acquired, structures are affected etc. ▶ NOC from regulatory agency for disposal of storm water in surface water body ▶ NOC from ASI, if construction activities is undertaken within 200 m of ASI protected sites <p>Construction Stage</p> <ul style="list-style-type: none"> ▶ CTE & CTO from JSPCB for batching plant and DG set ▶ Labour license from Department of Labour ▶ Contractor who employs or who employed five or more Inter-State migrant workmen need to obtain registration of interstate workmen migrant license from labour commissioner ▶ Approval from regulatory authority for withdrawal of water for construction purpose ▶ Obtain NOC for transporting and storing diesel, oil and lubricants etc. from Chief Controller of Explosives ▶ PUC for construction vehicles from Motor Vehicle Department, Jharkhand
4	Building	<p>Pre-construction stage</p> <ul style="list-style-type: none"> ▶ Tree Cutting Permission from State Forest Department if any trees are felled ▶ NOC from all utilities having service connections within the building, such as water, electricity, gas, sewer and other connection before demolition of any building ▶ Environmental Clearance if built up area is more than 20,000 sq. m

S.no	Sub-project	Clearance/Authorization
5	Sewerage	<p> <ul style="list-style-type: none"> ▶ Fire NOC from Jharkhand Fire Department ▶ Approved Land Acquisition Plan and R&R Plan from District Collector, where land is being acquired, structures are affected etc. ▶ Approved design of the building from regulatory agencies ▶ NOC from the Gram Panchayat / Local body for area designated for disposal of construction waste ▶ NOC from ASI, if construction activities are undertaken within 200 m of ASI protected sites <p>Construction Stage</p> <ul style="list-style-type: none"> ▶ PUC for construction vehicles from Motor Vehicle Department, Jharkhand ▶ CTE & CTO from JSPCB for batching plant and DG set(. 15 kVa) and for less than 15 kVA ▶ Labour license from Department of Labour ▶ Approval from regulatory authority for withdrawal of water for construction purpose ▶ Obtain NOC for transporting and storing diesel, oil and lubricants etc. from Chief Controller of Explosives <p>Post Construction Stage</p> <ul style="list-style-type: none"> ▶ Stability certificate from signed by the engineer/structural engineer ▶ Certificate of occupancy from ULB <p>Pre-Construction Stage</p> <ul style="list-style-type: none"> ▶ Tree Cutting Permission from State Forest Department if any trees are felled ▶ If Forest diversion is required, obtain Forest Clearance from regulatory authority ▶ NOC from the Gram Panchayat / Local body for area designated for disposal of construction waste ▶ Obtain NOC for utility shifting from concerned departments ▶ Obtain NOC from competent regulatory authority for constructing drain in RoW of the roads ▶ Approved Land Acquisition Plan and R&R Plan from District Collector, where land is being acquired, structures are affected etc. ▶ Environmental Clearance for sewage treatment facility, if required <p>Construction Stage</p> <ul style="list-style-type: none"> ▶ CTE & CTO from JSPCB for batching plant and DG set(. 15 kVa) and for less than 15 kVA ▶ CTE & CTO for STP from JSPCB ▶ Labour license from Department of Labour ▶ Contractor who employs five or more Inter-State migrant workmen need to obtain registration of inter-state workmen migrant license from labour commissioner ▶ Approval from regulatory authority for withdrawal of water for construction purpose </p>

S.no	Sub-project	Clearance/Authorization
		<ul style="list-style-type: none"> ▶ Obtain NOC for transporting and storing diesel, oil and lubricants etc. from Chief Controller of Explosives ▶ NOC from ASI , if construction activities is undertaken within 200 m of ASI protected sites ▶ PUC for construction vehicles from Motor Vehicle Department, Jharkhand

4 ENVIRONMENTAL AND SOCIAL BASELINE

4.1 ENVIRONMENTAL PROFILE OF THE STATE

4.1.1 Jharkhand: An Overview

50. The state of Jharkhand was created in the year 2000 by bifurcating the hilly and plateau regions of the erstwhile Bihar state. The state has an area of 79,714 sq. km and is home to 32.96 million people (GoJ, 2009). Jharkhand is predominantly an agrarian state with 80% of the population still depending on agriculture and allied industries for economic development and sustenance. The state falls between 21° 55' to 25° 35' North Latitude and 83° 20' to 88° 02' East Longitude¹⁰. The vast mineral resources clubbed with the human resource are shaping the future of the state. The state has proven reserves of 40% of the mineral resources of the country, and it ranks first in the production of coal, mica, kyanite and copper in the country. The state is also the sole producer of cooking coal, uranium and pyrite (Department of Industries, Jharkhand¹¹).

Figure 4: Map of Jharkhand



Source: <http://www.mapsofindia.com/maps/jharkhand/jharkhand.htm>

¹⁰ NIDM Jharkhand, National Disaster Risk Reduction Portal

¹¹ www.jharkhand.gov.in/new_depts/ap201011/industries201011.pdf

4.1.2 Geography and Physical Environment

51. The state of Jharkhand is flanked by Bihar in the north, Uttar Pradesh and Chhattisgarh in the west and Orissa in the south and West Bengal in East. The state mainly comprises the forest tracks of Chotanagpur plateau and Santhal Pargana. The area in and around the districts of Chotanagpur and Santhal Parganas was formerly Southern Bihar, thickly wooded and consisting of various hills. This area is studded with hills of 300 to 900m in altitude and covered with verdant virgin forests. The area comprises rivers, lakes, meadows and valleys and is rich in wildlife. The industrial city of Ranchi is its capital. The other major cities and highly industrialised cities are Jamshedpur, Bokaro, and Dhanbad. Jharkhand is also popularly known as 'Vananchal', which means a land mass covered with forests. Jharkhand is known for its mineral wealth and forestry products together with excellent human resources. Forest preserves support populations of tigers and Indian elephants. Most of the state lies on the Chota Nagpur Plateau, which is the source of the Koel, Damodar, Brahmani, Kharkai, and Subarnarekha rivers, whose upper watersheds lie within Jharkhand. The national parks and the zoological gardens located in the state of Jharkhand present a panorama of this variety. The state covers 79.70 lakh hectares area (2.42% of the geographical area of the country) with a population of 32.96 million (as per Census 2011), the state accounts for 2.72% of the total population of the country. It has sizeable tribal population (26.3%). The topography of the state is mostly undulating, hilly and sloping with mountains, forests, river basins and valleys. It has a rich endowment of forest and mineral resources.

4.1.3 Climate and Rainfall¹²

52. The state falls under the tropical monsoon climatic region. The Tropic of Cancer cuts across the state passing through the middle of Ranchi city. The average temperature of the state is 25° C, which varies greatly because of varying heights of different plateaus mentioned above. The average temperature of the region is below 23° C, while the rest of the state records average annual temperature between 23 and 26° C except the eastern part of the Santhal Pargana region, East Singhbhum, Garhwa, Palamu and the northern part of Chatra districts, where it is above 26° C. There are extremities in climate in the state in two seasons- summer and winter. The hottest areas are found towards the north-western part of the state (Daltonganj), around Jamshedpur and Dhanbad cities having more than 40° C temperatures. Similarly, the state gets affected by the cold waves with less than 5° C temperature and reeling cold. The average annual rainfall in the state is 1400 mm with more than 4/5th rainfall between June and

¹²As per report of Jharkhand National Disaster Risk Reduction Portal

September. It also gets rainfall from the branch of monsoon from the Arabian Sea. There are also variations in rainfall varying from below 1,200 mm to 1,800 mm. There are five climatic regions in the state: (i) North Eastern and North Central Plateau region (Western part of Santhal Pargana region, Giridih, Kodarma and Northern Hazaribagh),(ii) Upper Chotanagpur region (Ranchi Plateau, Gumla and the plateau region of outer Chotanagpur spread in Simdega),(iii) South Eastern Region (East Singhbhum, Saraikela and West Singhbhum),(iv) Eastern Region (Sahibganj, Pakur, eastern Deoghar, eastern Jamtara and north eastern part of Saraikela) and (v) North Western Lower Plateau region (Garhwa and Palamu).

4.1.4 Geology

- 53.** As per the Department of Mines & Geology, Jharkhand, the state is a part of the Indian Peninsular Shield which is a stable cratonic block of the earth's crust. Jharkhand is known for its diversified geological set up. The entire Singhbhum region is considered as a natural geological museum. Geologically, Jharkhand consists of different types of rock formations ranging from Pre-Cambrian to Cenozoic era. The most predominant hard rocks in the state comprise the Archaean metamorphics with associated intrusives and sedimentaries belonging to Vindhyan and Gondwana Super Group with associated igneous rocks. The Raj Mahal Hills, lying in the north-eastern extremity of the Chota Nagpur Plateau, consist of Jurassic volcanic lava flows. The Archaean metamorphics occur in east and west Singhbhum, Ranchi, Gumla, Lohardaga, Palamu, Giridih, Hazaribagh, Chatra, Ramgarh, Dhanbad, Godda, Deoghar and Dumka districts. They are represented by various types of Schists, Gneisses, Granulites, Quartzites, Meta basics and other basic intrusives and granites. The Archaean formation of West Singhbhum district possesses the iron bearing Iron Ore Group. The Vindhyan, comprising chiefly of Khenjua-shales, Porocelanite, Limestone and Sandstones, occupy a small area in the north-western part of Garhwa district. The Gondwanas are represented by alteration of argillaceous and arenaceous sediment and intervened with numerous coal seams. They are located in Palamu, Ranchi, Hazaribagh, Bokaro, Chatra, Dumka, Giridih, Dhanbad and Godda districts.
- 54.** Structurally, the state can be divided into 'Southern Singhbhum Province' and the 'Northern Chotanagpur Province' divided by Tamar – Khatra Fault (TKF) popularly known as the 'Northern Singhbhum Shear Zone'. The famous 'Singhbhum Thrust Zone' is the store house of several important minerals traversing East Singhbhum, West Singhbhum and Saraikela-Kharsawan district.

Singhbhum Shear Zone (SSZ)

55. The most spectacular structural element of the Singhbhum Craton in the southern part of the state is a 1-10 km wide and over 160 km long arcuate belt of shear zone called SSZ. It separates the North Singhbhum Mobile Belt in the north from the Iron Ore Group and the Singhbhum Granite in the south. The SSZ consists of a number of thrust planes with variable upward displacement of the northern block. A number of cross faults are also known to have displaced the shear zone. The SSZ is host to mineral occurrences of economic importance. This belt hosts several copper, uranium and apatite-magnetite and several other deposits. Besides these, nickel, gold, molybdenum, silver, tellurium and selenium are also extracted as by-products from the copper and uranium ores. The mineralised sections are Baharagora, Badia-Mosabani, Pathargarah-Surda, Kendadih-Chapri, Roam-Rakha Mines-Tamapahar, Ramchandra Pahar-Nandup-Turamdih etc.

4.1.5 Land Use of Jharkhand

56. The pattern of use of land in Jharkhand has been presented in Table 10.

Table 10: LandUse of Jharkhand

S.no	Category	Areas (in lakh hectare)	Areas (in%)
1	Cultivable Area	29.74	37.30
2	Forest Area	23.92	30
3	Water bodies	1.59	2
4	Wasteland	7.17	9
5	Scrub Forest	4.38	5.5
6	Built-up Area	3.99	5
7	Others	8.93	11.20
Total		79.72	100

Source: http://wrddjharkhand.nic.in/land_pattern_state.html

4.1.6 Soil

57. The soil content ¹³of Jharkhand state mainly consist of soil formed from disintegration of rocks and stones. The soil composition is further divided into the following categories:

- (i) Red soil, found mostly in the Damodar valley, and Rajmahal area
- (ii) Micacious soil (containing particles of mica), found in Koderma, Jhumeritilaiya, Barkagaon and areas around the Mandar hill
- (iii) Sandy soil, generally found in Hazaribagh and Dhanbad

¹³As per report of Jharkhand National Disaster Risk Reduction Portal

(iv) Black soil, found in the Rajmahal area

(v) Laterite soil, found in western part of Ranchi, Palamu, and parts of Santhal Parganas and Singhbhum.

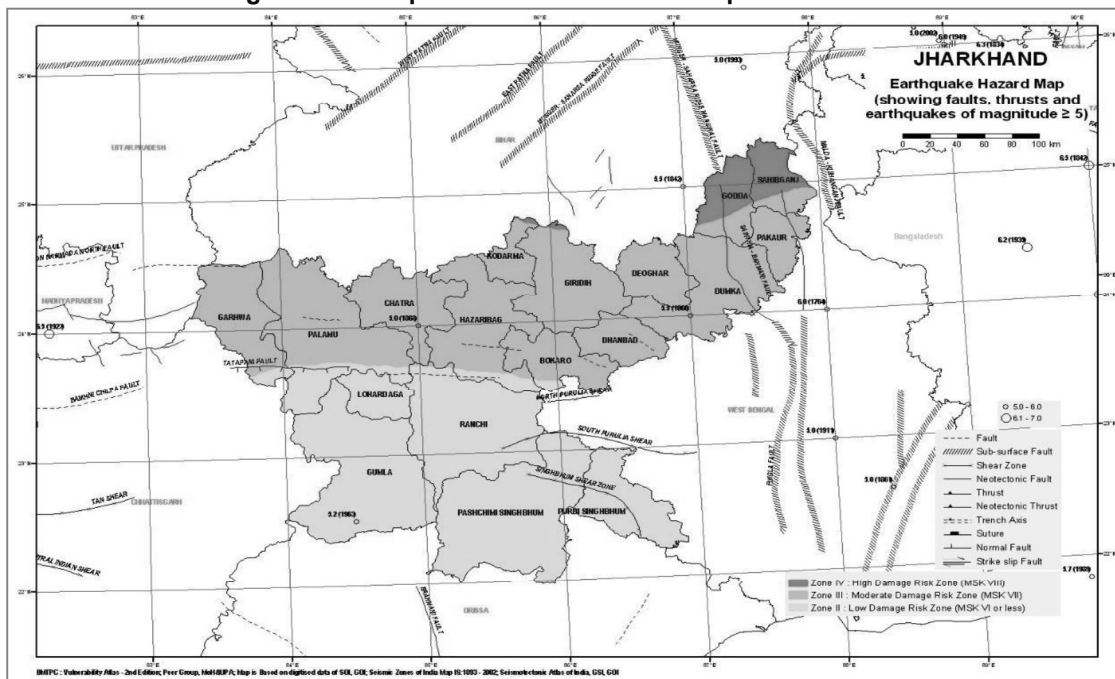
4.1.7 Sesimicity

58. As per Building Materials and Technology Promotion Council (BMTPC), the state of Jharkhand falls under 3 earthquake hazard zones: Zone II-Low Damage Risk Zone, Zone III-Moderate Damage Risk Zone and Zone IV & Zone III-High & Moderate Damage Risk Zone. The details of the district under each earthquake hazard zone have been presented in Table 11 and the earthquake hazard map has been presented in Figure 5.

Table 11: District under Different Earthquake Hazard Zones

Earthquake hazard	Number of districts	Districts
Zone –IV	2	Godda & Sahibgunj – Partially
Zone- III	15	(Godda , Sahibgunj, Garhwa, Palamau, Chatra, Hazaribagh, Koderma, Giridih, Bokaro, Dhanbad, Deoghar, Dumka, Godda, Pakur, Jamtara)
Zone – II	7	Lohardagga, Ranchi, Ramgarh, Khunti, Gumla, E. & W. Singhbhum

Figure 5: Earthquake and Wind Hazard map of Jharkhand



4.1.8 Surface Water in Jharkhand

59. River systems in Jharkhand are the principal surface water resources fed by rain water run-off. One of the most important features of the river system in the state is the dominant role of Ganga, which provides water for day-to-day use of habitants, for drinking purposes, irrigation, industry, commercial uses and recharges the underground water.

A. River Basin

60. **Damodar Basin (shared with West Bengal):** The Damodar River Basin (DRB) is a sub-basin and part of the Ganges River basin spreading over an area of about 23,370.98 sq.km in the states of Jharkhand and West Bengal in India. The geographical extremity lies between 22°15' to 24°30' N latitude and 84°30' to 88°15' E longitude. The Damodar River in its upper reaches flows over plateau followed by a flat alluvial plain in the south east and east ward towards the Bay of Bengal. The river basin traverses five districts of Jharkhand, viz., Palamau, Hazaribagh, Giridih, Dhanbad, and Santhal Pargana.
61. **Bhera/Subarnarekha Basin:** The Subarnarekha is one of the longest east flowing inter-state rivers. It covers large areas of Jharkhand and some parts of Orissa and West Bengal. The basin lies between north latitudes of 21° 33' to 23°32' and east longitudes of 85°09' to 87°27' situated in the northeast corner of the peninsular India. It is bounded on the northwest by the Chhotanagpur Plateau, in the south west by Brahmani Basin, in the south by Burhabalang basin and in the south-east by the Bay of Bengal. This river originates near Nagri village in Ranchi district of Jharkhand at an elevation of 600m. The total length of the river is about 395 km. Its principal tributaries are Kanchi, Kharkai, Karkari and Dulang. The basin is generally influenced by South-West monsoon, which breaks in the month of June and extended upto October. The important cities/towns in the basin are Jamshedpur, Ranchi and Muri
62. **Brahmani Basin (with Orissa and Jharkhand):** The Brahmani is the major inter-state east flowing river among the peninsular rivers in India. This basin is situated within the geographical coordinates of north latitude 20°28' to 23°35' and east longitude 83°52' to 87°03' approximately. This basin is bounded in the north by the Chotanagpur plateau, in the west and south by Mahanadi basin and in the east by the Bay of Bengal. The basin covers Jharkhand, Chhattisgarh, and Orissa States and its catchment area is 39,033sq. km. The Brahmani is known as the South Koel in the upper reaches. It originates near Nagri village in Ranchi District of Jharkhand at an elevation of about 600m. The total length of its run is about 799 km. The principal tributaries of this river are Sankh, Tirka and Karo. The climate of the basin is tropical with a fairly hot summer

and moderately cold winter. The basin is influenced by south west monsoon from June to October.

- 63. Sone Basin:** The river Sone is an important right bank tributary of the river Ganga. It originates from Amarkantak high lands in hills of Maikala range in Bilaspur district of Chhattisgarh at an elevation of 640 m and latitude 20°44' N and longitude 82°4'E. The river outfalls into the Ganga at about 16 km. upstream of Patna at latitude 25°14' N and longitude 84°42' E. The total length of the river is 881 km. The total catchment area of river system is 70,055 sq.km. The river Sone enters Jharkhand after flowing for 655 km through Chhattisgarh, Madhya Pradesh and Uttar Pradesh. The major rivers of Sone basin are Amanat, Auranga, Burha, Kanhar, North Koel and Son.

B. Major Rivers of Jharkhand

- 64. Brahmani River System:** The Brahmani is formed by the confluence of the rivers South Koel and Sankh near the major industrial town of Rourkela at 22 15'N and 84 47' E. The Sankh has its origins near the Jharkhand-Chhattisgarh border, not far from the Netarhat Plateau.
- 65. Subarnarekha River System:** The Subarnarekha emerges from the eastern slopes near Nagari (Ranchi upland) and has more or less southeasterly course. Enlarged by several tributaries it directly drains into the Bay of Bengal, east of Balasore. It is the largest river in Jharkhand. The Subarnarekha River flows eastwards upto Muri flowing down the Hirni, Dasam, Johna and Hundru falls. It then takes a sharp turn to the south and flows into the gap between the Bhagmundi hills on the east and the Ranchi uplands in the west. South of Chandil the river cuts through the Dalma range and turns south east and flows along the valley between the Dama and Dhanjori range towards Baharagora. Here it leaves the state, meanders eastward. Sapghara, Gurma, Bhagalduba, Dimnajhore, the Garra, Sanjal, the Karkai are tributaries of river Subarnarekha.
- 66. Damodar River system:** It rises from the eastern slope of the Balumath divides, east of Latehar near a place called Chulhapani in near the boundary of Lohardaga and Latehar districts. Later on the downstream, it is joined by the Bakaro, Kunar, and Jamunia and Barakar rivers in its eastward course. It reaches by and large a mature stage before passing the state boundary.
- 67. Amanat and Anuranga River systems:** Emerging from the Western flanks of the Balumath high, north east of Lohardaga are the west flowing Amanat and Auranga rivers which join the north flowing North Koel and drain into the Sone. The east flowing

Damodar and the west flowing Amanat-Auranga system are thus separated by the Balumath high drain the east west trending Gondwana coal basins and have a distant ancestry.

- 68. Barakar Ajoy and Mayurakshi rivers:** The region between the northern slopes of Hazaribagh plateau and the Kodarma-Rajmahal divides are drain by the Barakar, Ajoy and Mayurakshi rivers which flow to the south east through the Santal Pargana plains.
- 69. Dwaraka, Brahmani, Pagala, Gumani, Chandan and Chira rivers:** These rivers have originated from the Rajmahal plateau. Dwaraka, Brahmani, Pagala and Gumani drain down the Rajmahal plateau towards eastward slop. The western slopes of the Rajmahal ridge are drained by the Chandan and Chira rivers.

C. Dams and Reservoirs

- 70.** The important dams and reservoirs present in different districts of Jharkhand have been presented in Table 19.

4.1.9 Flooding Hazard

- 71.** As per a report on the Jharkhand National Disaster Risk Reduction Portal, only the Sahibgunj district of Jharkhand is prone to flood hazard and 3 districts (Jamshedpur, Saraikela, Ranchi) are prone to flash flood hazard.

4.1.10 Ground Water

- 72.** As per the Central Ground Water Board (CGWB), the state is underlain by a variety of rock formations from the Pre-Cambrian to the recent age. A major part of the state is underlain by formations comprising of granites, granite gneisses, meta- sedimentaries and a variety of volcanic rocks. The volcanic formations represented by Rajmahal traps are exposed as patches in a linear fashion in the north-eastern part. The sediments belonging to Vindhayan system are seen exposed in the north-western part of the state. The lateritic capping is invariably seen in the south-western part. Recent alluvial formations are mostly confined to the valleys along major rivers of the state. Ground water exploration has revealed the presence of 3 to 4 potential fractured zones at variable levels within a depth of 200 m from the ground level. The discharge of the exploratory wells is highly variable ranging between 3.6 and 54 m³/hr. In some of the pockets higher discharge wells has also been constructed. The ground water resources availability, utilization and stage of development of Jharkhand has been presented in **Table 12**.

Table 12: Ground Water Resources Availability, Utilisation and Stage of Development of Jharkhand

S. no.	District	Annual replenishable ground water resource						Natural discharge during non-monsoon period	Net ground water availability	Annual ground water draft			Projected demand for domestic and industrial uses upto 2025	Net ground water availability for future irrigation use	Stage of ground water development (%)
		Monsoon season		Non-monsoon season		Irrigation	Domestic and industrial water supply			Total					
		Recharge from rainfall	Recharge From other sources	Recharge from rainfall	Recharge from other sources										
1	Bokaro	20333	158	2546	1849	24886	1805	23081	5488	2474	7962	3575	14018	34	
2	Chatra	24927	216	3427	2389	30959	2187	28772	8886	1374	10260	2262	17623	36	
3	Deoghar	17805	53	6304	1506	25668	1935	23733	5527	2754	8282	4783	13423	35	
4	Dhanbad	12716	66	2587	1010	16378	1435	14943	3715	4623	8338	5780	5449	56	
5	Dumka	20061	2314	6125	1713	30212	3021	27191	5635	1948	7582	2509	19047	28	
6	E-Singhbhum	26081	146	4982	891	32101	3001	29100	3138	3467	6605	3837	22125	23	
7	Garhwa	25680	1555	4041	2493	33768	2783	30986	9221	2027	11248	2925	18839	36	
8	Giirdih	37470	81	6363	3141	47055	3360	43695	12308	3913	16221	5245	26142	37	
9	Godda	10583	1151	2648	1105	15487	1216	14271	4369	2052	6421	2414	7488	45	
10	Gumla	31233	905	8154	2462	42754	4275	38478	9094	1622	10716	2176	27208	28	
11	Hazaribagh	27712	703	5999	2991	37404	3154	34250	11022	3378	14399	4556	18673	42	
12	Jamtara	13568	14	3429	876	17888	1480	16407	3268	1401	4669	1888	11251	28	
13	Khunti	10438	658	4660	1031	16786	1679	15107	3728	724	4452	1166	10213	29	
14	Koderma	6335	3	1371	474	8182	610	7572	1818	885	2703	1286	4468	36	
15	Latehar	21629	147	3362	1566	26703	2086	24617	5772	1006	6778	1520	17325	28	
16	Lohardaga	7550	356	2313	956	11176	1118	10058	3498	627	4125	948	5612	41	
17	Pakur	11340	279	3314	256	15188	1405	13783	785	1255	2041	1897	11101	15	
18	Palamu	29279	1616	5715	2631	39242	3566	35676	9633	2654	12287	3855	22188	34	

S. no.	District	Annual replenishable ground water resource						Natural discharge during non-monsoon period	Net ground water availability	Annual ground water draft			Projected demand and industrial uses upto 2025	Net ground water availability for future irrigation use	Stage of ground water development (%)
		Monsoon season		Non-monsoon season		Irrigation	Domestic and industrial water supply			Total					
		Recharge from rainfall	Recharge From other sources	Recharge from rainfall	Recharge from other sources										
19	Rangarh	11423	44	1513	873	13854	1219	12635	3237	1806	5043	1867	7531	40	
20	Ranchi	28405	996	7795	3016	40212	3625	36587	11404	5982	17386	8718	16465	48	
21	Sahebganj	12190	196	1770	379	14535	1307	13228	957	2113	3070	3159	9112	23	
22	Saralkela	16180	617	4329	317	21443	1977	19465	690	2640	3330	3308	15467	17	
23	Simdega	23463	276	5298	1655	30693	2865	27828	7021	1086	8107	1630	19178	29	
24	W-Singhbhum	28470	887	8387	393	38136	3394	34742	1064	3064	4128	4563	29114	12	
	State Total (ham)	474870	13436	106432	35972	630710	54503	576206	131277	54875	186152	75869	369060	32	
	State Total (bcm)	4.75	0.13	1.06	0.36	6.31	0.55	5.76	1.31	0.55	1.86	0.76	3.69	32	

Source: Dynamic Ground Water Resources of India, CGWB

Present Scenario of Ground Water and Surface Water in Jharkhand

73. As per dynamic resource calculations carried out by the Water Resource Department, Jharkhand¹⁴, the present scenario of ground water and surface water in Jharkhand is as follows:

- a) Ground water reserve of Jharkhand - 4292 M.C.M.
- b) Surface water - 25876.98 M.C.M.
- c) Allocation for irrigation required by fields - 3813.17 M.C.M.
- d) Industry requirement - 4338 M.C.M.
- e) Urban area requirement - 1616.35 lakh gallons
- f) Availability in urban area - 734.35 lakh gallons

4.1.11 Air Quality¹⁵

74. As per National Ambient Air Quality Standard NAAQS trend report of 2012 published by CPCB, air quality monitoring was undertaken at 10 locations¹⁶ across different towns in Jharkhand. The result of the air quality monitoring has been presented in Table 13.

Table 13: Air Quality Monitoring Results of Jharkhand

Cities	SO ₂		NO ₂		PM ₁₀	
	Annual average (µg/m ³)	Air quality	Annual average (µg/m ³)	Air quality	Annual average (µg/m ³)	Air quality
Dhanbad	17	L	40	M	178	C
Jamshedpur	37	M	49	H	149	C
Jharia	17	L	40	M	212	C
Ranchi	18	L	35	M	202	C
Saraikela Kharsawan	39	M	51	H	160	C
Sindri	17	L	40	M	170	C
West Singhbhum	19	L	27	M	153	C

L: Low, M: Moderate, H: High, C: Critical¹⁷ Source: CPCB

75. PM₁₀ was observed to be critical¹⁷ at all locations and varied from 149 µg/m³ (in Jamshedpur) to 212 µg/m³ (in Jharia). NO₂ level was observed to be high at Jamshedpur and Saraikela Kharsawan, and moderate at Dhanbad, Jharia, Sindri and West Singhbhum. SO₂ level was observed to be moderate at Saraikela Kharsawan and Jamshedpur and low at Dhanbad, Jharia, Ranchi, Sindri and West Singhbhum.

¹⁴

<http://wrjdharkhand.nic.in/Present%20Scenario%20of%20Ground%20Water%20and%20Surface%20Water%20in%20Jharkhand.pdf>

¹⁵Noise pollution monitoring data by JSPCB of Jharkhand cities were not available on websites/published document

¹⁶AAQ station - 3 at Dhanbad, 1 at Jharia, 1 at Sindri, 2 at Jamshedpur, 1 at Ranchi and 1 at Saraikela-Kharsawan

4.1.12 Noise

76. As there is no secondary data available on noise levels, primary data collection was undertaken for the preparation of ESIA's for known sub-projects, and the results have been presented in **Table 14**. As noise monitoring levels have been observed to be higher than the standards prescribed by CPCB, additional mitigations needed to be undertaken during the project implementation stage. Samples were taken from the inner congested core areas of the cities/towns.

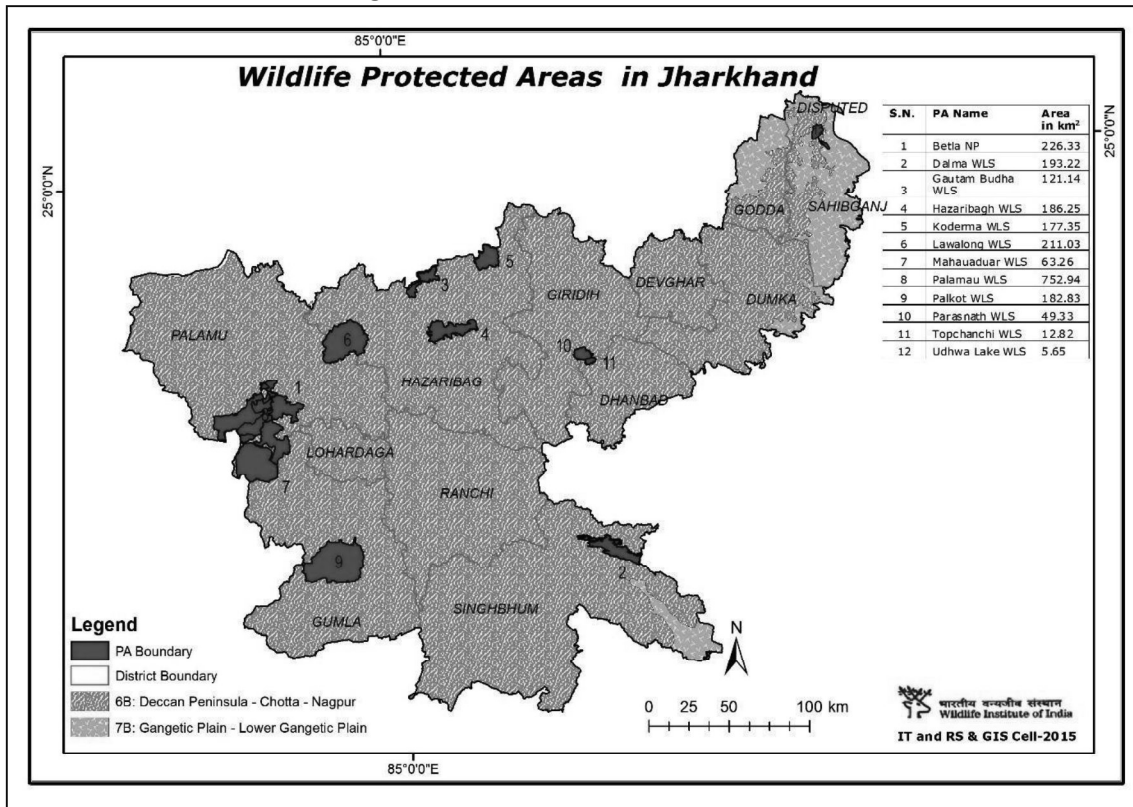
Table 14: Noise Level at Project Location

Sub-project location	Monitoring location	Maximum noise level dB (A)	Minimum noise level dB (A)	Noise standard – day (IFC and CPCB) dB (A)	Noise standard – night (IFC and CPCB) dB (A)
Khunti	Kadma Area	59.1	49.7	55	45
	Subhash Chowk	68.9	53.2	55	45
Dhanbad	Shastri Bhawan	85.5	54.5	55	45
	DRM office	78.9	58.4	55	45

4.1.13 Forest and Protected Areas

77. The state with a geographical area of 79,714 km² constitutes 2.42 of the country's area. As per the Forest Survey of India, the total recorded forest area of the state is 23,605 km², which is 29.61 of the geographical area of the state. Of the total recorded forest area, reserved forests constitute 18.58 %, protected forests 81.28%, and unclassified forests 0.14%. As per India State of Forest Report, 2013 published by the Forest Survey of India, forest cover in the state is 23, 473 km², which is 29.45% of the state's geographical area. The total forest and tree cover put together, it constitutes about 32.74% of the geographical area of the state. Figure 6 below presents the wildlife protected area map of Jharkhand.

Figure 6: Protected Areas in Jharkhand



Source: ENVIS Centre on Wildlife & Protected Areas hosted by Wildlife Institute of India, Dehradun, Sponsored by Ministry of Environment, Forests & Climate Change, Govt of India <http://wiienvis.nic.in>

Table 15: National Park and Wildlife Sanctuaries of Jharkhand

S. no.	Name of the WLS/NP	Area (sq. km)	District	Establishment year	Legal status
1	Betla National Park ¹⁸	231.67	Palamu	1986	NP
2	Palamau Sanctuary ¹⁸	794.33	Palamu	1976	WLS
3	Lawalong Sanctuary	207.00	Chatra	1978	WLS
4	Dalma Sanctuary	193.22	Singbhum (East)	1976	WLS
5	Hazaribagh Sanctuary	186.25	Hazaribagh	1976	WLS
6	Kodarma Sanctuary	177.95	Kodarma	1985	WLS
7	Palkot Sanctuary	183.18	Gumla	1990	WLS
8	Gautam Buddha Sanctuary (Part)	100.00	Kodarma	1971	WLS
9	Mahuadanr Wolf Sanctuary	63.25	Palamau	1976	WLS
10	Parasnath Sanctuary	49.33	Giridih	1981	WLS
11	Udhwa Lake Bird Sanctuary	5.65	Sahebganj	1991	WLS
12	Topchanchi Sanctuary	8.75	Dhanbad	1978	WLS
Total		2200.58			

Source:FSINP-National Park, WLS- Wild Life Sanctuary

78. **Table 16** below presents the forest area in various forest divisions of Jharkhand.

Table 16: Forest Area in Forest Divisions of Jharkhand (in hectares)

S. no.	Forest division	District	Reserved	Protected	Unclassified	Total
1	Deoghar	Deoghar		23546		31400
		Santhal Pargana		7854		
2	Dumka		12853	148136		150989
	Hazaribagh West	Hazaribagh	672	176524	340	177536
3	Hazaribagh East	Hazaribagh	1743	63625		125699
		Giridih		60331		
4	Chatra South	Hazaribagh	752	101828		102580
5	Chatra North	Hazaribagh		93372		93372
6	Kodarma	Hazaribagh	15630	73408		89038
7	Giridih	Giridih	8776	143020		151796
8..	Dhanbad	Dhanbad	10825	15555		26380
9	Saranda	Singbhum	81808	3988	86	85882

¹⁸Palamau Sanctuary and Betla National Park have now been included under Palamau Tiger Reserve

S. no.	Forest division	District	Reserved	Protected	Unclassified	Total
10	Kolhan	Singhbhum	58716	11258	68	70042
11	Porahat	Singhbhum	50628	15816	98	66542
12	South Chaibasa	Singhbhum	31	50875		50906
13	North Chaibasa	Singhbhum	6486	61540		68026
14	Ranchi East	Ranchi	11742	80182		91924
15	Dhalbhum	Singhbhum	53050	51863		104913
16	Ranchi West	Ranchi	15677	57784		100034
17	Lohardagga	Lohardagga	10613	15960		
18	Latehar	Ranchi	3417	10652		132384
	Latehar	Palamu	17231	101084		
19	Gumla	Gumla	12102	118717	16	130835
20	Daltonganj North	Palamu	3987	126661		130648

Source: GoJ web site, <http://jharkhand.nic.in/about/resources.htm>

4.1.14 Wetland of Jharkhand

A. District-Wise Wetland (Maps and) Statistics

79. Around 1,700.51 sq. km of wetland is present in Jharkhand, which is approximately 2.13% of the total geographical area of Jharkhand. Pashchimi Singhbhum district ranks first in terms of area (189.39 sq. km) followed by Sahibganj (161.18 sq. km). In terms of percent area under wetlands of total wetland extent, Pashchimi Singhbhum ranks first (10.08%). Around 50% of the wetland area is concentrated in five districts (Ranchi, Dumka, Palamu, Sahibganj and Pashchimi Singhbhum) and the rest of the wetlands are distributed in the remaining districts. The distribution of wetland area by district has been presented in Table 17.

Table 17: District-Wise Wetland Area of Jharkhand

S. no.	District	Total geographical area(sq. km)	Wetland area (sq.km)	Percentage of wetland area
1	Garhwa	4044	93.62	2.32
2	Palamu	8075	163.48	1.88
3	Chatra	3706	52.53	1.42
4	Hazaribagh	6147	113.07	1.84
5	Koderma	1312	31.60	2.41
6	Giridih	4975	78.45	1.58
7	Deoghar	2479	40.46	1.63
8	Godda	2110	24.45	1.16
9	Sahibganj	1599	161.18	10.08
10	Pakur	1806	27.34	1.51
11	Dumka	6212	158.24	2.55
12	Dhanbad	2052	94.38	4.60
13	Bokaro	2861	112.22	3.92
14	Ranchi	7698	147.28	1.91
15	Lohardaga	1491	21.10	1.42

16	Gumla	9077	124.23	1.37
17	Paschimi Singhbhum	9907	189.39	1.91
18	Purbi Singhbhum	3533	67.49	1.91
	Total	79714	1700.51	2.13

Source: National Wetland Atlas, Jharkhand

B. Important Wetland Type in Jharkhand

80. As per the Wetland Atlas of Jharkhand, Udhwa Lake (Bird Sanctuary), Getalsud, Tenughat, Panchet, Konar, Tilaiya, Maithon, Masanjore, Malay, Kansjore, and Hatia reservoirs are the most important wetland areas of Jharkhand state¹⁹.

- ▶ **Udhwa Lake Bird Sanctuary** is the single Bird Sanctuary of Jharkhand State is situated at about 42 km from Sahibgunj. It is situated on the bank of the Ganges about 10 km southeast of Rajmahal. Two water bodies, namely, Pataura and Barhale constitute the 5.65 km² Udhwa lake bird sanctuary. Pataura Lake is perennial and the average depth is about 2 meter.
- ▶ **Damodar River comprises five reservoirs (Konar, Tilaiya, Maithon, Panchet, Durgapur)** at different stretches to store the rain water and protect the lower valley from floods. Out of the five major reservoirs, Tenughat and Panchet are located on Damodar River, Tilaiya and Maithon on Barakar and one on Konar river, a tributary of Damodar river. The Tenughat reservoir is mainly constructed to meet the water requirements of Bokaro Steel Plant while the Durgapur barrage was constructed on Damodar river to meet the irrigation water requirements of West Bengal. Some important lakes also exist to provide surface water for drinking and industrial purposes out of which Topchanchi and Nalkari lakes are prominent. Topchanchi lake serves as the source of drinking water for Jharia coalfields, whereas water from Nalkari is used for the Patratu Thermal Power Plan.
- ▶ **Getalsud Reservoir** is located at 23° 27' N and 85° 33' E, across the river Subarnarekha, 40 km east of Ranchi River Subarnarekha. The main source of inflow originates at Nagari in the Chhotanagpur plateau of Jharkhand, about 50 km upstream of Getalsud Dam.
- ▶ **Konar Dam** is situated in the Hazaribagh district. The inflowing river Konar is a seasonal stream joining the river Damodar. Tilaiya Dam is constructed across the river Barakar, which rises from the hilly forests of Hazaribagh district, at an elevation of 610 m.
- ▶ **Tenughat Reservoir** is situated near Tenu village about 8 miles west to the Bokaro Thermal Power Station in the Giridih district of the state. It was constructed on

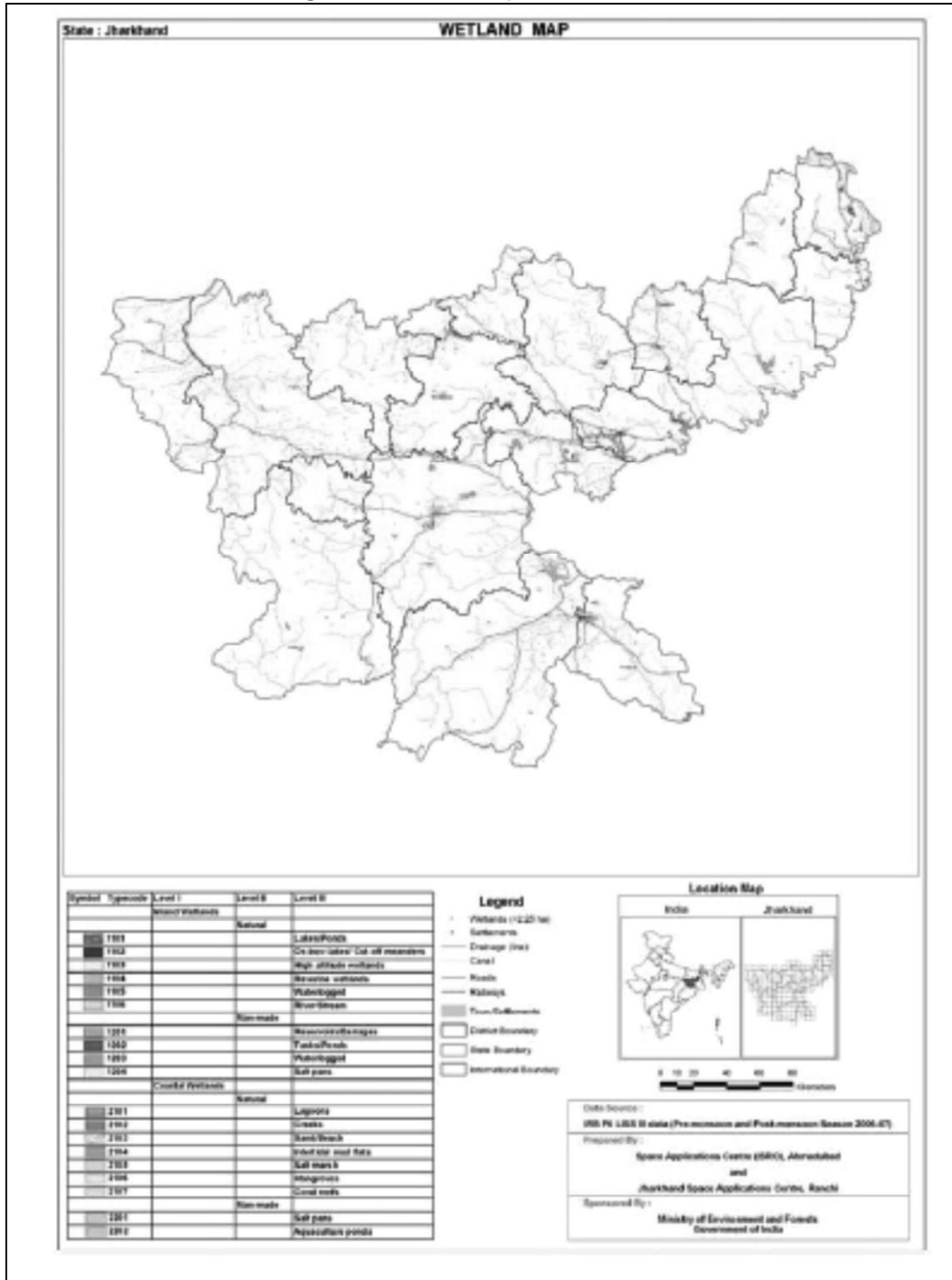
¹⁹ National Wetland Atlas: Jharkhand, BySpace Applications Centre (ISRO), Ahmedabad And Jharkhand Space Applications Centre, Ranchi February 2010 ; Sponsored By MoEF&CC

Damodar river in the year 1971 to utilise the water resources of river in Damodar and its tributaries to fulfil the needs of Bokaro Thermal Power Station and Steel Plant and their employees.

- ▶ **Masanjore Dam**(also known as Canada Dam) was constructed on the river Mayurakshi. The dam was constructed with two primary objectives: (a) to generate hydro-electricity and (b) to facilitate irrigation in Jharkhand and West Bengal.

81. The wetland atlas map of Jharkhand has been provided in Figure 7.

Figure 7:Wetland Map of Jharkhand



Source: Natural Wetland Atlas, Jharkhand

4.1.15 Ecology

A. Terrestrial Biodiversity

82. The plateau has been defined as the ChotaNagpur dry deciduous forest, a tropical and subtropical dry broadleaf forests ecoregion drier than surrounding areas such as the

Eastern Ghats and the Satpura Range that encroach on it to the south. The plateau is covered with a variety of different habitats, of which Sal forest is predominant. The plateau is home to the Palamau Tiger Reserve and other large blocks of natural habitat, which are among the few remaining refuges left in India for large populations of tiger and Asian elephants. Forests range from dry to wet and reach up to 25m tall. The plateau is also swampy in some places and in other parts is covered with bamboo grasslands and shrubs such as *Holarrhena* and *Dodonaea*. The flora of²⁰ the plateau is distinct from the wetter parts of India that surround it and includes several endemic plants such as *Aglaia haslettiana* and endangered plant species including *Madhuca longifolia* and *Butea monosperma*. Tigers, Asian elephants, four-horned antelopes, blackbucks and chinkara, dhole wild dogs and sloth bears are some of the animals found in Jharkhand²⁰. Birds include the threatened Lesser Florican Indian Grey Hornbill and other hornbills. More than half of the natural forest on the plateau has been cleared for grazing land and the scale of the mining operations on the plateau is disturbing to the movement and therefore the survival of wildlife including elephants and tigers.

B. Aquatic Biodiversity²¹

83. Udhwa lake is infested with aquatic macrophytes comprising emergent, free floating and submerged forms. Water hyacinth was found to be the dominant form. Over all 50% of the lake surface was covered with aquatic weeds. Some common fish of the lake are Rohu, Catla, Tengra, Reba and Mirka.
84. In Subernarekha river Diatoms has the maximum species diversity, followed by Chlorophyceae and blue-greens. Desmids and Dinophyceae are also present. Zooplankton is represented by 12 genera of rotifers, 6 of protozoa, 5 cladocerans and 2 of copepods. The major fish species found in the reservoir are Rohu, Catla and Mirka.
85. In Barakar river, the major fish species found are Catla, Rohu (*L. rohita*), Bata, *Cyprinus carpio*, *Notopterus notopterus* and *Ompok bimaculatus*.
86. The plankton in Konar river is characterised by a poor species diversity and an overwhelming dominance of *Microcystis aeruginosa* and *Diaptomus sp.* among the phyto- and zooplankton respectively. Major fishes found in the river are Catla, Mirka, Rohu, Bata *L. dyocheilus*, *Puntius sarana*, *Cyprinus carpio*, *Notopterus* and *Ompok bimaculatus*.

²⁰ <http://www.jharwildlife.in/>

²¹ National Wetland Atlas: JHARKHAND; sponsored by MoEF&CC

87. The phytoplanktons found in the Damodar River are Spirogyra, Chlamydomonas lemna, Ajola, Hydrilla, Vacillinaria, Chara, and potamojiton. Major fish found in Damodar river are Catla (C. catla), Mirka (C. mrigala), Rohu (L. rohita), L. calbasu, Bata(L. bata), C. carpio, P. sarana, M. aor, W. attu, B. bagarius etc.

88. Phytoplanktons found in Mayurakshi River are *Agmenellum sp.*, *Anabena sp.*, *Ceratophyllum sp.*, *Dentella sp.*, *Diatomella sp.* Major fish species found in Mayurakshi river are *W. attu*, *C. catla*, *N. chitala*, *H. fossilus*, Papda, *C. mirgala* and *L. rohita*. Major weeds found in Mayurakshi river are *M. aor*, *Ipomia aquatica*, *Myriophyllum*, *Limnathemu*, *Potamogetan*, *Hydrilla* and *Ceratophyllum*.

4.1.16 Physical and Cultural Resources Properties

89. Physical cultural resources are movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance.

90. In Jharkhand, around 13 ASI sites have been reported in seven districts. Details of the archaeological sites present in Jharkhand have been presented in Table 18.

Table 18: ASI Sites in Jharkhand

S.no	Districts	ASI sites
1	Ranchi	Jagannathpur Temple, Asura Sites, Ancient Stone Temple, Ashoka inscription on the Chandan Shahid -hill
2	East Singhbhum	Site of an old fort-Ruam
3	Dumka	Maluti Temple
4	Sahebganj	Jama Masjid, Sangeet Dalan, Ruins of Baradari buildings with probable underground cells and passage
5	Lohardaga	Shiva Temple
6	West Singhbhum	Benisagar tank, Old remains of temple and sculptures on the south east bank of the above tank
7	Saraikela Kharsawan Saraikela Kharsawan	Ancient Mound, Itagarh

Source: http://asi.nic.in/asi_monu_alphalist_jharkhand.asp

91. The major sites of religious/cultural significance in Jharkhand are Baidyanath Dham Temple at Deoghar (millions of devotees visit the temple during the Maha-Shravani Mela in July and August), Pahari Mandir at Ranchi (7 km from Ranchi Railway Station), Basukhinath Temple at Dumka (43 km from Deoghar Railway Station), Jagannathpur Temple (around 10 kms from Ranchi), Sun Temple (around 40 km on Ranchi Tata

Road), Angrabari (Amreshwar Dham) Temple in Khunti,Parasnath Temple (most important and sanctified holy place of Jains(10 km from Parashnath Railway Station), Chhinnamasta Temple at Rajrappa (28 km away from Ramgarh Cantonment), Shakti Mandir in Dhanbad city and additional 29Sarnas²²(sacred groves worshipped by tribals of Jharkhand) in Palamau district of Jharkhand.Apart from the above-mentioned major culturally important sites, people of Jharkhand celebrate *Chatt Puja* after five days of Diwali. During this festival, people take dips or holy baths in surface water bodies like ponds/lakes/rivers.

²²[http://ecoheritage.cpreec.org/viewsacdetail.php?\\$mFJyBfK\\$MOIb-B5vugEjkLs1Yr10%](http://ecoheritage.cpreec.org/viewsacdetail.php?$mFJyBfK$MOIb-B5vugEjkLs1Yr10%)

4.1.17 Summary of Environmental Resources in Jharkhand

92. The summary of environmental resources present in Jharkhand is present in Table 19.

Table 19: Summary of Environmental Resources in the State

S. no.	Districts	Urban areas	National park (NP)/wild life sanctuary (WLS)	Distance of NP/WLS from nearest railway station (located within the ULB)	Schedule 1 species in NP/WLS ²³	Important bird area	Water bodies	ASI sites	Major physical cultural properties
1	Dhanbad	Dhanbad	Topchanchi WLS	25 km from Dhanbad Railway Station	<i>Panthera pardus</i> (Leopard), <i>Melursus ursinus</i> (Sloth Bear), <i>Python spp</i> (Python)	Topchanchi Lake	Damodar River, Barakar River, Gobai river, Ijri river, Khudia river, Topchanchi Dam, Panchet Dam, Maithon Dam	-	Shakti mandir, Buddhist Statute
2	Ranchi	Ranchi	-		-	-	Bicha Opa Dam, Getalsud Dam, Hatia Dam, Latratu Dam, Paras Dam, Buchaopa Nala, Subarnarekha River, North Karo River, Paras River	Agannathpur Temple, Asura Sites, Ancient Stone Temple, Ashoka inscription on the Chandan Shahid hill	Angrabadi Temple, Pahari Mandir, Sun Temple, Birsa Munda Jail

²³<http://www.jharkhandwildlife.in/>

S. no.	Districts	Urban areas	National park (NP)/wild life sanctuary (WLS)	Distance of NP/WLS from nearest railway station (located within the ULB)	Schedule 1 species in NP/WLS ²³	Important bird area	Water bodies	ASI sites	Major physical cultural properties
3	East Singhbhum	Jamshedpur, Mango, Adityapur	Dalma WLS	12 km from Tata Nagar Railway Station	<i>Elephas maximus</i> (Asian Elephant), <i>Melursus ursinus</i> (Sloth Bear), <i>Manis crassicaudata</i> (Indian pangolin) <i>Falco spp</i>	Dalma WLS	Subarnarekha River, Kharkai River, Dimna Lake, Hudco Lake, Murahir Dam	Site of an old fort-Ruam	TELCO Bhuwaneswar Temple, Chitreshwar temple, Harina Shiva Temple, Rankini Temple, Bhuwaneswar Temple, Chitreshwar Temple
4	Bokaro	Bokaro Steel City, Chas	-	-	-	-	Konar River, Bokaro River, Jamunia River, Tenughat Dam	-	Jagannath Temple, Maa Karunamayi Temple, Ayyappa Temple, Noori Masjid
5	Palamau	Daltonganj,	Palamau Tiger reserve ²⁴ (Betla NP & Palamau WLS), Mahauadanr WLS	Palamau Tiger Reserve - 12 km from Chipadohar Railway Station	<i>Melursus ursinus</i> (Sloth Bear), <i>Panthera tigris</i> (Tiger), <i>Elephas maximus</i> (Asian Elephant),,,	Palamau	North Koel River, Amanat River, Son River, Amanat Dam, Amanat Dam, Batane Dam, Batre Dam, Bhutanduba Dam, Dhankai Dam, Malay	-	Palamau Fort, Sun Temple, Gaayatri Mandir, Devi Dham 29 Sarhuli Mander

²⁴Palamau Sanctuary and Betla National Park have now been included under Palamau Tiger Reserve

S. no.	Districts	Urban areas	National park (NP)/wild life sanctuary (WLS)	Distance of NP/WLS from nearest railway station (located within the ULB)	Schedule 1 species in NP/WLS ²³	Important bird area	Water bodies	ASI sites	Major physical cultural properties
				Mahuadanr WLS -60km from Chipadohar Railway station			Dam, Temrain Dam, Batane River		
6	Dumka	Dumka	-		-	-	Baranadi Dam Masanjor JH Dam Mayurakshi River	Maluti Temple	Udhwa Basukinath temple, Ramakrishan Mission Vidyapith, Baiju temple, Maa Shitala temple, Lita temple
7	Koderma	Koderma, Domchanch, Jhumri Telaiya (NP)	Koderma WLS, Gautam Buddha Sanctuary	Koderma WLS- 10 km from Koderma railway station Gautam Buddha Sanctuary-60 km from Koderma railway station	<i>Panthera pardus</i> (Leopard), <i>Melursus ursinus</i> (Sloth Bear), <i>Elephas maximus</i> (Asian Elephant),	Tilaya Dam, Barakar River	Tilaya Dam, Barakar River	-	Shaktipeeth maa chanchala devi Saint paramhans baba tomb
8	Hazaribagh	Hazaribagh	Hazaribagh Sanctuary		<i>Panthera pardus</i> (Leopard) <i>Manis crassicaudata</i>	North Karpur Valley Hazaribagh Sanctuary	Anjanwa Dam Baudha Dam Anjanwa Dam Baudha Dam, Jamunia Dam, Barhi	-	Rajrappa religious place, Narsigsthan temple, kandaver temple, bhadrakali

S. no.	Districts	Urban areas	National park (NP)/wild life sanctuary (WLS)	Distance of NP/WLS from nearest railway station (located within the ULB)	Schedule 1 species in NP/WLS ²³	Important bird area	Water bodies	ASI sites	Major physical cultural properties
					(Indian pangolin), <i>Python spp</i> (Python)		Dam, Gagrah Dam, Gonda Dam, Jamunia Dam, Konar Dam, Lotia Dam, Mahuaghat River, Anjanwa River, Chondhi River, Ghagra River, Konar River, Agrawa River		temple, Buddhist Temple Itkhori
9	Chatra	Chatra	Lawalong WLS	Lawalong WLS -76 km from Chandwa (Tori) railway station	<i>Panthera pardus</i> (Leopard) <i>Python spp</i> (Python)	-	Amanat River Baksa Dam Baksa River Dhulki Dam, Hiru Dam, Lilajan River, Hiroo River	-	Bhaduli (Bhadrakali), Kauleshwari Devi, Buddhist Relics
10	Giridih	Giridih	Parasnath WLS	Parasnath WLS- 16 km from Parasnath railway station	<i>Panthera pardus</i> (Leopard) <i>Python spp</i> (Python)	Khandoli Dam	Barakar and the Sakri rivers	-	Samosharan temple and Bhomiwaji Asthan, Stevenso n memorial church, Jharkhandi & Harihar Dham
11	Sahebganj	Sahibganj	Udhwa Lake WLS	Udhwa Lake WLS- 42 km from Sahenganj	-	Udhwa Lake (IN-JH-03)	Ganga, Gumani and Morang	Jama Masjid, Sangeet Dalan,	Chaitya Durga Temple, Baisi Sthan Temple.

S. no.	Districts	Urban areas	National park (NP)/wild life sanctuary (WLS)	Distance of NP/WLS from nearest railway station (located within the ULB)	Schedule 1 species in NP/WLS ²³	Important bird area	Water bodies	ASI sites	Major physical cultural properties
12	Latehar	Latehar, Chandwa, Barwadih	-		-	-	North Koel River	-	Cathedral Church, Lord Shiv Temple Akbari Masjid, Tomb of Maina-Bibi, Tomb of Miran Teliagarhi fort
13	Gumla	Gumla	Palkot WLS	Palkot WLS- 55 km from Bano Railway station and 115 km from Ranchi railway station	<i>Panthera pardus</i> (Leopard) <i>Python spp</i> (Python)	-	Dhansingtoli Dam, Jaipur Dam, Masaria Dam, Tapkara Dam, South Koel River, Nakti Nallah, Kukurdoba River	-	Ramrekha, Pampur, rekas tangra, Anjan, Baghmunda, shiv-parvati temple (Dewaki), Mahamaya temple (Hapamuni), Jagannath temple (Nagfeni)
14	Garwa	Garhwa	-		-	-	Sukhaldari River Anraj Dam, Anraja Dam, Chatania Ghat Dam, Chirka Dam, Danro Dam, Left Banki Dam, Pandarwa Dam Arraj	-	Radha Krishna Mandir, Raja Pahari, Statue of Goddess Kottam, Bansidhar Mandir

S. no.	Districts	Urban areas	National park (NP)/wild life sanctuary (WLS)	Distance of NP/WLS from nearest railway station (located within the ULB)	Schedule 1 species in NP/WLS ²³	Important bird area	Water bodies	ASI sites	Major physical cultural properties
15	Pakur	Pakur	-		-	-	River, Dhengura River, Danro River, Pandarwa River Surjudi Nala, Suryodi Dam	-	Shiv sheela mandir, nityakali mandir, Diwan-e-pir, Kunjoana, Martello Tower, Kunjoana
16	Ramgarh	Ramgarh	-		-	Patratu Dam	Nalkari River Nalkari Dam, Patratu Dam	-	Rajrappa temple, vaishno devi mandir, guruwara singh saba, tutee jharna prachin shiv mandir, jama masjid, kaitha shiv mandir
17	Lohardaga	Lohardaga	-		-	-	Nandini River, Nandini Dam	Shiva Temple	Elohims Pentecostal Church, Hanuman Temple, Korambe Mahamaya Prabhut Temple
18	Simdega	Simdega	-		-	-	Chinda Dam, Larwa Dam, Ramrekha Dam, Chinda River,	-	Ramrekha dham, ramjanki mandir, saran mandir

S. no.	Districts	Urban areas	National park (NP)/wild life sanctuary (WLS)	Distance of NP/WLS from nearest railway station (located within the ULB)	Schedule 1 species in NP/WLS ²³	Important bird area	Water bodies	ASI sites	Major physical cultural properties
19	Khunti	Khunti	-		-	-	Deo River , Utial Nala, Sankh Tajana River, Banai River Chata River and Karo River	-	Anganbari- shiv temple, dombari buru
20	West Singhbhum	Chaibasa	-		-	-	Jenasai Dam, Nakti Dam, Torlow Dam, Bijay River , Torlow River	Benisagar tank, Old remains of temple and sculptures on the south east bank of the above tank	Chainpur (shiva temple), Mahadevsa (lord mahadev temple), Ponga, Ramtirtha (shiva temple)
21	Saraikela Kharsawa Saraikela Kharsawa	Saraikela	-		-	-	Chandil Dam, Lorgara Dam, Palna Dam, Sitarampur Dam, Subarnarekha River, Kharkhai River, Ranka Jhuria	Ancient Mound, Itagarh	Jayda temple
22	Godda	Godda	-		-	-	Sunder River Sunder Dam	-	Ratneswar dham, yogini maa mandir
23	Jamtara	Jamtara	-		-	-	Rivers Brahmani, Mayurakshi, Ajoy	-	Dukhia mahadev temple
24	Deoghar	Deoghar	-		-	-	River Ajoy and its tributaries viz	-	Baba Baidyanath Temple,

S. no.	Districts	Urban areas	National park (NP)/wild life sanctuary (WLS)	Distance of NP/WLS from nearest railway station (located within the ULB)	Schedule 1 species in NP/WLS ²³	Important bird area	Water bodies	ASI sites	Major physical cultural properties
							Bhagdura, Partho, Dama, and Jayanti		Rikhia Dham Shivganga

4.2 URBAN PROFILE OF JHARKHAND

4.2.1 Urban Area of Jharkhand

93. The state of Jharkhand has 43 ULBs with a total population of 32.96 million (2011 Census). These include 6 Municipal Corporations, 19 Municipal Councils, 15 Nagar Panchayats, 2 Notified Area Committees and 1 Municipality.

94. The different classes²⁵ of ULBs based on population have been presented in Table 20. Out of 42 ULBs, 11 fall under Class-I, 9 under Class-II, 19 under Class-III and 4 under Class-IV.

Table 20: Classification of ULBs of Jharkhand Based on Population

S. no.	ULB	Population	Class
1	Dhanbad Municipal Corporation	1162472	Class-I
2	Ranchi Municipal Corporation	1073427	Class-I
3	Jamshedpur (NAC +OG)	677350	Class-I
4	Mango (NAC)	223805	Class-I
5	Deoghar Municipal Corporation	203123	Class-I
6	Adityapur Nagar Parishad	174355	Class-I
7	Hazaribagh Nagar	142489	Class-I
8	Chas Nagar Nigam	141640	Class-I
9	Jugsalai Nagar Parishad	125374	Class-I
10	Ramgarh Nagar Parishad	123875	Class-I
11	Giridih Nagar Parishad	114533	Class-I
12	Phusro Nagar Parishad	89178	Class-II
13	Sahebganj Nagar Parishad	88214	Class-II
14	Jhumri Telaiya Nagar Parishad	87867	Class-II
15	Daltongunj Nagar Parishad	78396	Class-II
16	Chaibasa Nagar Parishad	69565	Class-II
17	Lohardaga Nagar Parishad	57411	Class-II
18	Chakradharpur Nagar Parishad	56531	Class-II
19	Madhupur Nagar Panchayat	55238	Class-II
20	Gumla Nagar Panchayat	51264	Class-II
21	Chatra Nagar Parishad	49985	Class-III
22	Nagar Utari Nagar Panchayat	49050	Class-III
23	Godda Nagar Parishad	48480	Class-III
24	Dumka Nagar Parishad	47584	Class-III
25	Garhwa Nagar Parishad	46059	Class-III
26	Pakur Nagar Parishad	45840	Class-III

²⁵Class I- Population above 100000, Class II – Population between 50,000 and 99,999, Class III-Population under 20,000-49,999, Class IV-Population between 10,000-19,999.

S. no.	ULB	Population	Class
27	Chirkunda Nagar Parishad	45508	Class-III
28	Kapali Nagar Panchyat	43256	Class-III
29	Simdega Nagar Panchayat	42944	Class-III
30	Bishrampur Nagar Panchayat	42925	Class-III
31	Mihijam Nagar Panchayat	40463	Class-III
32	Khunti Nagar Panchayat	36390	Class-III
33	Jamtara Nagar Parishad	29415	Class-III
34	Hussainabad Nagar Panchayat	29241	Class-III
35	Chattarpur Nagar Panchyat	28450	Class-III
36	Latehar Nagar Panchayat	26981	Class-III
37	Koderma Nagar Panchayat	24633	Class-III
38	Rajmahal Nagar Panchayat	22514	Class-III
39	Bundu Nagar Panchayat	21054	Class-III
40	Majhiyaon Nagar Panchayat	18349	Class-IV
41	Basukinath Nagar Panchayat	17123	Class-IV
42	Chakuliya Nagar Panchayt	16,306	Class-IV
43	Saraikela Nagar Parishad	14252	Class-IV

Source:Census,2011

4.2.2 Land Use of Urban Areas of Tier-I Cities of Jharkhand

95. As per 2011 Census, Tier-I cities of Jharkhand are Dhanbad Municipal Corporation (DMC)Ranchi Municipal Corporation(RMC) Jamshedpur (NAC+ OG),Bokaro Steel City (CT), Mango (NAC), Deoghar (M Corp.),Adityapur (NP), Hazaribag (NP),Chas(NP) and Giridih (NP).

96. The land use of the urban areas of DMC, RMCJamshedpur (NAC+ OG), Mango (NAC), Adityapur (NP), Hazaribag (NP) and Giridih (NP)of Jharkhand are presented in Table 21.

Table 21:Land Use of Urban Areas of Tier -I Cities of Jharkhand

Land use	Area (%) of total area						
	RMC ²⁶	JNA	MNA	ANP	DMC	Hazaribag (NP)	Giridih
Residential	67.21	18	51	40	16.75	24.4	21.4
Commercial	2.85	2	4	1	0.045	0.4	0.6
Industrial manufacturing	6.74	41	3	24	17.63	0.5	3.9
Government	4.22	NA	NA	NA	NA	NA	NA
Public and semi-public	8.65	9	1	1	1.465	5.1	2.1

²⁶RMC-Ranchi Municipal Corporation ; JNA-Jamshedpur Notified Area; MNA-Mango Notified Area;ANP-Adityapur Municipal Corporation ;DMC- Dhanbad Municipal Corporation

Land use	Area (%) of total area						
	RMC ²⁶	JNA	MNA	ANP	DMC	Hazaribag (NP)	Giridih
Recreational/open space/vacant space	3.29	6	0	0	1.405	0.6	0.2
Traffic and ransportation	7.05	24	9	11	4.655	2.9	1.5
Agriculture, Forest, Tribal Land, Special area & Water bodies		1	33	24	57.95	66.2	70.3

Source: Draft Master plan of the district²⁷

4.2.3 Drinking Water

97. As per the 2011 Census, in urban Jharkhand, around 34.7% of urban households are dependent on tap water (treated source) whereas 6.9% of households take water from tap water (untreated source). 19.3% of urban households are dependent on wells for drinking water, of which 2.6% are covered and 16.7 are uncovered wells. 27.2% of urban households depend on hand pumps for drinking water.²⁸

98. Further to this, 9.7% of households are dependent on tube wells/bore wells. Table 22 provides detail status of access to drinking water for urban population in Jharkhand in comparison to India.

Table 22: Households by Main Source of Drinking Water

% of households with access to	Jharkhand (urban)	India (Urban)
Tap water (treated source)	34.7	62
Tap water (un-treated source)	6.9	8.6
Well (covered)	2.6	1.7
Well (un-covered)	16.7	4.5
Hand Pump	27.2	11.9
Tubewell/Borehole	9.7	8.9
Spring	0.1	0.2
River/Canal	0.6	0.2
Tank/Pond/Lake	0.2	0.4
Other source	1.3	1.7

²⁷ Preparation of GIS Based Master Plan & Zonal Development Plan DHANBAD – 2041(Draft); GIS based Master Plan & Zonal Development Plan For Giridih, Jharkhand (2040)(Draft), City Development Plan – Dhanbad - 2007; City Development Plan for Ranchi; GIS BASED MASTER PLAN & ZONAL DEVELOPMENT PLAN FOR HAZARIBAG, Jharkhand (2040)(Draft), Addendum to Master Plan for Jamshedpur Urban Agglomeration Master plan 2027: Draft Proposal

²⁸ Water and Sanitation STATE SERIES 2012, Jharkhand, USAID

Source: USAID report, Health of the Urban Poor [HUP] Program²⁹

99. Urban households with availability of drinking water within premises are only 59.1% in Jharkhand, whereas the national average is 71.2%. As presented in Table 23 in Jharkhand, 23.1% and 17.8% of urban households avail drinking water near the premises and away from the premises respectively.

Table 23: Households with Availability of Drinking Water

% of households having access to drinking water	Jharkhand (Urban)	India(Urban)
Within the premise	59.1	71.2
Near the premises	23.1	20.7
Away	17.8	8.1

Source: USAID report, Health of the Urban Poor [HUP] Program

100. Fluoride, Iron and nitrate are the major contaminations of ground water in Jharkhand. Table 24 provides ground water quality problems and districts affected in Jharkhand.

Table 24: Water Quality Affected Zones in Jharkhand

Contaminants	Districts affected (in part)
Fluoride (>1.5 mg/l)	Bokaro, Giridih, Godda, Gumla, Palamu, Ranchi
Iron (>1.0 mg/l)	Chatra, Deoghar, East Singhbhum, Giridih, Ranchi, West Singhbhum
Nitrate (>45 mg/l)	Chatra, Garhwa, Godda, Gumla, Lohardega, Pakur, Palamu, East Singhbhum, West Singhbhum, Ranchi, Sahibganj

Source: USAID report, Health of the Urban Poor [HUP] Program

101. As observed from Table 24, Khunti has high fluoride and nitrate contaminants

102. Contaminants present in drinking water affect human health. Ingestion of excess fluoride, through drinking-water, can cause fluorosis, which affects the teeth and bones. Moderate amounts lead to dental effects, but long-term ingestion of large amounts can lead to potentially severe skeletal problems. Chronic high-level exposure to fluoride can lead to skeletal fluorosis. Children under the age of six months are more prone to developing methemoglobinemia, or blue baby syndrome, when consuming high-nitrate water. High nitrate levels in drinking water may result nitrate poisoning in adults. As per WHO, high nitrate levels in drinking water is carcinogenic in nature. Safe drinking water has to be provided in order to curb rise in health related issues due presence of contaminants in water.

²⁹<http://hupindia.org/resources/Studies/WASH%20States%20Series,%202012/State%20Series,%20Jharkhand%202012.pdf>

4.2.4 Sewerage and Drainage

103. Most of the Class-I cities of Jharkhand have a combination of both open and closed drainage system with the exception of Adityapur, which has provision for only open drainage network.
104. The condition of Class-II towns is also not good as more than half of them have open drainage networks. Phusro, Ramgarh Cantonment, Saunda, Chaibasa, Lohardaga and Chakradharpur are the large towns with no provision for closed drainage system.
105. The storm water drainage coverage of major cities and towns of Jharkhand has been provided **Table 25**.

Table 25: Coverage of Storm Water Drainage Network

S. no.	Cities/Towns	Storm water drainage network (km)	Sewerage network (Km)
1	Dhanbad	40	Currently, no sewerage network exist
2	Chaibasa	37	
3	Chas	36	
4	Dumka	18	
5	Giridih	73.5	
6	Hazaribagh	31.85	
7	Medininagar	51.3	
8	Deoghar	24.4	

106. Highly inadequate sewerage and drainage network is observed in Jharkhand and significant investment is required to develop the sewerage and drainage infrastructure. Hence, GoJis developing sewerage facilities, septage management and storm water drain projects the under AMRUT scheme.

4.2.5 Urban Roads

107. Total Road density of Jharkhand is 119.77 (road km/1,000 sq. km), which is below the national average of 182.40 (road km/ 1000 sq. km).
108. The Class-I cities have a higher urban road density of 4.7 km/sq. km area while Class-II towns also have above average road density of 3.43 km/sq. km urban area. The mining industrial cities of Dhanbad (28.45 km/sq. km) followed by Jamshedpur (11.54 km/sq. km) have the highest urban road densities among the major cities of Jharkhand. Ranchi, despite being the administrative capital city, has extremely low urban road density of mere 1.98 km/sq. km area.

109. Currently, the road network is unable to cater to heterogeneous traffic movement. The roads have deteriorated in many parts and the current roads attract incremental costs in repairs. Frequent maintenance and gravel quarrying pose financial and environmental costs. Due to the bad road conditions, road safety is low, travel times are unduly long and journeys are cumbersome and uncomfortable. With the normal growth rate of population at 2.5% per annum, vehicle growth is expected at 5% per annum, leading to an addition of about 1,00,000 vehicles by 2020. With population growth, increase in traffic volumes and the economic development of cities/towns would continue and will exacerbate the already critical situation. The existing unsafe conditions and the adverse environmental consequences, in terms of the environmental quality along the roads, would continue to worsen in the absence of any road improvement process.

4.2.6 Summary of Urban Infrastructure of Major Cities/Towns of Jharkhand

110. The summary of urban infrastructure of Jharkhand major cities is provided in **Table 26**.

Table 26: Summary of Urban Infrastructure of Major Cities of Jharkhand

City	Current water Supply (MLD)	Current sewage generated (MLD)	STPs/WTPs ³⁰	Drainage Coverage	Urban road coverage	Sewerage coverage
Dhanbad	240.81	192.65	3 WTP (Total capacity-185 MLD.)	581.62 km (pucca open drains, pucca closed drains and kutcha open drains)	940 Km,	No sewerage system
Ranchi	235.56	188.45	4 WTP – (361.80MLD)	182.72 km – Kutcha drain & 258.32 km (pucca drain)	559 km	No sewerage system
Jamshedpur (NAC)	50.37	40.3	2 STP under JUSCO	Under JUSCO- no data is available NA		No Sewerage System
Mango	5.47	4.3	1 WTP – 5 MLD	64 km	244.78	No sewerage system
Adityapur	2.86	2.28	1 WTP – 22 MLD	90 km	342 km	No sewerage system
Deoghar	34.65	29.82	2 WTP – 7.5 MLD ; 18 MLD	60km length of drains	190 km	No sewerage system

³⁰WTP- Water Treatment Plant; STP-Sewage Treatment Plant

City	Current water Supply (MLD)	Current sewage generated (MLD)	STPs/WTPs ³⁰	Drainage Coverage	Urban road coverage	Sewerage coverage
Giridih	13.6	10.88	3 WTP – 15 MLD, 8 MLD & 7 MLD	73.5 km	149.4 km	No sewerage system
Chas	13.38	10.7	1 WTP- 24 MLD	36 km	105 km	No sewerage system
Hazaribagh	35.41	28.33	2 WTP- 9.5 MLD	31.85 km	118 km	No sewerage system

Source: JUIDCO

4.3 SOCIAL PROFILE OF THE STATE

111. As per the last Census undertaken in 2011, Jharkhand has a population of 32.96 million of which 26.3% is tribal. The population density of the state is 414 persons per square kilometre; however, it varies from as low as 159 per square kilometre in Simdega district to as high as 1,316 per square kilometre at Dhanbad. A demographical representation of Jharkhand is depicted in the table below:

Table 27: Comparative table of Demography of Urban Jharkhand, Jharkhand and India

Demography	Jharkhand Urban	Jharkhand	India
	2011	2011	2011
Total population (in millions)	7.94	33	1210
% contribution to national population	0.65	2.72	100
Sex ratio (females per 1,000 males)	910	947	940
Under 6 sex ratio (females per 1,000 males)	908	943	914
Density of population per sq. km	689	414	382

Source: Census 2011 and others³¹

112. Majority of the population (75.95%) reside in rural areas and only 24.05% in urban areas. The sex ratio in urban areas is 910 females per 1,000 males which is lower than the state sex ratio of 947 females per 1,000 males and the national sex ratio of 940 females per 1,000 males. It is again observed that the sex ratio below the age of 6 years is still

³¹ Census of India 2011, Provisional Tables, Registrar General of India, http://www.censusindia.gov.in/2011-prov-results/prov_results_paper1_india.html 5-10 RBI Handbook of Statistics on Indian Economy and Economic Survey of India 2010-11, India Human Development Report 2011, IAMR and Planning Commission 13-16, GOI http://unPAP.org.in/sites/default/files/GDI_and_GEM_Report.pPAF17-19 Inequality Adjusted Human Development Index for India's States 2011, UNPAP, www.unPAP.org.in/sites/default/files/reports_publication/IHDI_India.pPAF23-24 Tendulkar Committee Report 2009, Planning Commission, http://planningcommission.gov.in/reports/genrep/rep_pov.pPAF25-27 MPI data and updates for 2011

lower at 908 females per 1,000 males. This gives an indication that there is a prevailing preference towards male child in the urban areas.

4.3.1 Literacy of Jharkhand

113. Jharkhand has a network of government and privately run schools, although standards of teaching vary considerably from place to place, as also from school to school. The overall literacy rate at Jharkhand is 66.41% and that for India is 74.04%.

Table 28: Comparative Literacy Status of Jharkhand Urban, Jharkhand and India

Literacy	Jharkhand Urban	Jharkhand	India
	2011	2011	2011
Literacy rate (%)	82.26	66.41	74.04
Male literacy rate (%)	88.44	78.45	82.14
Female literacy rate (%)	75.47	56.21	65.46

Source: Census 2011 and others³²

114. The urban literacy rate (82.26%) in Jharkhand is much higher than both average of Jharkhand and India. Female urban literacy (75.47%) indicates that there is no significant difference in imparting education to the female child in comparison to the male counterpart. Literacy as a whole in urban areas has developed due to easy access to upto the secondary level education. Also, free education and mid-day meal in the primary and the upper primary levels play an important role in alluring young students to their school premises.

4.3.2 Migration

115. Migrant is a household member whose last usual place of residence (UPR)³³, anytime in the past, is different from the present place. The migration of population in India has been depicted below to give an outline of the nature and reason of migration.

³² Census of India 2011, Provisional Tables, Registrar General of India, http://www.censusindia.gov.in/2011-prov-results/prov_results_paper1_india.html 5-10 RBI Handbook of Statistics on Indian Economy and Economic Survey of India 2010-11, India Human Development Report 2011, IAMR and Planning Commission 13-16, GOI http://unPAP.org.in/sites/default/files/GDI_and_GEM_Report.pPAF17-19 Inequality Adjusted Human Development Index for India's States 2011, UNPAP, www.unPAP.org.in/sites/default/files/reports_publication/IHDI_India.pPAF23-24 Tendulkar Committee Report 2009, Planning Commission, http://planningcommission.gov.in/reports/genrep/rep_pov.pPAF25-27 MPI data and updates for 2011,

³³UPR of a person defined as a place (village/town) where the person has stayed continuously for a period of 6 months or more.

Table 29: All-India Proportion of Internal Migrants by Reason for Migration for Rural-to-Rural and Rural-to-Urban Streams (Per Cent) (2007–08)

Reasons for migration	Males		Females	
	Rural-to-rural	Rural-to-urban	Rural-to-rural	Rural-to-urban
Employment-related reasons	29.1	60.9	0.5	2.6
Studies	10.5	7.8	0.5	2.5
Marriage	12.2	1.6	92.6	62.8
Movement of parents/earning member	23.7	22.8	3.6	28.2
Other Reasons	24.4	6.9	2.9	4.0
	100	100	100	100

Source: NSS 64th Round, Report 533, Migration in India, July 2007 – June 2008.

116. The following is a comparative table of internal migrations of Jharkhand from rural to rural, rural to urban, urban to urban and urban to rural by gender in comparison to All India.

Table 30: Proportion of Internal Migrants by Type of Migration (2007-2008)

States	Rural-to-rural in %			Rural-to-urban in %			Urban-to-urban in %			Urban-to-rural in %		
	Male s	Femal es	Perso ns	Males	Fem ales	Perso ns	Male s	Femal es	Perso ns	Male s	Femal es	Perso ns
Jharkh and	17.7	79.0	71.8	43.6	7.9	12.1	36.1	9.2	12.3	2.5	3.9	3.7
All-India	27.2	70.0	61.7	39.0	14.8	19.5	24.8	10.3	13.1	8.9	4.9	5.7

Source: NSS 64th Round, Report 533, Migration in India, July 2007 – June 2008.

117. It has been observed that in the state of Jharkhand, migration from rural to rural is highest at 71.8% and that of the women migration is highest at 79%. This migration of women between the rural areas is not only due to employment related requirement but mainly due to marriages and movement of the parents or earning member. The migration from rural to urban areas is common and mainly due to employment and studies related issues. Female migration is less in comparison to male as there is still restriction on the movement of females from the rural society to the urban places which is still not considered good for women. The migration from rural to urban is also seasonal as the rural workforce of the state migrates to the urban cities during the slag agricultural season. The urban to urban migration is also low (12.3%) as it only implies change of towns or cities in search of better opportunity in employment and studies. There is rarely migration from urban to rural area. The above table denotes that 3.7% of the people have migrated from urban to rural, which may be due to movement of retired or jobless people to their native places.

4.3.3 Slum Population in Urban Area in Jharkhand

118. Imbalance in spatial growth of the urban population along with substantial rural-urban migration has its noticeable impacts on growing slum population in Jharkhand.
119. As per Jharkhand's economic survey report, 2016-17, published by the Planning cum Finance Dept,GoJ, a major negative fallout of increasing growth of urban population in only few urban centres is increase of urban poor living in overcrowded urban areas which are set apart as slums. The total slum population of Jharkhand stood at 3,72,999 and total slum households at 72,554 during the 2011 Census. About 72.38% of the total slum population of Jharkhand resides in Class-I cities alone. Ranchi city has the highest share of slum population (19.92%) followed by Jamshedpur (11.27%). Bokaro Steel City is the only Class-I city which did not have any recorded slum population in the 2011 Census.

Table 31: Distribution of Slum Population in Jharkhand, 2011 Census

Town name	Population of town	Town class	Slum households	Slum population	Share of slum population
Ranchi (M Corp.)	1073427	I	14426	74287	19.92
Jamshedpur (NAC+OG)	677350	I	8829	42026	11.27
Giridih (NP)	114533	I	5940	34867	9.35
Mango (NAC)	223805	I	5969	30508	8.18
Adityapur (NP)	174355	I	6457	29574	7.93
Deoghar (M Corp.)	203123	I	4303	23442	6.28
Daltonganj (NP)	78396	II	2704	15152	4.06
Dhanbad (M Corp.)	1162472	I	2852	14275	3.83
Chaibasa (NP)	69565	II	2400	11906	3.19
Hazaribag (NP)	142489	I	2050	11333	3.04
Lohardaga (NP)	57411	II	1961	10308	2.76
Chas (NP)	141640	I	1790	9657	2.59
Jharkhand (Urban)	7933061		72544	372999	100
All Class- I cities	4328014		52616	269969	72.38

Source: Computed from Town Directory, Jharkhand, Census of India, 2011

4.3.4 Workforce Participation

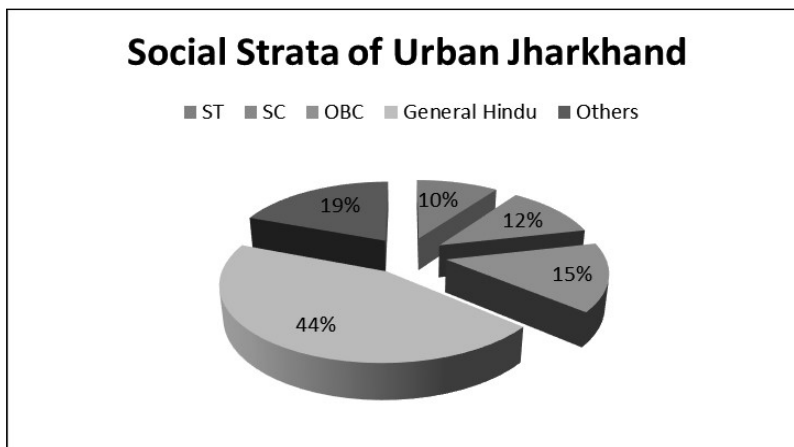
120. Total workforce participation is 37.5% for the state. Total male workforce is 48.0% and female workforce is 26.4%. The urban male workforce is estimated at 48.6% and female workforce at 8.5%. Though the female literacy rate in urban areas is high at 75.47%, interestingly the female urban workforce participation is very low at 8.5%.
121. Employment in the state, in terms of main workers to all workers, is the lowest in the country at 63.8%; conversely, the share of marginal workers (36.2%) is the highest in

the country. About 38.5% of the employed persons are cultivators and 28.2% agricultural labour as compared to 4.3% of industrial workers.

4.3.5 Social Composition

122. As per the 2011 Census, Hinduism is followed by 68.5% of the population of Jharkhand. Islam is followed by 13.8% of the population and Animistic Sarna (ST) religion is practiced by 12.6% of the population. Christianity with 4.1% of the population is the fourth largest religious community in Jharkhand. Jainism, Buddhism and Sikhism are all practiced making less than 1% as on 2011.

Figure 8: Social Stratification of Urban Jharkhand



Source: Jharkhand Profile, 2011

123. The urban social strata of the state are ST: 9.8%, SC: 11.6%, OBC: 14.8%, General Hindu 44.6 and others 19.2%. The figure above denotes that still the majority of the ST population lives in the rural areas in their traditional and natural habitats.

4.3.6 Relationship of Literacy and Education

124. A tabular format has been prepared to understand the relationship of the urban literacy rate and sex ratio among the social strata and gender.

Table 32: Sex Ratio and Literacy with Gender Segregate Data for the Social Strata

Type	% to total households in urban areas	Sex ratio in urban areas	Male urban literacy	Female urban literacy	Total urban literacy
SC	11.6%	911	82.8%	66.3%	76.5%
ST	9.8%	929	78.2%	72.6%	76.4%
OBC	14.8%	901	91.3%	78.2%	85.3%
General Hindu	44.6%	896	92.6%	76.4%	84.9%

Minority	19.2%	917	84.5%	71.7%	78.9%
Total	100%	910	88.4%	75.5%	82.26%

Source: Census 2011, UN Human Development Report 2014

125. The above data clearly indicates the highest sex ratio among the ST population in the urban area. The difference between the male and female literacy among the ST population is the lowest in comparison to all other social strata. This implies that the position of women in the ST population is better than that of the others. The lowest sex ratio is among the General Hindus, who form the majority of the population. The difference in male and female literacy is highest among this stratum. Thus, it may be inferred that still the position of women in the higher caste is not at par with that of the ST population.

4.3.7 Health

126. The basic health indicators of the state in comparison to the entire country are denoted in the table.

Table 33: Basic Health data

Health	Jharkhand	India
IMR (per 1,000) for 2010-11	41	47
MMR (per 1 lakh) for 2007-09	261	212
TFR (SRS 2010)	3.0	2.5
Full immunisation (AHS 2010)	64%	44%

Source: Census 2011 and others

127. The basic health data of Jharkhand is in favour of the state in comparison to the national average except in the maternal mortality rate for 2007-09. There is a shortage of 37% health sub-centres, 64% primary health centres and 82% community health centres. However, the main constraints are lack of attending doctors at a regular interval, very few diagnostics facilities and insufficient Government schemes that are women-specific, e.g., Janani Surayshka Yojana. Many PHCs, CHCs and hospitals are also unable to function properly due to lack of proper infrastructures, including diagnostic laboratory, ambulance service, X-ray and other vital facilities and shortage of skill manpower in the health sector. Some private clinics and medical practitioners provide health care facilities where PHCs are either absent or inadequately maintained but at a higher premium.

4.3.8 Poverty Estimates

128. The state is endowed with vast and rich natural resources, mainly minerals and forest. Business and economy center on the various industries housed in the territory. Business and economy in Jharkhand seem to be a vital component of the administrative set up of Jharkhand; it is this aspect of GoJ that is helping the Government to meet up to the

challenges of this industrial world. Jharkhand houses two major steel plants in India. The steel plants at Bokaro and the Tata Iron and Steel Company are the two major plants housed within the territory of Jharkhand. These steel plants largely contribute towards the economy of not only Jharkhand, but also India.

- 129.** About 76% of the state population residing in rural clusters and depend mainly on agriculture and allied activities for their livelihood. Agriculture is the main stay for the 80% of rural population of the state. Agriculture is their employment and primary income generating activity. The agricultural economy of the Jharkhand state is characterized by dependence on nature, low investment, low productivity, mono-cropping with paddy as the dominant crop, in inadequate irrigation facilities and small and marginal holdings. The dependence of agriculture on the Vagaries of the rain-god can be gauged from the fact that as much as 92% of the total cultivated area is un-irrigated. Thus, the prevalence of poverty of the state is estimated in various available methods to depict a proper picture of the poor and destitute people of the state.

Table 34: Poverty Estimates

Economy	Jharkhand	India
	2011	2011
GSDP ³⁴ growth rate	12.08	8.2
Poverty Headcount Ratio (%) for 2009-10	39.1	29.8
Total number of poor (in millions) for 2009-10	12.62	354.68

Source: Census 2011 and others³⁵

- 130.** Despite the bounty of natural resources like minerals and forests, the state remains underdeveloped. About 12.5% of households do not get two square meals a day (NSSO, 55th Round) and 46% of the population lives below the poverty line. The poverty ratio in India fell from 37.2% in 2004-05 to 21.9% in 2011-12, but the decline in poverty ratio in Jharkhand was only 8%, from 45.8% in 2004-05 to 37.0% in 2013-14.

- 131.** The Planning Commission of India estimated the poverty line by monthly per capita income of Rs. 748 for rural and Rs.974 at urban for the year 2011-12 for the state of Jharkhand and accordingly it was estimated that about 35 lakh family were poor. As per

³⁴Gross State Domestic Product

³⁵ Census of India 2011, Provisional Tables, Registrar General of India, http://www.censusindia.gov.in/2011-prov-results/prov_results_paper1_india.html 5-10 RBI Handbook of Statistics on Indian Economy and Economic Survey of India 2010-11, India Human Development Report 2011, IAMR and Planning Commission 13-16, GOI http://unPAP.org.in/sites/default/files/GDI_and_GEM_Report.pPAF17-19 Inequality Adjusted Human Development Index for India's States 2011, UNPAP, www.unPAP.org.in/sites/default/files/reports_publication/IHDI_India.pPAF23-24 Tendulkar Committee Report 2009, Planning Commission, http://planningcommission.gov.in/reports/genrep/rep_pov.pPAF25-27 MPI data and updates for 2011,

the Tendulkar method in the year 2011-12, the urban poverty was estimated at 24.83%, the rural poverty at 40.84% and the total poverty at 36.96%.

Table 35: Other Measurement of Poverty

	Jharkhand	India
Poverty and hunger indicators	2009-10	2009-10
Poverty headcount ratio (%)	39.1	29.8
Total number of poor (in millions)	12.62	354.68
	2005	2005
Multidimensional Poverty Index (MPI)	0.441	0.283
Multidimensional Poverty Headcount (%)	74.8	53.7
Number of Multidimensional Poor (in millions)	23.1	612
	2007	2007
Global Hunger Index (GHI)	28.67	23.3
GHI Rank (out of 17)	16	Not Applicable
	2005-06	2005-06
Prevalence of calorie undernourishment (%)	19.6	20
Prevalence of underweight children under 5 years of age (%)	57.1	42.5

Source: Census 2011 and others³⁶

132. It has been observed that the incidence of poverty in the state of Jharkhand is always on the higher side than that of the country. The acute condition of the state could be noticed by the Global Hunger Index where the state ranked 16th out of 17 states of India for the year 2007. It is observed that 57% of the children in the state are underweight in comparison to the national average of 42.5%.

4.3.9 Public Amenities

133. Social services are defined as benefits and facilities provided by a government to improve life and living condition of the children, elderly persons, the disabled, the poor and other disadvantaged sector of the society to develop them into productive and self-reliant community. Social services include education, food subsidies, health care facilities, subsidised housing, self-employment assistance and skill development assistance, among others. Only 75.4% of households have access to safe drinking water

³⁶ Census of India 2011, Provisional Tables, Registrar General of India, http://www.censusindia.gov.in/2011-prov-results/prov_results_paper1_india.html 5-10 RBI Handbook of Statistics on Indian Economy and Economic Survey of India 2010-11, India Human Development Report 2011, IAMR and Planning Commission 13-16, GOI http://unPAP.org.in/sites/default/files/GDI_and_GEM_Report.pPAF17-19 Inequality Adjusted Human Development Index for India's States 2011, UNPAP, www.unPAP.org.in/sites/default/files/reports_publication/IHDI_India.pPAF23-24 Tendulkar Committee Report 2009, Planning Commission, http://planningcommission.gov.in/reports/genrep/rep_pov.pPAF25-27 MPI data and updates for 2011,

and as per NSSO 65th Round, 15.8% of rural areas and 75.5% of urban areas have toilet facility. The road network density is 21.40 km per 100 sq. km.

Table 36: Public Amenities

Public amenities	Jharkhand	India
	2011	2011
Road length per 1 lakh population	58km	277km
Road length per 1,000 sq. km	219.9km	965.7km
All houses access to electricity	40.2%	67.9%

Source: Census 2011 and others³⁷

134. The public amenities of the state in comparison to the National average, clearly proves that it is lacking behind in roads and electricity, two major tools for development.

4.3.10 Features of Scheduled Area in Jharkhand

135. Jharkhand state has high proportion of ST population, which is about 26.3% against an all India average of 8%. It also has a high percentage of area under forest cover, which is about 29% against the Indian average of 23%. A total of 32 tribes are reported to be present in the state. The tribes in Jharkhand were originally classified on the basis of their cultural types by the Indian anthropologist Lalita Prasad Vidyarthi. The classification are:

- ▶ Hunter-gatherer type — Birhor, Korwa, Hill Kharia
- ▶ Shifting Agriculture — Sauria Paharia
- ▶ Simple artisans — Mahli, Lohra, Karmali, Chik Baraik
- ▶ Settled agriculturists — Santhal, Munda, Oraon, Ho, Bhumij, etc.

136. Eight out of the 32 tribes of Jharkhand fall under the Primitive Tribal Group (PTG). They are Asur, Birhor, Birajia, Korwa, Savar, Pahariya (Baiga), Mal Pahariya and Souriya Pahariya. PTGs, Sauria Paharia, remain the most isolated and disadvantaged indigenous tribal groups with noticeable reduction in their population. Their lives are closely associated with the nature as they are dependent on natural environment – streams, trees, plants, animals etc. for their livelihood purpose.

³⁷Census of India 2011, Provisional Tables, Registrar General of India, http://www.censusindia.gov.in/2011-prov-results/prov_results_paper1_india.html 5-10 RBI Handbook of Statistics on Indian Economy and Economic Survey of India 2010-11, India Human Development Report 2011, IAMR and Planning Commission 13-16, GOI http://unPAP.org.in/sites/default/files/GDI_and_GEM_Report.pPAF17-19 Inequality Adjusted Human Development Index for India's States 2011, UNPAP, [www.unPAP.org.in/sites/default/files/reports_publication/IHDI_India.pPAF23-24](http://unPAP.org.in/sites/default/files/reports_publication/IHDI_India.pPAF23-24) Tendulkar Committee Report 2009, Planning Commission, http://planningcommission.gov.in/reports/genrep/rep_pov.pPAF25-27 MPI data and updates for 2011,

137. The Chotanagpur region lies in the southern and eastern plateau of Jharkhand (Ranchi, Hazaribag, Giridih, Palamau, Dhanbad, Bokaro and Singhbhum) and Santhal Pargana mainly comprises Godda district, Deoghar district, Dumka district, Godda, Jamtara district, Sahibganj district and Pakur districts.
138. Although Hindi is the state language, the people of Jharkhand speak a number of languages belonging to three major language groups: the Munda languages, which include Santhali, Mundari, Ho, Kharia and Bhumij; the Indo-Aryan languages, which include Bengali, Oriya, Maithili, Nagpuri, Sadri, Khortha, Kurmali and Panchpargania; and the Dravidian languages, which include Oraon (Kurukh), Korwa and Paharia (Malto). Santhali is spoken predominantly in Dumka, Jamtara, Pakur, Godda, and Sahibganj and in parts of East Singhbhum and Saraikela-Kharsawan districts. Mundari is spoken mainly in Khunti, parts of Ranchi and other districts including West Singhbhum, Gumla, Simdega and Latehar.
139. The traditional governance system that exists in different tribal regions of Jharkhand is as follows:
- ▶ *Munda - Manki* system in *Ho* areas
 - ▶ *Parha* system in *Oraon* villages
 - ▶ *Munda - Manki* system in *Khuntkatti* system in *Munda* dominated areas
 - ▶ *Manjhi Pradhan* system in Santhal
140. The main festivals celebrated by the tribes of Jharkhand are Sarhul, Karam, Jawa, Tusu and Hal punhya. Sarna religion/Sarna Dharam (regarded as Sari Dharam) is the predominant religion followed by the tribals. The tribals have their own place of worship place called "Sarna Asthal/Jaher" and have a religious flag called "Sarna Jhanda".
141. Panchayats (Extension to Scheduled Areas) Act, 1996 or PESA is a law enacted by the GoI for ensuring self-governance through traditional Gram Sabhas for people living in the Scheduled Areas of India. In Jharkhand, other than PESA two more Acts are operational in the Schedule Area which are:
- ▶ Chota Nagpur Tenancy Act, 1908 (CNT Act)
 - ▶ Santhal Parganas Tenancy (Supplementary Provision) Act, 1949 (SPT Act)
142. The CNT Act, 1908 provides for rights of tribal communities/indigenous people with an objective to restrict the transfer of tribal land to non-tribal. The basic motto of the SPT Act, 1949 is to restrict the transfer of land and ST and SC can only transfer their land to

people belonging to their caste only and that also within their police station (the seller and buyer must be under same police station) with prior permission. Thus, the people have occupancy right with the right to inheritance.

4.3.11 Gender Issues

143. The Gender Development Index (GDI) value for India is very low and the socio-economic profile of the project area shows much lower socio-economic standing for women. The details have been discussed in table below:

Table 37: Gender Data of Jharkhand and India

Items	Jharkhand	India
Gender Related Development Index (GDI)	0.558	0.590
GDI rank (out of 35)	29	122
Gender Empowerment Measure (GEM)	0.435	0.497
GEM rank (out of 35)	26	Not Applicable

Source: Jharkhand Factsheet

144. Further, the SES conducted for 200 households for the Khunti water supply sub-project indicated the following:

- a) Women play a major role in domestic water management and are typically responsible for collecting and storing water. The table below shows that in case of 84.36% households, women are responsible for managing household water requirements.

Table 38: Present Accessibility in Khunti of Water for the Households

For households without water supply			
Responsibility of managing water requirements	Women 84.36%	Men 12.80%	Both 2.84%
Source of water	Within house 20.85%	<0.5km 38.86%	>0.5km to <1km 40.28%
Time spent on fetching water	<=15 Mins 44.55%	>15 to <=25 mins 37.44%	>25 mins 18.01%

Source: Survey from Jan to June, 2017

- b) Women participation in decision-making regarding financial matters, education of child, healthcare of child, purchase of assets, day to day household activities, social function and marriages and land property was observed to be significantly low. The table below provides details of women involvement in various activities.

Table 39: Women Participation in Khunti on Decision Making

Decision making and participation at household level							
	Financial matter	Education of child	Healthcare of child	Purchase of assets	Day-to-day household activities	Social function and marriages	Land property
Men	85.3%	9.8%	9.8%	60.8%	11.3%	60.8%	71.1%
Women	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
Both	10.3%	85.8%	85.8%	34.8%	84.3%	34.8%	24.5%

Source: Survey from Jan to June, 2017

- c) The benefits of the project as envisaged by the women population are:
- i. Increased accessibility and quality of the urban infrastructure
 - ii. Reduced time spent on accessing the urban infrastructure
 - iii. Decreased cost of living leading to a better quality of life
 - iv. Increased security of the women with infrastructural development of the urban areas, mainly roads
 - v. Improvement in water quality leading to improvement in health and hygiene.
 - vi. Reduced flooding of road and houses with effective functioning of the storm water drainage
 - vii. Increased job opportunities in fishing sector with outfall of storm water drains at ponds and other water bodies

The project can improve the situation and create opportunities for them to equally access the project benefits by ensuring the following:

- i. Good quality of water supply will decrease the incidences of water borne diseases and will increase hygiene and sanitation.
 - ii. Time saved by the women folk can be utilised for other productive activities that can help in generation of additional income.
- d) Women are largely involved in domestic work and have very low economic participation rate (i.e., productive or gainful employment). In the project, women are affected in a variety of ways. For example, they face hardship and stress due to scarcity of urban infrastructure and services such as water supply, drains and drainage, etc. In order to assess women's issues in connection with urban infrastructural project women were interviewed separately. The present scenario of the PIA as per the women is depicted below.
- i. Women going out of their houses to access the urban infrastructure constantly experience fear of harassment; the age group 18-24 years is among the most vulnerable and inexperienced in dealing with harassment
 - ii. Sites of sexual violence include streets/roads, market places/malls, auto/bus stops and public transport.
 - iii. Poor quality of infrastructure such as lighting, crowded public spaces and badly maintained open public spaces contribute to perceptions of fear.
 - iv. Public transport (especially shared autos) is seen as major sites of harassment. Women have experienced lack of support in public spaces due to mute bystanders.

Very few women approach the police, while 60% survivors share their harassment with family members.

v. More than 95% males in the cities know that sexual harassment and others forms of sexual violence would be a crime under law, but the awareness among women is lower.

e) Other constraints currently faced by females in accessing the basic urban infrastructure services are listed below:

- i. Poor condition of road
- ii. Poor street lighting
- iii. Inadequate public transport
- iv. Overcrowded public transport
- v. Flooding of roads in rainy season
- vi. Unhygienic living conditions
- vii. Access and quality of water supply

The “study on violence against women in Ranchi and Hazaribagh, A Synopsis” April 2016 published by Jagori supplements the above findings³⁸.

The project is expected to address the concern of harassment in public spaces by ensuring the following:

- i. Reduced threat of harassment in public places due to increased quality of urban infrastructural services like street lighting
- ii. Fewer women venturing out for basic necessities, thus reducing the incidence of harassment
- iii. Equal opportunities of employment to both women and men
- iv. Increased awareness on women’s rights

³⁸<http://www.jagori.org/sites/default/files/publication/Summary%20findings%20%28Ranchi%20%26%20Hazaribag%29%20English.pdf>

Gender Action Plan

Actions	Indicators	Responsibility	Timeframe
Output 1. Water supply infrastructure and integrated storm water and sewage infrastructure			
1.1 Provide metered water pipe connections in project towns	<ul style="list-style-type: none"> ▶ In the water supply projects, free water connection will be given to women headed households and the project will monitor the number of free connections provided to this category. 	PIU/ULBs (support from PMC/PMU)	Construction to operation
1.2 Provide access to sanitation system	<ul style="list-style-type: none"> ▶ Provision of well lit, clean and encumbrance free access to sanitation facilities. 		
Output 2. Capacity of JUIDCO, ULBs and consumers community in project town			
2.1 Prepare and implement gender-sensitive behavior change communication (BCC) plan for project towns	<ul style="list-style-type: none"> ▶ A gender-sensitive BCC plan will be developed and implemented in all project towns focusing on water conservation, water use efficiency, hygiene behavior and road safety awareness. Minimum 50% women participants will be ensured. 	PMU/PIU/ULBs (support from PMC/PMU)	Pre-Construction Stage
2.2 Conduct awareness generation programs in project towns	<ul style="list-style-type: none"> ▶ Awareness generation programs on water conservation, environment protection, and hygiene will be conducted in each project town, ensuring, 50% women participants. 	ULBs (support from PMC/ PMU)	Construction to operation
2.3 Constitute Grievance Redressal Committees (GRCs) in each sub-project	<ul style="list-style-type: none"> ▶ GRCs will be constituted in each project location with at least one women member. 	PIU/ULBs (support from PMC/PMU)	
2.4 Designate a gender focal point in JUIDCO.	<ul style="list-style-type: none"> ▶ Designated social expert will function as Gender Focal Point for all women related grievances. 	JUIDCO/PMU	Pre Construction stage to operation
2.5 Develop gender-sensitive training/learning material for ULBs	<ul style="list-style-type: none"> ▶ Training/learning material will be prepared for ULBs staff on gender sensitive O&M services and urban servicemanagement ▶ Learning material on community based participatory planning, monitoring and evaluation 	PMU (support from PMC)	Pre Construction stage to operation

4.3.12 Initiatives

- 145.** To control crimes against the women, 'Himmat' a mobile app for women safety, has been introduced by the Jharkhand Government as part of its security measures. The State Government is committed for security of women and their empowerment. Jharkhand Government also plans to raise the strength of women in the police department to 30% and setting up women police stations in every district. In order to create awareness on security-related issues in all schools, a woman official would be appointed as liaison officer. The purpose of the Liason Officer is to protect girl students from any sexual exploitation.
- 146.** Jharkhand set an example for other states by rolling out a special 'gender' budget this year, besides the annual budget. The special budget will allocate funds for several development schemes being run for women. The idea was mooted for bringing expenses for women development under one umbrella.

4.3.13 Actions to be Taken

- 147.** The Vishakha Guidelines are a set of procedural guidelines for use in India in cases of sexual harassment. They are promulgated by the Indian Supreme Court in 1997 and was superseded in 2013 by 'The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013'. The Jharkhand High Court in the Writ Petition (PIL) 5497 of 2011 had ordered the State of Jharkhand to strictly enforce the directions of the Honourable Supreme Court and also advised to enact legislation in tune Tamil Nadu Prohibition of Eve Teasing Act, 1998 and Delhi Prohibition of Eve Teasing Act, 1998.
- 148.** As per the information of Jharkhand State Commission for Women (JSCW), around 10 Government organisations have confirmed the functioning of Anti sexual harassment cells till the December of 2016. The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act 2013 under Vishaka Guidelines mentions an employer to set up an Internal Complaints Committee (ICC) at each office or branch with more than 10 employees of any gender. Inability to form such a cell can charge a sum of Rs 50,000 from the employer. JSCW had written letter to the chief secretary for prompt formation and functioning of such cells in all private as well as government departments for the sake of women employees. Involvement of an NGO member and a woman employee is mandatory in the cell also referred as ICC. But the formation of such cells in all the government and private offices is in process.

5 PUBLIC CONSULTATIONS AND DISCLOSURE

5.1 INTRODUCTION

149. In the context of the ESMF and ESIA process, stakeholder involvement in the form of public consultation and disclosure is defined as the two-way communication between the project team and the targeted and affected groups. The goals of such stakeholders participation are primarily to promote public understanding and acceptance of a developmental activity or a project by minimising potential perceived environmental impacts through education and open discussion. It can be best done through adopting a planned public communication and disclosure strategy. Public/community consultation, focus group discussion, key informant interviewing, etc., are required to be done. In return, public feedback can be used as constructive input into improving the project design. This is necessary for smooth implementation of the project.

150. The objectives of the communication strategy are as follows:

- ▶ To create project awareness among the affected population
- ▶ To provide information to PAPs about the adverse impacts on private properties, economic resources, livelihoods and mitigation measures considered in the RAP
- ▶ To take cognizance of PAP's views, grievance redressal mechanism to act on the desired lines of minimizing impacts thus creating a congenial environment for the implementation of the project

5.2 STAKEHOLDER IDENTIFICATION MATRIX

151. The project adopted a Stakeholder Identification Matrix formulated by analysing the relevance of stakes in the form of influences and interests of all identified persons / groups directly or indirectly related to the project. Table 40 provides the Stakeholder Identification Matrix formulated for the project.

Table 40: Stakeholder Identification Matrix

Stakeholder category	Interest	Influence	Potential/Probable impacts
Primary Stakeholders			
Project affected people	Supportive: Access to the facility, project entitlement, timebound delivery of benefits, enhanced quality of life	Critical: Social and political influence	Positive and/or negative
EA / PIU	The project proponent and JUIDCO are committed to the implementation of the project with the ESIA including RAP and STPP, as applicable	JUIDCO is committed on the timebound delivery of benefits, enhanced quality of life	Positive
Beneficiaries	Committed: Access to the facility, project entitlement, timebound delivery of benefits, enhanced quality of life	Desirable: Social and political influence	Positive
Secondary Stakeholders			
ULBs	Committed: Project implementation, contracting; project management, monitoring and evaluation	Critical	Positive
Revenue department, Water resource department, ASI, Forest department	Supportive: Additional departments for permission and implementation	Desirable	Positive and /or negative
NGOs, CSOs, Research institutes	Supportive: Development, community participation, and community welfare	Desirable	Positive and /or negative
Associations, Citizen's forum	Neutral: Community welfare	Critical	Positive

Source: Assessment studies.

5.2.1 Consultation for Preparation of ESMF

Consultation at Planning/Design Stage

152. Stakeholder profiling was conducted for identification of institutional and non-institutional stakeholders. Dissemination of project information to the public and other relevant stakeholders was carried out for some of the ULBs and will be carried out for the future sub-projects in the implementation phase of JMDP. The community at large was made aware of the project and necessary feedback was obtained.
153. As part of these consultations, overview of the project was discussed with the public and other stakeholders. The suggestions of consultations were incorporated as appropriate in the designs and ESMF. Further, socio-economic and census survey of the PAPs was conducted for known sub-projects.

Consultations at the Implementation Stage

154. The effectiveness of the implementation of ESMP is directly related to the degree of continuing involvement of those affected by the project. Several additional rounds of consultations with PAPs will form part of project implementation. An NGO for RAPs will be entrusted with the task of conducting these consultations during implementation, which will continue throughout the project implementation. The following set of activities will be undertaken for effective implementation of the plan:

- a) In case of any change in alignment, PAPs and other stakeholders will be consulted in the selection of alternative alignment for minimization of resettlement impacts, development of mitigation measures etc. Detailed surveys shall be undertaken to completely enumerate the PAPs affected as a result of alternative alignment.
- b) Together with the NGO, the PIU will conduct information sharing sessions in the project area and solicit the help of local community leaders to encourage participation of the PAPs in implementation of Environmental and Social Management Plan.
- c) Consultation and FGDs will be conducted with the vulnerable groups like women, SCs, STs and OBCs to ensure that the vulnerable groups understand the process and their needs are specifically taken into consideration during implementation.

Consultations as part of the implementation stage would be direct interactions of PIU staff, contractors staff, CSQC consultant with the Project Affected Persons to understand the perspectives/concerns of the stakeholders. These would comprise of consultations towards relocation of cultural properties, utilities, and addressal of impacts on environmental resources as water bodies, trees, etc. amongst other concerns raised by the affected communities.

155. During sub-project implementation the ULB, and other city level agencies will be involved. Stakeholder meetings would need to be conducted to discuss the sub-project progress reports, any EHS & Social issue and make recommendations for modifications. Consultations are required for preparation of all safeguards mitigation documents and these consultations should be an on-going activity over the life of the project. Project monitoring reports would be disseminated in the public consultation meetings in the ULB. The stakeholder meetings would discuss the sub-project progress reports, any EHS and social issue and make recommendations for sub-project control and modifications.

Consultations at the Operation Stage

156. Additional consultations with the beneficiaries will form part of project maintenance and sustainability. Regular and continuous consultations will be held with the

communities and the other relevant stakeholders for effective operations of the project and for fulfilling the envisaged targets. The consultation will be a two-way interaction between the ULBs and various stakeholders.

157. The detailed framework of consultations has been presented in **Table 41** below.

Table 41: Framework for Future Consultations

Stage of sub-project cycle	Level	Agenda	Targetstakeholders	Method	Outputs
Design /Planning stage	State	Policy Framework of the project. Statutory Clearances	Secretaries/ Heads of different Departments and Labour Commissioner	Key informant interview	Application for permissions and other information related to the project
	ULB	Proposals of project alternatives and Contracting;	Mayor/Chairman/Councillors/ Other relevantorganisations and beneficiaries	Workshop/meetings	Finalisation of the alignment and concurrence of the beneficiaries
	Project Site	Project details, alternatives and mitigation for the probable impacts	PAPs /local people/ relevantgroups and beneficiaries	FGD/Public meeting	Finalisation of alignment and concurrence of the PAPs
Implementation	State	Project management and status of the all statutory clearances and progress of disbursement and implementation	Secretaries/ Heads of different Departments and Labour Commissioner	Key informant interview	Statutory Clearances, Shifting of Utilities and disbursement
	ULB	Monitoring and evaluation	Mayor/Chairman/Councillors/ Other relevant organisations and Beneficiaries	Workshop/meetings	Project implementation including implementation of RAP and ESMP
	Project Site	Disclosure of RAP/ARAP and ESMP progress. Disbursement and grievances	PAPs/local people/ relevant groups and beneficiaries	FGD/Public meeting	Timely redressal of grievances
Operation	State	Operation and maintenance	Secretaries/ Heads of different Departments and Labour Commissioner	Key informant interview	Maintenance Strategy and sustainability
	ULB	Maintenance, maintenance budget,	Mayor/Chairman/Councillors/	Workshop/meetings	Efficient O&M and sustainability

Stage of sub-project cycle	Level	Agenda	Targetstakeholders	Method	Outputs
	Project Site	monitoring and evaluation Achievement of targets, grievance redressal and further mitigation measures for efficiency and sustainability	Other relevant organisations and beneficiaries PAPs /local people/ relevant groups and beneficiaries	FGD/Public meeting	Achievement of target as per schedule, timely redressal of grievances

Participants in Public Consultation at Different Levels

158. The consultation programme has been segregated and conducted at several levels, such as state level, district level, city level and ULB level.

Levels of Public Consultation

► State Level

- a) Secretaries of different Ministries and Departments of GoJ including the following:
 - i. Principal Secretary, Urban Development and Housing Department
 - ii. Director, State Urban Development Agency
 - iii. Principal Secretary, Drinking Water and Sanitation Department
 - iv. Principal Secretary, Department of Environment, Forest and Climate Change
 - v. Secretary, Welfare and Tribal Development Department
 - vi. Member Secretary, Jharkhand State Pollution Control Board
- b) Labour Commissioner, Department of Labour, Employment Training and Skill Development.
- c) Chief Engineer, Water Resource Department

► City/ULB Level

- a) Mayor/Chairman
- b) Municipal Commissioner
- c) Councillors
- d) Representatives of the following departments:
 - i. Road Construction Department
 - ii. Public Works Department
 - iii. Public Health and Engineering Department
 - iv. Traffic Police
 - v. Forest Department
 - vi. Irrigation Department
 - vii. Electricity Department
 - viii. Telephone Department

► Location/Site Level

- a) Heads and members of the households likely to be impacted
- b) Clusters of PAPs: vendors, traders, etc
- c) Villagers of PIA
- d) Local CBOs³⁹/NGOs

159. Table 42 presents findings of public consultation and key informant interview carried out at different levels.

Table 42: Findings of Public Consultation at Different Levels

Name/Date/Place	Discussions/Major issues	Consensus	Mitigation measures - Input to technical design
<p>State Level Ajay Rastogi, IAS, Special Secretary, Department of Environment and Forests 18.01.2017; Ranchi</p>	<p>The meeting team discussed on the Jharkhand Municipal Development Project (JMDP) and proposed sub-projects in water supply, storm water drainage and road sectors and sought his suggestions on environmental issues to be addressed in the Environmental and Social Management Framework. Special Secretary suggested proposing alignment of projects in such a way that tree cutting is minimised, especially for water supply projects, sub surface pipeline may be considered. Order No: 3503/2014 passed by Jharkhand High Court is to be referred for guidelines on tree cutting. Application may also need to be submitted to High Power Committee headed by Chief Conservator of Forests, Ranchi in this regard. List of environmental parameters in municipal areas is to be collected from JSPCB. Necessary measures are to be adopted to minimise SPM emissions from construction sites/transport of construction of material</p>	<p>ESMF and ESIA would be shared. All statutory guidelines and order to be followed. Environmental parameters in municipal areas are collected. ESMP would be shared with the Department.</p>	<p>Minimising environmental impacts by consultation with the DPR Consultant. ESMP would be a part of the Bid Documents.</p>
<p>Sanjay Kumar Suman, IFS, Member Secretary, Jharkhand State Pollution Control Board 18.01.2017; Ranchi</p>	<p>The meeting team appraised the Member Secretary on JMDP and proposed sub-projects in water supply, storm water drainage and road sectors and sought his suggestions on environmental issues to be addressed in the Environmental and Social Management Framework.</p>	<p>The applicability related to Consent to establish and consent to operate was issued.</p>	<p>ESMP to be added in the bid document.</p>
<p>Smt. Himani Pandey, IAS, Secretary, Welfare Department 14.01.2017; Ranchi</p>	<p>Meeting team appraised Secretary on Jharkhand Municipal Development Project (JMDP) and proposed sub-projects in water supply, storm water drainage and road sectors and sought her suggestions on environmental and social issues to be addressed in the Environmental and Social Management Framework. She suggested to reconfirm and validate the ROW and vendor compensation should be carried out as per the national laws and guidelines</p>	<p>ESMF and ESIA would be shared. The RAP and ESMP would be displayed in the Welfare Office notice board. The GRC committee Contact Details would be displayed.</p>	<p>DPR consultant was asked to review the RoW details. Initiation for formation of GRC.</p>
<p>Praveen Kumar Toppo, Labour Commissioner, 23.01.2017, Ranchi</p>	<p>The meeting team appraised the Labour Commissioner on JMDP and proposed sub-projects in water supply, storm water drainage and road sectors and sought their suggestions on environmental issues to be addressed in the Environmental and Social Management Framework.</p>	<p>ESMF and ESIA would be shared. The ESMP would be available in the public domain.</p>	<p>ESMP to be added in the bid document. All the labour rules would also be part of the bid document</p>
<p>Prabhat Kumar, Labour Commissioner, 23.01.2017, Dhanbad</p>	<p>The meeting team appraised the Labour Commissioner on JMDP and proposed sub-projects in water supply, storm water drainage and road sectors and sought their suggestions on environmental issues to be addressed in the Environmental and Social Management Framework.</p>	<p>ESMF and ESIA would be shared. The ESMP would be available in public domain.</p>	<p>ESMP to be added in the bid document. Place for construction of labour camp is to be identified.</p>

Name/Date/Place	Discussions/Major issues	Consensus	Mitigation measures - Input to technical design
<p>Amarinder Pratap Singh, IAS, Principal Secretary, Ministry of Drinking Water and Sanitation 23.01.2017; Ranchi</p>	<p>The meeting team appraised the Principal Secretary on JMDP and proposed sub-projects in water supply, storm water drainage and road sectors and sought their suggestions on environmental issues to be addressed in the Environmental and Social Management Framework. New source may be identified Ranchi Water Supply project to improve source sustainability Air pollution threat at construction sites to be handled adequately Rain water harvesting to be encouraged in all the projects to improve source sustainability in water supply projects Mines Department may also be consulted for availability of sand during construction of the projects</p>	<p>ESMF and ESIA would be shared. The ESMP would be available in public domain. Rain water harvesting plan is to be shared with the department.</p>	<p>Rain water harvesting provision is being considered in the outlet ponds. ESMP to be added in the bid documents. Proper plan for withdrawing underground water or surface water for construction is reviewed. All departments including Mines are intimated about the broad perspective of the project.</p>
<p>Ashok Kumar / Yogender Sharma, Chief Engineer / Member, Monitoring Cell -Water Resources Department 25.01.2017; Ranchi</p>	<p>The meeting team appraised the Chief Engineer and his team on JMDP and proposed sub-projects in water supply, storm water drainage and road sectors and sought their suggestions on environmental issues to be addressed in the Environmental and Social Management Framework. Chief Engineer has suggested that source sustainability has to be given importance for water supply projects. He then directed Mr. Yogender Sharma to provide feedback in the questionnaire provide by the team.</p>	<p>ESMF and ESIA would be shared. The ESMP would be available in public domain.</p>	<p>The DPR Consultants were asked to give source sustainability importance for water supply projects.</p>

Name/Date/Place	Discussions/Major issues	Consensus	Mitigation measures - Input to technical design
<p>City Level RRDA Building, Dhanbad, Various department of Dhanbad municipality Councillors, Ward Councillors, Ward Date: 31.01.2017; Dhanbad</p>	<p>Provisions of toilets/ urinals should be kept while building the road Trees should be planted as per national and international rule & guidelines. The exact details would be known only after the survey. Parking facilities should be provided where roads are widened, there should be parking points. Social Impacts will be known only after the survey has taken place 15 years old diesel cars should be replaced with new ones For dust reduction sprinkler system should be installed The roads are being made 4 lanes if there is space the project should try making the road 6 lanes. Since some of the roads are extremely congested, we feel that flyovers will help in reducing congestion. Foot-over bridges should be constructed at specific positions for pedestrian to cross Flyovers should be constructed at important junctions after the main congested zones are mapped. The small roads connecting the main roads should have flyovers Instead of constructing speed breakers on the main roads, more emphasis should be given in constructing the speed breakers in lanes and bye-lanes Discussions are to be done regarding the rehabilitation of markets lying along the road. Schemes of underground markets are to be proposed. Similarly, cars that are parked on the road creates lot of congestion, underground parking scheme should be proposed. At multiple crossing (2 lane, 3, 4 or 5 lane crossing) points a specific type of traffic movement occurs and one should analyse it to understand the congestion Drains should be designed in such a manner that they are not deep. This will reduce accumulation of water. Whatever the amount of trees that will be felled one should plant at least double the amount.</p>	<p>As per provision of ESMP Trees should be planted. All CPRs, waiting sheds, public toilets would be replaced. Scope of land acquisition is minimum so there would be construction within the available RoW. Safety measures would be a part of ESMP and bid document. Temporary Impacts will be a part of RAP which would be disclosed in websites and other media.</p>	<p>ESMP is to review to accommodate all aspects of environment and safety. The DPR Consultants were asked to include COI in their drawings.</p>

Name/Date/Place	Discussions/Major issues	Consensus	Mitigation measures - Input to technical design
<p>Nagar Nigam Conference Hall, The Chairman, Executive Engineer, Temple department and various ward councillors of Basukinatha nagar nigam official Date: 01.02.2017; Basukinath</p>	<p>Discussion on purpose of the consultation Detailing out what the ESMP entails and what kind of information would be required specific to Basukinath water supply. Presently on ward no 3 completely and parts of ward no. 7&8 have piped water supply. The Chairman then further added to the discussion by detailing out the salient features of the project and how it is expected to benefit the people. While the water supply project is expected to supply water to all the households he said an added advantage would be that the existing water supply system wouldn't be decommissioned but would act as a supplementary system when required. All the land required for this project is government land and NOC's are in place The various representatives wanted to know if studies had been carried out to assess if the river can supply water to all the households for the projected period of 25yrs. They were concerned since the existing system has water issues during summer The existing water charges for each connection (residential/commercial) is Rs.400/month and the onetime charges for getting a connection is Rs.4000. BPL families get free water. Presently O&M is the responsibility of the PHED and providing connections and collecting water charges the responsibility of the nagar panchayat. People as such don't face shortage of water like in other areas since they have enough wells to source water. Water wastage is an issue since people don't close the taps properly as is seen in the public water vats found around the city. So they felt user charges and campaign on efficient and safe usage of water would help Construction activities would have to be carried out prior or after the Shravan festival when more than a lakh people visit Basukinath everyday Everyone was of the opinion that the project would help the people. The temporary impacts that may occur during construction wouldn't be a major problem as activities like excavation can be done in small lengths in a phased manner so as to not cause major disruption to people's daily lives.</p>	<p>The cost of water connection is not fixed till now. As per the DPR, targets is there to cover all the wards.As per provision of ESMP Trees should be planted. All CPRs, Waiting Sheds, Public Toilets would be replaced. Scope of Land Acquisition is minimum so there would construction within the available RoW. Safety measures would be a part of ESMP and Bid document Temporary Impacts will be a part of RAP which would be disclosed in websites and other media. Construction during Shravan would be avoided.</p>	<p>ESMP is to review to accommodate all aspects of Environment and Safety. DPR Consultant to review the intake sustainability. Construction during Shravan would be avoided. The DPR Consultants were asked to include COI and Property Line in their drawings</p>

Name/Date/Place	Discussions/Major issues	Consensus	Mitigation measures - Input to technical design
<p>District Commissioner's Office, Municipal Commissioner, Various departments of Deoghar Municipality and ward councilors Date: 04.02.2017; Deoghar</p>	<p>Discussion on ESMF Key activities and methodologies that will be carried out while conducting the ESIA studies. Relevance of soil, water and air testing for the water supply project All the ward members will act as a facilitator to realise the ESIA activities Discussion on whether the water entering the ponds will be purified. Respective provisions of pure waters entering the ponds should be there The flowers and all accessories used for worship are dumped in the drain – hence the water requires thorough cleaning before entering into the reservoirs Discussion on the existing drainage system of the city.</p>	<p>ESMF and ESIA would be shared. The ESMF would be available in public domain. All CPRs, Waiting Sheds, Public Toilets would be replaced. Scope of Land Acquisition is minimum so there would construction within the available RoW. Safety measures would be a part of ESMF and bid document Temporary Impacts will be a part of RAP which would be disclosed in websites and other media. Construction during Shravan would be avoided.</p>	<p>ESMP is to review to accommodate all aspects of Environment and Safety. Construction during Shravan month would be avoided. To hold back the Flowers and other material for easy maintenance, the drain design is to review The DPR Consultants were asked to include COI and Property Line in their drawings.</p>
<p>Vivaha Mandal, The chairman, Ward councilors , SDO, BDO Date: 02.02.2017; Hussainabad</p>	<p>Discussion on ESMF Key activities and methodologies that will be carried out while conducting the ESIA studies. Relevance of soil, water and air testing for the water supply project Thorough coordination should be done with the executive officer. All the ward members will act as a facilitators to complete the ESIA activities If new wards are developed, whether they will be the beneficiary or not Discussion on the presence of rock at the inlet point there by reducing the depth and how to tackle the situation Discussion on the existing drainage system of the city</p>	<p>As per provision of ESMF Trees should be planted. All CPRs, Waiting Sheds, Public Toilets would be replaced. Safety measures would be a part of ESMF and bid document . Temporary Impacts will be a part of RAP which would be disclosed in websites and other media. The Land for the intake line to be reviewed</p>	<p>ESMP is to review to accommodate all aspects of Environment and Safety. DPR Consultant to review the intake sustainability. The intake point and transmission line to be clarified as there is no Land Acquisition whatsoever. The DPR Consultants were asked to include COI and Property Line in their drawings</p>

Name/Date/Place	Discussions/Major issues	Consensus	Mitigation measures - Input to technical design
<p>Local Level Different Location on selected Dhanbad Road during February to March 2017; Dhanbad</p>	<p>In road 11 the quantum of impacted persons is less. Most of the people are squatters (residential/commercial/ residential-commercial). In road 12 there is likely impact on mobile hawkers and the boundary wall of some of the houses / buildings. Roadside parking places will be impacted too. Road 13 will impact mostly commercial encroachments and stationary and mobile hawkers. It is expected that one stretch will be closed during construction but an alternate road to divert traffic exists. Road 14 densely populated stretch Road 15 reclaiming the RoW will bring the road to the edge of some of the residential walls thereby making safety and security an issue. Also many of the encroached building have their entrance steps on the RoW thereby resulting in access issues to these buildings once the land is reclaimed. Some of the buildings will lose their extended balconies at the first and second floor levels. These balconies act as corridors of access to the shops and offices there. Therefore these enterprises will also lose their access and if alternate access points are not available the buildings may be rendered redundant. Road 16 densely populated in stretches. Will impact some residential structures. Existing parking spaces on the road will be lost Construction debris and dust requires management Reptiles and bird will affected the most due to tree loss Nagar Nigam with Sanmam has already carried out the survey and they are developing a plan on hoe to relocate them. There are 14 places identified, where the vendors can be relocated, To perform the relocation of the vendors the Nagar Nigam, consents are taken from the relevant vendor associations. No ponds or wetlands are affected due to the above activities Around 7000 to 8000 trees will be felled or transplanted. Alternate access to be provided before construction activity. For each tree felled the forest department has guidelines to plant 5 to 10 trees.</p>	<p>In all the roads the available RoW is to utilised. There would be no Land Acquisition. The Squatter and the Encroachers mainly Hawker, Kiosk and other commercial entities would be provided compensation and assistance. Temporary Impacts and Safety would be mitigated. There is provision of Training for skill development for PAF. CPR would be replaced on the land identified by Community. ESMP and RAP</p>	<p>Minimise the typical cross section for minimum impacts. Avoid the temples and statue in the DPR or make provision to relocate it in proper place. The DPR Consultants were asked to include COI and Property Line in their drawings</p>

<p>Basukinath Water Supply, FGD at places in different Location during February to March 2017; Basukinath</p>	<p>The water source is River Mayurakshi. A complete new water supplying infrastructure is to be developed and the old retrofits are to be removed. The lanes within the Wards vary between 10 to 14 ft. in width. The pipes will be laid on both the sides. There is no problem in the water quality but water test is yet to be done. There has been no epidemic in the recent past. Currently there are sufficient hand pumps to provide water to the communities. Once the pipelines are installed the hand pumps will be removed. Metering system is preferred. At present for every connection the following water taxes are collected:</p> <ul style="list-style-type: none"> ▶ INR 180 for private ▶ INR 120 Residential <p>At present the existing connection receives 2 to 3 hours of water and the rest is available water from the hand – pump. Awareness building has been created through paper advertisements. The new pipe line covers all 10 wards. As the pipe will provide water to all houses. EIA and SIA of all the arterial pipeline of the arterial pipes are to be done. Safety issues has to be considered while laying the pipes. Pipes form water and drains should be separated at a distance that leakages do not impact on water supply. The water supply should be able to cater to the high floating population of 50 thousand to 1 lakh per day during Shrawan Mela as also the 5 to 10 thousand pilgrims per day on other months which is generally for "Sparsh Puja". Land is yet to be selected to relocate shop vendors. The construction will take about 2 years and execution needs to be planned meticulously. All agreed that robust consultation is required with the residents as it will involve high level of temporary inconvenience. There are no land acquisition. Drinking water pipe and drainage pipes are very close. So the design should be such that a minimum distance is there and the pipes should be laid in parallel to each other. The average family size is 5. Water supply projection is calculated based on the 100 % population projection for the next 25 years and floating population. The town is not expected to grow into a city. But since the population is increasing and it's a religious site the tourism activity will increase. Hence railways and roadways are to be improved for better connectivity. Land for WTP, ESRs and intake have not been demarcated on the ground.</p>	<p>ESMF and ESIA would be shared. The ESMP would be available in public domain. All CPRs, Waiting Sheds, Public Toilets would be replaced. Scope of Land Acquisition is minimum so there would construction within the available RoW. Safety measures would be a part of ESMP and Bid document. Temporary Impacts will be a part of RAP which would be disclosed in websites and other media. Physical demarcation of WTP, ESR would take place. Rigorous Environmental and Social monitoring during the construction period would be part of the project.</p>	<p>The DPR Consultant to review the land available in the RoW, the COI is to be defined in the drawing, provisions for the floating population during the month of Shrawan should also be considered and Water pipelines should be away from the drains. The DPR Consultants were asked to include COI and Property Line in their drawings</p>
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<p>Khunti Water Supply, FGD at different locations during February to March 2017; Khunti</p>	<p>The objective is to provide piped water to all residents in Khunti through the proposed project. At present, Ward Nos. 2&3 are served fully and partially served in Ward Nos. 3, 4 & 5. The present tariff is Rs. 120 per month per household and commercial establishments. The households wanting a connection have to buy pipes and pay for plumbers for extending the connection to their residences from the nearest node. All APL households have to pay Rs. 4000/- for this. The Mason deputed by the ULB guides on this. However, those who are BPL are provided free connection. However they will pay the monthly amount as mentioned above. There is an Office Order promulgated in 2015 to this effect. For new water infrastructures, more technical people will be required for uninterrupted 24X7 supply. More plumbers will need to be trained. 135 lpcd for urban and 90 lpcd for rural areas is provided now and the same has been considered both for households and commercial establishments in the proposed plan. Most people do not know about the project. All agreed that robust consultation is required with the residents as it will involve high level of temporary inconvenience. Some of the structures on the main road which is NH 75 and the shops and hawkers will be affected during works. The width of the lanes within the Wards vary between 6 and 10 ft. The pipes will be laid on both the sides depending on how the houses are located. The construction will take about 2 years. All vendors in Khunti have a license for operating. Khunti has achieved ODF status. Occupation of the people here is mixed – farmers (more in Ward 8), shop keepers, vendors and holding jobs. Water supply is now ULB's responsibility, technical support is provided by the JEs of PHED. Drains are open, hence pipelines close to the drains are vulnerable to contamination if there is any leakage. It was suggested that we meet with the Secretary of the Vendors' Committee. The DC is the Chairperson of this committee. A vendors' zone is being created where all vendors are to be shifted. The water supply services are transferred under the ULB from the PHED department. The ULB have appointed a full time junior engineer to look after the technical aspects. There are 3 plumbers who aids the ULB. But proper training is not provided to the plumber. Currently drainage and water supply pipes are laid down in a haphazard manner. No specific distance is maintained and there are stretched where the two pipes are very close. The land for WTP, ESRs and intake well have not been pegged or demarcated on ground.</p>	<p>ESMF and ESIA would be shared. The cost of water supply is not fixed. The ESMF would be available in public domain. All CPRs, Waiting Sheds, Public Toilets would be replaced. Scope of Land Acquisition is minimum so there would be construction within the available RoW. Safety measures would be a part of ESMP and bid document. Temporary Impacts will be a part of RAP which would be disclosed in websites and other media.</p>	<p>The DPR Consultant were asked to review typical cross section for minimum impacts. Avoid the temples and statue to relocate it in proper place. The DPR Consultants were asked to include COI and Property Line in their drawings</p>
<p>Hussainabad Nagar Panchayat. FGDs at different location</p>	<p>The proposed plan will supply water to all households.</p>	<p>ESMF and ESIA would be shared.</p>	<p>The DPR Consultant should confirm the RoW.</p>

Name/Date/Place	Discussions/Major issues	Consensus	Mitigation measures - Input to technical design
<p>during February to March 2017; Hussainabad</p>	<p>Households are provided 135 lpcd and charged 120/- per month and have to pay 4000/- for laying of pipes from the supply node, plumber charges, etc. The BPL families pay the same monthly charges as others but the connection is free. Since all households will be connected, the temporary impacts of construction will be felt all over Hussainabad. The vendors will be affected during this period for laying of the main pipe from the source to the WTP. There is a Vendor Committee. The space by the main road is used by vendors which is auctioned every year. The present leaseholder is Mr. Kasab who paid 2 lakhs for the space and has rented the space out to vegetable vendors. Visit to the source revealed a dilapidated pumping room with leaking water from the pipe joints. At the WTP site, the filth and poor housekeeping was glaring. The staff employed were using lime and chlorine for water purification but did not seem to know the ratios and proportions related to use. Since this will not be decommissioned, from health perspective of the citizens it could be vulnerable. The profile of the area is feudal where in Mr. Chandan Singh seems to be an important person and husband of the Ward Member, owning large landholdings. The clarity of the WTP site area could not be clearly identified due to lack of demarcation at the ground level. A part of Mr. Singh's inherited land was vested during the land ceiling process in 1956 but remained under his control or 'kubzaa', which he relinquished for WTP. There is a need for the Amin to be called in for clarification of land boundary here. Many land parcels here were seen under cultivation in the vicinity. As understood from discussions, that these cultivated portions are partly within the WTP site and partly outside but under Mr. Chandan Singh's control. The road leading to the WTP site has not been considered. Land for ESR, intake well, WTP not demarcated on ground.</p>	<p>The cost of water supply is not fixed. All CPRs, Waiting Sheds, Public Toilets would be replaced. Scope of Land Acquisition is minimum so there would be a part of ESMP and bid document. Temporary Impacts will be a part of RAP which would be disclosed in websites and other media.</p>	<p>The DPR Consultants were asked to include COI and Property Line in their drawings. Planning for rigorous monitoring is part of the project.</p>

Disclosure of Project Information

160. Sharing of information is essential for sustainable development. It stimulates public debate and broadens the understanding of development issues and, enhances transparency and accountability in the development process. It also strengthens public support to improve the lives of people, facilitates collaboration among the many parties involved in development, and improves the quality of projects and programs. It is now accepted everywhere that the expanded access to information by the public will enhance the dialogue on development, and make an important contribution to efforts to reduce poverty and promote sustainable development. In this development project the disclosure of project information (during the feasibility stage) to the public in general and to the people who are likely to be impacted negatively in particular, have been done through publicconsultation. During publicconsultation sessions, it was observed that the local people were aware of this project byinformation disclosed from from time to time throughlocal newspapers.

161. To maintain transparency in planning and for active involvement of PAPs and other stakeholders, the project information will be disseminated through information sharing aspresented in **Table 43**.

Table 43: InformationSharingatDifferent Sub-project Stages

Project stage	Type of information and reports	Medium/Channel	Target recipient
Design/Planning	Detailed project information, ESIA, ESMP, RPF and Executive Summary of ESMF in English, Hindi and vernacular languages (as required)	Website, television, print media, loud speaker announcement,workshop s, meetingsand hard copy at notice board at designated places	PAPs and beneficiaries,Govern ment departments,NGOs and associations
Sub-project implementation	Final design, ESMP, RAP, STPP, construction plan, process of disbursement and GRC. Monthly, quarterly, Bi annually and yearly reports, Safeguard Audit report.	Website, television, print media, loud speaker announcement, workshops, meetings and hard copy at Notice Board at designated places	PAPs and Beneficiaries., Government departments, NGOs and Associations
Operation	Environmental quality monitoring parameters and reports, benefits available under sub-project, connection charges, etc.	Website, television, print media, loud speaker announcement, workshops, meetings and hard copy at notice board at designated places.	Beneficiaries and Government Departments

The details of disclosure of draft ESMF and three ESIAs areprovided in Chapter 11, “Monitoring and Supervision”.

162. In addition, all above documents for each sub-project will be submitted to the World Bank for approval and disclosure.

6 Assessment of Impacts

6.1 POTENTIAL ENVIRONMENT AND OCCUPATIONAL HEALTH AND SAFETY IMPACTS DUE TO SUB-PROJECT TYPOLOGY

- 163.** While JMDP aims to provide critical infrastructure required for the municipal towns in Jharkhand which include water supply, sewerage, drainage and urban roads, which will likely lead to overall improvement of quality of life in these cities. Hence, from the project development objective, it can be seen that this project and the sub-project would yield positive and beneficial impacts on the target population. However any and all development interventions will also have negative impacts especially associated with construction activities in already congested and populated urban areas. Keeping in the view, the likely positive and negative impacts are listed in Table 44. The significance of these impacts would vary depending on the individual sub-projects, its size, duration of impact and location. However, adverse impacts, if any would be minimum, localised and largely reversible, negative impacts if any would be mitigated and capacity building initiatives to mitigate any future risks will be undertaken.
- 164.** The environmental impacts identified at this stage are preliminary in nature and will need to be further elaborated and potential for occurrence has to be ascertained during further stages of sub-projects ESIA's. The potential impacts are identified during various stages of the project location, design, construction and operation as their potential nature, extent, duration and severity differs between the nature of projects and stages.
- 165.** Environmental management measures for impacts from pre-construction and construction activities including site clearance, earthworks, civil works, etc. are presented in Annexure VIII. Project interventions involving construction activities include site clearance prior to initiation of construction activities, trees being retained in the project area as long as they do not present a safety hazard. If trees are to be removed from the corridor of impact and/or construction sites, it will be done before commencement of construction with prior intimation to the Forest department or competent authority, and the requisite measures for compensatory afforestation, disposal of cut trees would be ensured. Where appropriate transplantation of trees will also be supported under the project.
- 166.** Environmental screening undertaken at the design stage of sub-projects would ensure that infrastructure components identify and avoid larger area of forest lands, or areas with very dense cover of trees. Care will also be taken to avoid the forests in the alignment of

pipelines. However, in case it is essential and unavoidable, all necessary mitigations measures will be integrated in the project design and permissions will be taken from appropriate authorities. Diversion of land from sensitive environmental areas shall be avoided to the extent possible and minimised, although in case it is unavoidable measures to mitigate impacts arising from such diversion of forest land, measures to safeguard the area (like natural habitat management plan) shall be carried by JUIDCO in both construction and operation stages of the project.

- 167.** Detailed traffic control plans will be prepared by contractor in consultation with JUIDCO with the help of the local traffic police and ULB prior to commencement of works. The traffic control plans shall contain details of temporary diversion, details of arrangement for construction under traffic, details of traffic arrangement after cessation of work each day, safety measures for transport of hazardous material and arrangement of flagmen, markers, barricades. Special consideration will be given to traffic control plans for safety of pedestrians and workers at night. It needs to be ensured that the diversion/detour is always maintained in running condition, particular during monsoon to avoid disruption to traffic flow. All vehicles delivering materials to the site will be covered to avoid spillage of materials. All existing roads used by construction vehicles need to be kept clean and clear of all dust /mud or other extraneous materials dropped by such materials.
- 168.** The construction techniques of the envisaged sub-projects typologies would involve standard techniques of civil works; however, many towns in Jharkhand, and as seen in the case of Dhanbad, are densely populated areas congested with pedestrians, unorganised traffic and commercial activities. This may result in adverse impacts due to the implementation of excavation works for water pipes, drainage lines and sewers, and road widening activities. As construction activities, would be implemented in a phased in a manner, these impacts are likely to be localised, and transitory in the urban areas, and cause localised impacts such as (i) increase in noise, dust, and impacts on air quality; (ii) temporary water quality impacts resulting from possible drainage and sewage pollution; and (iii) temporary changes in access to, and the use of, public spaces during construction/excavation works. All sub projects will be screened for such impacts, and impacts on sensitive receptors will be avoided or to the extent feasible.
- 169.** Construction equipment and machinery such as crushers, hot mix plants and batching plants would be located away from sensitive environmental areas and from town/city to avoid air and noise impacts. Specifications of the machinery need to comply with the regulations to avoid air and noise impacts. Specifications of the machinery need to comply

with the requirements of the relevant current emission control legislations. In case of other construction vehicles, equipment and machinery, the discharge standards promulgated under the EPA, 1986 will be strictly adhered to and shall conform to the relevant Bureau of Indian Standard (BIS) norms. Noise limits for construction equipment to be procured such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws will not exceed 75dB(A) , measured at 1m from the edge of the equipment in free field , as specified in the Environment (Protection) Rules, 1986.

- 170.** Construction stage activities will give rise to waste from construction debris, domestic waste from camps, debris generated due to dismantling/demolition of existing facilities. These shall be suitably be reused in the proposed construction. Unutilised debris materials shall be disposed of at pre-designated disposal locations in agreement with the ULB. Debris generated from the pile driving or other construction activities shall be disposed such that it does not flow into the surface water bodies or form mud puddles in the area. The ESMF provides guidance for development of a comprehensive waste management plan in Annex XVIII to be developed by the contractor and monitored by JUIDCo.
- 171.** Jharkhand contains number of protected and unprotected monuments, temples and ponds in urban areas that have cultural and historical importance. Sub-projects would be designed to avoid impacts on these protected monuments, and additional precautions during the construction phase of the sub-projects would be taken not to affect these structures and to ensure the appropriate treatment of physical cultural resources; and, in case. In the event that excavation activities uncover previously unknown relics in these areas, a procedure for handling chance finds detailing the plan of action in the event of such an encounter has been outlined in Annex XIV.
- 172.** Occupational health and safety issues will arise during the construction phase. To prevent any incidents during the construction phase, an occupational health and safety management plan, including emergency response plan will be developed with emergency procedures in the event of any accidents. All personnel/ contractors staff will use PPE (appropriate gloves, safety glasses/face shield, appropriate clothing) and will be trained on OHS issues and environmental impacts in construction.
- 173.** The operational phase of the road projects may lead to incremental increase in noise and air pollution level. Improved road surface, less congestion and free movement of vehicles may lead to better of environmental conditions in the city. Implementation of water supply projects where previously there was no coverage will result in incremental increase in

domestic wastewater generation which may result in increase of water pollution/community hazard in absence of proper sewerage infrastructure.

Table 44: Environment Impacts Anticipated for Typology of Sub-projects

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
Water supply	<p>i. Aesthetic and visual impacts on land use, aesthetics and visual due to site clearing, ground levelling, and installation of the various WTP plant structures and establishment of plant building (manufacturing block, warehouse, office etc.,) and utilities which will bring permanent change to the local land use of the site.</p> <p>ii. Water quality impacts due to run-off from storm water, from site construction activities, which may include pollutants, suspended solids from excavation or dredging and/or oil and grease from mechanical equipment operation. Such runoff may pollute the receiving waters when entering the river environment.</p> <p>iii. Impacts on water quality, local ecology due to dredging in case water source is a pond/lake that needs to be dredged, or</p>	<p>▶ Without proper mitigation/control measures there is possibility of following impacts (i) Water logging due to leakage during O&M (ii) Improper storage of chemicals (such as Chlorine gas) can cause safety risk to operators. (iii) Improper disposal of WTP sludge can cause soil and water contamination ▶ Impacts on community health and safety due to cross contamination, excessive algal growth in storage reservoir, use of wrong dosage in treating water, and discharge of backwash water without treatment to nearby community or surface water body used by community ▶ Reduced downstream flow without proper water balance carried out during water allocation process. ▶ Increase in ambient noise level due to operation of pumping, treatment plants, and DG sets without acoustic enclosure ▶ Improper onsite storage of domestic waste in staff quarters can give rise to odour nuisance, vermin and pests.</p>	<p>▶ Supply of sufficient quantity and quality of clean water to the dependent community. ▶ Time and labour saved by reducing distance to fetch water. ▶ Reduce risk of water borne diseases to the city due to availability of safe and clean water quality. ▶ Less conflict at water points.</p>	<p>▶ Development of vegetative belt along the water treatment plant for controlling noise from DG sets and pumps ▶ Backwash water to be reused in system.</p>

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<p>change in local drainage patterns due to the construction</p> <p>iv. Tree cutting and vegetation loss due to cutting of small shrubs and trees</p> <p>v. Impacts on traffic and CPRs</p> <p>vi. Increased road traffic due to interference of construction activities</p> <p>vii. The construction of water supply mains may involve obstruction of traffic flow wherever the width of the road is less.</p> <p>viii. Impact on accessibility and movement around public and private properties and other sensitive receptors along the water supply lines during construction</p> <p>ix. Soil environmentImpacts on soil environment due to construction of labour sheds and movement of heavy machinery and excavate</p> <p>x. Air quality in and around the project site would be impacted to some extent due to construction related activities such as site levelling, excavation, construction material</p>	<p>▲ Risk to community health and safety due to emergency flow in case of pump failure, the electrical power supply interruption, mechanical failure of primary, secondary and tertiary treatment units, disinfection units, as well as blockage of river outfall.</p> <p>▲ If water supply alignments are incorrectly sighted, contamination of seepage from laterines, municipal wastes can give rise to water borne diseases.</p> <p>▲ High energy demand for pumps in booster stations.</p>		

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<p>handling etc. Fugitive dust emissions would arise from excavation work, digging, stacking of soils, filling, handling of construction material, transportation of material, emission due to movement of tyres and plying of heavy construction machinery.</p> <p>xi. Ambient noiselevels during construction will increase due to use of heavy machineries and vehicles during construction and demolition, and operation of D.G. sets.</p> <p>xii. General construction related impacts without proper mitigation/ control measures possibility of the following impacts.</p> <p>xiii. Contamination of soil, surface and ground water from hazardous substances such as used oil fuel, cement waste, etc.</p> <p>xiv. Chances of safety risks due to open excavations, storing of lubricants and hazardous material on site.</p> <p>xv. Depletion of ground water level due to pumping of</p>			

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<p>ground water for construction purpose.</p> <p>xvi. Impact on surface water quality due to pumping of storm water from pipe trenches and foundations to the ditches.</p> <p>xvii. The materials supply and disposal will generate circulation of trucks. This may lead to traffic congestion and temporary road closures & increase risk of accidents.</p> <p>xviii. Potential impact owing to the escape/discharge of untreated sewage into the nearby land or drain from labour camp.</p> <p>xix. Potential OHS risks to workers owing to improper handling of chemical wastes, construction activity.</p>			
Storm water drainage	<p>▲ Potential impact on topography due to excavation activity.</p> <p>▲ Health and safety concerns of workers while working in closed drains.</p> <p>▲ Impact on public private properties and other sensitive receptors along the storm water drains during construction.</p>	<p>▲ Storm water mixing with sewage and industrial effluent may lead to foul odour, which may affect communities residing nearby the drain.</p> <p>▲ Clogging of drains with soil, silt and garbage and pollution due to improper maintenance.</p> <p>▲ In the absence of inadequate management /cleaning of drains by ULB, stagnation of water may</p>	<p>▲ Protect the health, welfare and safety of the community from flood hazards by safely routing and discharging stormwater.</p>	<p>▲ Development of foot paths over the drains to protect the drain and offer add on facilities.</p> <p>▲ Providing groundwater recharge facilities in the drain to ensure re-use.</p> <p>▲ Rain water harvesting system.</p> <p>▲ Rehabilitation of culverts</p>

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<ul style="list-style-type: none"> ▶ Changes in land use , and local drainage patterns due to the construction. ▶ Disruption to local traffic during construction. ▶ Disposal of excavated silt from existing drains has to be done at designated landfill site, using only mechanical means of cleaning, else it could lead to health an ssafety impacts on workers. ▶ Impacts on land use and landscape due to site clearing and ground levelling. ▶ Impacts on soil environment due to construction of Labour sheds and movement of heavy machinery and excavate. ▶ Incremental increase in ambient air quality, noise levels and vibrations due to construction phase. ▶ Increased road traffic due to interference of construction activities. ▶ Increase in suspended sediments and turbidity levels from dredging and disposal operations. ▶ Without proper mitigation/ control measures possibility of the following impacts: <ul style="list-style-type: none"> i. Contamination of soil,surface and ground water from hazardous substances such 	<p>take place, which may lead to mosquito breeding grounds and other water borne diseases which may affect community health and aesthetic of the area.</p> <ul style="list-style-type: none"> ▶ Dumping of solid waste in drain may lead to flooding of low lying area during monsoon season affecting community residing in those areas. ▶ Mixing of discharges of human waste, wastewater or other substances in storm water drain may result in water borne diseases. ▶ Drainage maintenance work, including dredging, can have impacts to water quality if not conducted routinely. 		<ul style="list-style-type: none"> ▶ Enhancement of water bodies ▶ Aestehtic improvements of natural drains in the cities.

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<p>as used oil fuel, cement waste, etc.</p> <ul style="list-style-type: none"> ii. Soil and water contamination due to improper disposal of excavated material, construction and demolition wastes. iii. Chances of safety risks due to open excavations, storing of lubricants & hazardous material on site. v. Depletion of ground water level due to pumping of ground water for construction purpose. vi. Impact on surface water quality due to pumping of storm water from trenches. vii. The materials supply and disposal will generate circulation of trucks. This may lead to traffic congestion and temporary road closures and increase risk of accidents. ▲ Potential impact owing to the escape/discharge of untreated sewage into the nearby land or drain from labour camp. ▲ Potential OHS risks to workers owing to improper handling of chemical wastes, construction activity. ▲ Improper barricade may lead to community health and safety risk. ▲ Access to cultural property/private property will be 			

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	affected due to blockage of access road.			
Roads	<ul style="list-style-type: none"> ▲ Aesthetic and visual impacts on land use and landscape due to site clearing and ground levelling. ▲ Impacts on soil environment due to construction of labour sheds and movement of heavy machinery and excavation. ▲ Loss of vegetation due to tree felling and vegetation clearing in the case of new roads and road widening ▲ Incremental increase in ambient air quality, noise levels and vibrations due to construction activities, machinery and vehicular movement ▲ Slow movement of traffic due to barricading, diversion and interference of construction activities ▲ Disturbance to other utilities/services during construction without proper mitigation/ control measures possibility of the following impacts: 	<ul style="list-style-type: none"> ▲ Increase noise and air pollution resulting from traffic volume ▲ Without proper safety measure, accident risks associated with increased vehicular traffic, may lead to accidental spills of toxic materials and loss of life. ▲ Increase risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road. ▲ Risk of accident and travel time for local community due to lack of crossings. ▲ If adequate provision is not given to natural drainage, there may be stagnant pools of water forming. ▲ Increased run-off and flooding in the absence of road side drains. 	<ul style="list-style-type: none"> ▲ Accident rates may improve following improvement in road geometry and pavement. Paving a gravel road will improve visibility, reduce braking distances and have road signs installed where none existed. Although speeds are expected to increase, there is evidence that overall, paving a gravel road reduces accident rates and fatalities. ▲ Reduced vehicle wear/ tear. ▲ Reduction in travel time. ▲ Polluted and congested core city areas/heritage areas would be experiencing better environmental quality 	<ul style="list-style-type: none"> ▲ Plantation and development of vegetative belt along the alignment. ▲ Enhancement of physical and cultural properties. ▲ Solar lighting. ▲ Rehabilitation plan for quarries/borrow areas into productive use of land. ▲ Use of alternate material like fly-ash bricks and re-use of construction debris. ▲ Providing cycle lanes. ▲ Use locally available construction material. ▲ Road safety enhancement. ▲ Noise barriers. ▲ Adequate street lighting. ▲ Creation of toilets and bus shelters. ▲ Providing cattle crossings.

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<ul style="list-style-type: none"> i. Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site. ii. Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction. iii. Increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing. iv. Increase in construction debris especially when existing roads/pavements need to be broken and bituminous waste needs to be disposed of. ▲ Impact to community health safety noise and vibration due to civil works, hazardous driving conditions where construction interferes with pre-existing roads. ▲ Traffic diversion, nuisance, and congestion due to improper mitigation measures. ▲ Utility re shifting – issue and inconvenience caused to dependent communities. ▲ Impact to cultural property due to blockage of access road. ▲ Impact due to the removal of topsoil during roadconstruction 		<p>than before the project implementation due to better organisation, parking facilities , traffic mamangeemt and better paved surfaces of roads leading to improvements in air and noise quality</p> <p>▲ Pedestrian safety would also be improved with the implementation of the project.</p>	

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<p>and from storing, stockyards, workers camp.</p> <ul style="list-style-type: none"> ▲ Impact due to dust generation from material handling, storage, operation of crushers and hot mix plants, movement of construction vehicles and construction activities. ▲ Poor sanitation and solid waste disposal in construction camps and work sites, which may lead to possible transmission of communicable diseases from workers to local populations. ▲ Loss of adequate frontage of properties foot paths ,cycle lanes and bus lanes during construction. ▲ Relocation of utilities in the pre-construction stage causing temporary disruption to services. ▲ Safety of pedestrians and traffic in the area is likely to be affected due to the process of construction activities. ▲ Safety of labour working in the construction sites as well as working with construction equipments as hot mix plants, batching plants, cranes, etc. ▲ Contamination of runoff from road with construction material as sand/cement/silt from stacked excavated earth 			

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<ul style="list-style-type: none"> ▲ Construction activities elevate the air and noise pollution in the project area temporarily. Air pollution is due to generation of noxious gases emanating from asphalt plants, construction equipments , crushers etc , while noise pollution is due to operation of various types of construction equipment. ▲ Stacking of construction waste causing interruption to traffic and pedestrian movements. ▲ Run off from stacked construction waste entering the water bodies and existing drainage systems causing clogging of drain outlets as well as the drains themselves. ▲ Property prices in case of road improvements is an induced impact which may be beneficial as well as harmful. 			
Sewerage	<ul style="list-style-type: none"> ▲ Potential impact on topography due to excavation of trenches due to laying the trunk mains, branch sewers and outfall sewer of various diameter sizes. ▲ Clearance of vegetation and tree-cover due to laying of sewer trunk mains. 	<ul style="list-style-type: none"> ▲ Noise impacts due to pump sets/ motor/gen-set operation surface and groundwater contamination due to leakages ▲ Environmental issues associated with disposal of sludge ▲ Without proper PPE, health and safety hazards may arise due to toxic gases and hazardous 	<ul style="list-style-type: none"> ▲ The proposed work will provide better health benefits for the public, preventing water borne diseases arising from the improper sewage disposal system, Reuse of treated effluent. 	<ul style="list-style-type: none"> ▲ Reuse of treated effluent. ▲ Energy efficient pump sets. ▲ Attraction and environmental improvement.

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<ul style="list-style-type: none"> ▲ Impacts on land use due to site clearing and ground levelling ▲ Impacts on soil environment due to construction of labour sheds and movement of heavy machinery and excavate ▲ Incremental increase in ambient air quality, noise levels and vibrations due to construction phase ▲ Damage to existing infrastructure, public utilities, amenities etc ▲ Increased road traffic due to interference of construction activities ▲ Without proper mitigation/control measures possibility of the following impacts: <ul style="list-style-type: none"> ▪ Contamination of soil, surface and ground water from hazardous substances such as used oil fuel, cement waste, etc. ▪ Soil and water contamination due to improper disposal of excavated material, construction and demolition wastes ▪ Chances of safety risks due to open excavations, storing of lubricants & hazardous material on site: 	<ul style="list-style-type: none"> ▲ materials, which may be contained in sewage flow. ▲ Contamination of downstream water quality used by community due to inadequate sewage treatment or release of untreated sewage. ▲ Environmental pollution due to inadequate sludge disposal ▲ Deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water ▲ Contamination of surface and ground waters due to improper sludge disposal ▲ Contamination of water supplies and groundwater because of seepage or over-flowing of network pipes 	<ul style="list-style-type: none"> ▲ Energy efficient pump sets 	

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
<ul style="list-style-type: none"> ▶ Building project 	<ul style="list-style-type: none"> ▪ Depletion of ground water level due to pumping of ground water for construction purpose ▪ Impact on surface water quality due to pumping of storm water from trenches, The materials supply and disposal will generate circulation of trucks. This may lead to traffic congestion and temporary road closures & increase risk of accidents. ▪ Potential impact owing to the escape/discharge of untreated sewage into the nearby land or drain from labour camp. ▪ Potential OHS risks to workers owing to improper handling of chemical wastes, construction activity. ▪ Improper barricade may lead to community health and safety risk ▶ Access to cultural property/private property will be affected due to blockage of access road. 	<ul style="list-style-type: none"> ▶ In the absence of traffic planning, increase in car movement at peak hours can lead to traffic congestion and issue to 	<ul style="list-style-type: none"> ▶ New building projects will have more efficient lighting system, air conditioning system, 	<ul style="list-style-type: none"> ▶ Recycle grey water and STP treated water for gardening and flushing purpose.

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<ul style="list-style-type: none"> ▲ Soil compaction, loss of top soil due to construction of labour sheds, buildings, movement of heavy machinery and excavate and excavation activity. ▲ Contamination of soil, and water bodies in the instance of leakage/spill of hazardous substances such as used oil fuel, cement waste, etc. ▲ Soil and water contamination due to improper disposal of excavated material, construction and demolition wastes. ▲ Incremental increase in noise levels and vibrations and deterioration of air quality and fugitive dust emission due to construction activity. ▲ Increase in congestion and inconvenience caused to public due to movement of construction equipments and if the access road to public is narrowed. ▲ Increase in solid waste and hazardous waste material ▲ Chances of safety risks and accidents due to improper safety measures adopted for open excavations, barricading and fencing, working at heights, storage of loose excavated materials, and 	<ul style="list-style-type: none"> pedestrian safety in peripheral areas of the building. ▲ Proliferation of commercial squatters and associated issues near the municipal building may lead to rise in solid wastes ▲ Improper disposal of waste water generated from the building may lead to soil and water contamination in the nearby vicinity ▲ Increase risk due to lack of fire safety system ▲ Absence of emergency evacuation routes and designated assembly points may lead to accidents inside municipal building during any emergency situation like natural calamity/terrorist attack. 	<p>better water conservation system, will lead to reduction in carbon footprint and sustainable use of waters.</p> <ul style="list-style-type: none"> ▲ The new building will incorporate all safety provisions as per Jharkhand Building Bye-Laws, 2015, thereby accidents or loss of life due to any emergency situation. 	<ul style="list-style-type: none"> ▲ Solar PV panels on roof tops and solar lightings. ▲ Provision of on site compost system for the organic stage. ▲ Energy efficient lights (like LED lights). ▲ Green belt development along the periphery

Sector	Construction stage	Operational phase	Positive impact	Value add/ environmental enhancements
	<p>storing of lubricants, hazardous material on site.</p> <p>▲ Depletion of ground water level due to illegally pumping of ground water for construction purpose.</p> <p>▲ Potential impact on nearby community due to lack of proper infrastructure facilities at labour camp.</p>			

6.2 CLIMATE CHANGE ADAPTATION AND MITIGATION

174. A report on State Action Plan on Climate Change of Jharkhand was published in 2014 by the Department of Forest, Environment and Climate Change, GoJ. As per the report, the following activities have been proposed for strategic approach for urban and transport sector under the Climate Change Action Plan.

Table 45: Strategic Approach under Climate Change Action Plan

Strategies	Proposed activities	Responsible department/s
U&T-1. Urban water use management	Development of operational standards for water sector utilities (High Priority)	Urban Development Department(UDD) and ULBs
	Adoption of water efficient devices in government owned/supported institutions (High Priority)	UDD & ULB
	Regulations for use of water efficient devices in buildings and other urban settlements (High Priority)	UDD & ULB
U&T-2. Rainwater Management	Increase in the absorption capacity of urban spaces (High Priority)	UDD & ULB
	Scientifically developed rainwater drainage systems for all the major cities (High Priority)	UDD & ULB
	Enact laws to avoid potential encroachments of water drainage channels (High Priority)	UDD & ULB
	Revive lost glory of city lakes and use them as sinks to capture rain water (High Priority)	UDD & ULB
U&T-3. Reducing carbon footprint of urban sector	Regulation for energy audits of commercial and state owned buildings (Medium Priority)	UDD & ULB
	Develop urban energy guidelines in line with BEE supported Municipal DSM program (Medium Priority)	UDD & ULB
	Development of programmatic energy efficiency approaches for urban water pumping and sewerage disposal (Medium Priority)	UDD & ULB
	Lighting, cooling and heating centric energy saving options for bigger buildings (Medium Priority)	UDD & ULB

175. The climate change adaptation is in early stages of development in Jharkhand state. UD&HD will undertake further studies to establish the climate change impacts due to temperature, precipitation or extreme event patterns such as flooding, drought etc. that can disrupt reliability of water supply and drainage, and the potential feasible adaptation measures to be incorporated in the design and the results of which can be applied to JMDP

176. Likely impacts due to climate change in storm water drainage and road projects are in the table along with typical adaptation measures.

Table 46: Impacts due to Climate Change in Urban Projects

Climate risk	Impact	Key design parameters
High precipitation impacting roads/bridge/embankment	Heavy rains can cause disruption of the road networks, decreased accessibility, erosion of roads and embankments, surface water drainage problems, slope failures, landslides, among others. Increased river flow resulting from precipitation and storminess may result in damages to bridges, pavements, and other road structures. Bridge / culvert capacities are reduced or exceeded, causing upstream flooding to occur.	Design parameters need to consider: <ul style="list-style-type: none"> ▶ Flood estimation, return period, design discharge ▶ High flood level ▶ Free board (clearance above high flood level) ▶ Length of waterway ▶ Design load, wind load ▶ foundation, river and bank protection ▶ corrosion protection
High temperature impacting road stability	Extreme heat, combined with traffic loading, speed and density can soften asphalt roads, leading to increased wear and tear. It is likely that there would be concerns regarding pavement integrity such as softening, traffic related rutting, embrittlement, migration of liquid asphalt. Additionally, thermal expansion in bridge expansion joints and paved surfaces may be experienced.	Design parameters needing consideration: <ul style="list-style-type: none"> ▶ Camber to quickly remove surface water ▶ Stiff bitumen to withstand heat or workable in winter ▶ Soil moisture and maintenance planning
Flood	Jharkhand does not have flood problems. However, flash floods occurred in 11 districts including some parts of project districts in 2004. However, the entire Asian monsoon region is likely to witness more extreme rainfall events in future due to global warming impact.	Key engineering measures taken to address flood risks in the design are: <ul style="list-style-type: none"> ▶ Increase in embankment height ▶ Construction of new side and lead away drains ▶ Construction of culverts and widening of existing ones ▶ Widening of bridges

6.3 ASSESSMENT OF SOCIAL IMPACTS

177. While JMDP projects are expected to improve general living standards within urban localities, they can also have associated social impacts on the local environment and people. This section identifies various social impacts that are already identified or apprehended while carrying out the implementation of the known sub-projects.

Table 47: Sector-Specific Social Impacts

Sector	Positive social impacts	Adverse social impacts	Severity of impacts observed/known sub-projects
Water supply	<ul style="list-style-type: none"> ▶ Supply of sufficient quantity and quality of clean water to community. ▶ Time saved by reducing distance to fetch water, making it available for other vocational and income generating activities. ▶ Less quarrels and abuses at water points. ▶ Decrease in water borne diseases resulting from improved quality. 	<ul style="list-style-type: none"> ▶ Loss of land due to acquisition for the project. ▶ Loss of structures both residential and commercial. ▶ Loss of livelihood due to physical and economic displacement. ▶ Affect on CPRs for implementation of the project. ▶ Inaccessibility of infrastructural facilities and services during construction. ▶ Traffic congestion as barricading on the COI during construction will reduce the available space for persons and vehicles. 	<ul style="list-style-type: none"> ▶ Structures of non-title holders in the COI are affected. ▶ A total of 2 structures will be affected due to construction in Khunti. ▶ Livelihood of 37 PAPs is impacted that includes temporary impact on 35 mobile vendors in Khunti.
Storm water drainage	<ul style="list-style-type: none"> ▶ Protect the health, welfare and safety of the community from flood hazards by safely routing and discharging. 	<ul style="list-style-type: none"> ▶ Loss of Land due to acquisition for the project. ▶ Loss of structures both residential and commercial for the implementation of the project. ▶ Loss of livelihood due to physical and economic displacement. ▶ Affect on CPRs for implementation of the project. ▶ Temporary loss due to inaccessibility during construction. ▶ Traffic congestion as barricading the COI during construction reduce the available space for persons and vehicles. 	<ul style="list-style-type: none"> ▶ No land acquisition. ▶ Structures of the Non Title holders within the COI are affected. A total of about 3,500 structures will be affected due to drainage construction in Dhanbad. ▶ Livelihood of 6,000 PAPs is impacted including about 2500 with temporary impact. ▶ No CPR impacted.
Roads	<ul style="list-style-type: none"> ▶ Accident rates change following improvement in road geometry and pavement. Better pavement and design will improve visibility, reduce braking distances and have road signs installed where none existed. ▶ Reduced vehicle wear/ tear. 	<ul style="list-style-type: none"> ▶ Loss of land due to acquisition for the project. ▶ Loss of structures both residential and Permanent for the implementation of the project. ▶ Loss of livelihood due to physical and economic displacement. ▶ Affect on CPRs for implementation of the project. ▶ Temporary loss due to inaccessibility during construction. 	<ul style="list-style-type: none"> ▶ No land acquisition. ▶ About 260 structures will be affected in Dhanbad. ▶ Livelihood of about 220 PAPs is impacted. ▶ 19 CPRs will be affected (waiting sheds, temples and statues). ▶ About 31 handpumps and tube-wells will be impacted.

Sector	Positive social impacts	Adverse social impacts	Severity of impacts observed/known sub-projects
	<ul style="list-style-type: none"> ▶ Reduction in travel time. 	<ul style="list-style-type: none"> ▶ Traffic congestion as barricading the COI during construction reduce the available space for persons and vehicles. 	<ul style="list-style-type: none"> ▶ Temporary loss of access during construction. ▶ As the COLis narrow there will be traffic congestion during construction.

6.3.1 Land Acquisition

178. There is no land acquisition in all the known sub-projects of 2 ULBs. Project development can be taken up within the existing land available with Road Construction Department/ULBs for existing roads alignments or other infrastructural amenities. However, there may be a requirement of land acquisition for the future projects of JM DP. The following plan of action will be considered keeping in mind the future land requirements.

- ▶ JUIDCO will coordinate with the revenue department on LA-related activities from early stages of project preparation/planning. JUIDCO will initiate the collection of land records soon after the feasibility stage for a project is completed. This should be the basis for establishing legal RoW and also provide information to finalise the alignment at the preliminary design stage.

- ▶ JUIDCO will work closely with the Revenue Department to update land records on the transfer of land ownership (including the updating of the land sub-divisions). Adequate support should be provided to the revenue department by JUIDCO under the project to facilitate the preparation of LA plans and carrying out the actual LA during implementation.

- ▶ In case land is to be transferred from other government/quasi-government organisation, initiative will be taken by JUIDCO for processing inter-organisation land transfer as early as possible.

- ▶ JUIDCO will take initiative in building its organisational capacity to deal with land acquisition. As procedural requirements have to be fulfilled, service of retired revenue officers thoroughly conversant with the procedural requirements may be considered in position to coordinate the land acquisition process.

- ▶ Project-related land acquisition process will be based on the information collected from the revenue records and these need to be correlated with findings from the field surveys to identify gaps, if any in the process of identification of required land parcels and their ownerships. The social experts of the EA, PMC and implementing consultant will work together with the engineering teams to prepare LA plans. Acquisition process will be initiated after DPR is prepared with sub-project designs finalised.

- ▶ To provide land to the civil construction contractor free from any encumbrances, the process of land acquisition will be initiated soon after the project design is finalised and DPR prepared. Realistic timeframes for LA will be worked out. The basis for determining the time required to complete the LA will be based on the recent experience of JUIDCO or other government agencies to acquire land for similar projects. Direct purchase of land by the EA in the project implementation process may be a workable option and may be encouraged.
- ▶ NGOs along with recognised government evaluators shall make an assessment of the land along with related legislations which shall be further confirmed by the client.

6.3.2 Structures and Other Assets

- 179.** A detailed Census Survey besides covering the list of PAPs will also cover structures that are likely to be affected during the course of project implementation. For preparation of the current ESMF, a project specific census survey was carried out to identify the likely displaced persons/PAPs and an inventory of their impacted assets has been prepared.
- 180.** The detailed survey carried out also provides information on the nature and type of adverse impact on CPRs in addition to structures and people. The findings of the census survey thus form the basis for preparing the RAP.

6.3.3 Loss of Livelihood

- 181.** During assessment of the known sub-projects in 2 ULBs, relevant information for livelihood was a part of the Census Survey. The Census Survey provided adequate data on individual's sources of income, skill sets, total assets and income levels. The information was extremely relevant to finalise the R&R policy that provides individual entitlements to mitigate the losses that arise from loss of livelihood and help to firm-up adequate budgetary provisions in the RAP. During future preparation, emphasis would be on the following:
- ▶ Identifying ongoing land-based and non-land-based income-restoration (IR) activities in the project area.
 - ▶ The ToR of the NGO/implementation consultants will also include scope for development of a realistic training plan for livelihood restoration. Separate consultations will be organised on the IR plans. Draft IR plans would be shared with PAPs to obtain their preferences, based on reviews final IR plans will be developed.

- ▶ Once implementation is initiated, NGO/implementation consultants will coordinate with affected people to collect all the required information to assess the success of the IR trainings.

6.3.4 Impacts on the ST Population

182. The SIA was carried out in the feasibility stage during the preparation of ESMF of the sub-projects at 2 ULBs. The survey identified that about 5.5% of the total affected population is STs. The total vulnerable population including the STs is around 20%. No isolated ST populations in the rural areas or outside the ULBs is impacted. It is observed that 12% of the PAPs are STs in Dhanbad Road Project NCB I & II and 5% in Khunti. About 0.02 ha of land will require to be diverted for Khunti water supply project to lay the raw water mains under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Right) Act 2006. A separate STPP is being prepared. Further, there may be likelihood of impact on the tribal populations since some of the sub-projects considered for implementation in the future may be extended beyond the limits of the ULBs and enter in the scheduled areas. Utmost care should be taken for avoiding probable impacts on the STs. . In case of project area involves presence of Schedule V area or ST groups with unique characteristics STPP will have to be prepared and implemented.

6.3.5 Other Impacts

183. Other social issues anticipated during the lifecycle of the project include land acquisition, loss of structures, loss of livelihood, loss of CPRs, conflict between immigrated laborforce and local community on issues such as use of civic utilities. The local population, in particular ST population, may be adversely affected due to loss of natural resources such as land, water and forest. Further, the impacts during construction include loss of access to roadside properties, CPRs and urban infrastructural facilities. In addition to the above, there may be issues relating to safety and security of women, disruption to traffic, over crowding and influx of population from the rural areas.

7 ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK

184. ESMF is devised as a tool for use by JUIDCO to identify and address the potential environmental and social concerns or impacts of sub- projects of JMDP right from the planning stage to its implementation and post-implementation operations.

7.1 NEGATIVE LIST

185. JMDP will not support sub-projects which will involve creation, construction of water storage structures, such as weirs, barrages and dams.

7.2 SCREENING

186. During the screening stage, as a first step, the environmental and social impacts will be identified through filling of E&S Screening Checklist by JUIDCO. The objective of filling this checklist will be to collect basic information on environmental and social aspects of the proposed sub-project and categorise the sub-projects according to the level of impacts identified. Further, the E&S Screening Checklist will cover basic environmental and social data pertaining to the potential sub-project area/baseline conditions, and anticipated environmental impacts compiled during the initial field data collection stage. For this purpose, the E&S Checklist (Annexure- I) will be used. The E&S Screening Checklist will be filled during the feasibility stage of the project design.
187. Following the screening process, the sub-projects will be categorised based on potential for negative impacts, taking into account project type and scale, sensitivity of location, the nature and magnitude of its potential environmental and social impacts. Subsequently, the requisite safeguard documents will be prepared.

7.3 PROJECT CATEGORISATION

188. Based on screening JUIDCO will categorise the projects into different categories E1, E2 and E3 as environmental categorisation and S-1, S-2 and S-3 as social categorisation (**Table 48**)linked to severity of impacts and regulatory requirements.
189. Based on the project categorisation, JUIDCO will undertake safeguard due-dilligence to reduce the environmental and social risks of the sub-project as detailed in the subsequent section.

Table 48: Environmental and Social Categorisation of Projects

Category	Description	Criteria	Actions
Environmental			
E-1	Significant adverse environmental impacts over the lifetime of the project; likely need for significant mitigation.	<ul style="list-style-type: none"> ▶ Significant adverse impacts that are sensitive, diverse, or unprecedented, or that affect an area broader than the sites or facilities subject to physical works. ▶ Projects impacting sensitive environmental components⁴⁰. ▶ Projects involving STPs and dam safety due diligence measures. ▶ Projects requiring environmental clearance as per EIA notification of MoEF&CC 	<p>For E1 category sub-projects, full, comprehensive EIA is required following all the requirements specified in OP 4.01 for Category A. including consultations, and disclosure.</p> <p>(i) JUIDCO needs to engage an independent agency different from DPR consultant to carry out a full ESIA. In this regard JUIDCO will prepare a Terms of Reference (ToR) for the environmental consultants for EIA of this category of projects. Model ToR of ESIA has been presented in Annexure-VII. The format presented in OP 4.01 Annex B will be followed.</p> <p>(ii) This ESMF will be shared with the independent ESIA consultants for following the procedures and using the relevant information in their assessment.</p> <p>(iii) This ESIA and ESMP will be disclosed at least 120 days before the award of the contract.</p>
E-2	Moderate impacts; straight forward issues; likely need for some easily implemented mitigation.	<ul style="list-style-type: none"> ▶ Project is categorised as E-2 if its potential adverse environmental impacts are less severe than those of E-1 projects. ▶ E2 projects are expected have less adverse and more limited, fewer, site-specific, likely 	<p>JUIDCo will Prepare a ESIA and ESMP per guidance provided in Annexure –V and VIII. The ESIA follow all the requirements specified in OP 4.01 for Category B.</p> <p>This EIA and ESMP will be disclosed before the start of procurement and at-least 60 days before the award of the contract.</p>

⁴⁰Projects impacting sensitive environmental components include protected areas, forest areas.

Category	Description	Criteria	Actions
		<p>reversible environmental impacts.</p> <ul style="list-style-type: none"> ▶ Mitigation measures can be more easily designed/implemented. 	
E-3	Few direct or indirect minor environmental impacts.	<ul style="list-style-type: none"> ▶ Projects with minor environmental impacts which are easily and fully mitigated through routine measures. ▶ Temporary in nature 	<p>A standalone ESMP may be sufficient for Category E3 projects. (guidance on sector-wise ESMP format in annex VIII). This will also follow the requirements specified in OP 4.01 for Category B. The ESMP needs to be included in the bid document.</p>
Social			
S-1	Significant with adverse irreversible social impacts	<ul style="list-style-type: none"> ▶ If it involves acquisition of private land and affects more than 200 persons or 50 households. ▶ If it involves physical displacement. 	<p>JUIDCO would conduct a comprehensive social assessment and prepare a RAP, through an independent agency (separate from DPR) as attached in Annexure X. Like in the case of Environmental Social Impact Assessment, the RAP needs to be disclosed before the start of procurement for that sub-project and at least 120 days before the award of the contract.</p>
S-2	Moderate with minimised social impacts	<ul style="list-style-type: none"> ▶ If impacts are of minor nature or less than 200 persons or about 50 households are affected. 	<p>JUIDCO will ensure that an Abbreviated Resettlement Action Plan (ARAP) is prepared as per format attached in Annexure IV by a separate consultant. The ARAP will be disclosed before the start of procurement for that sub-project and at least 60 days before the award of the contract.</p>
S-3	Minor with temporary impacts or indirect social impacts.	<ul style="list-style-type: none"> ▶ Temporary disruption to income activities that can be resumed post construction and other construction linked social impacts. 	<p>JUIDCO will prepare ESMP. The ESMP will be included in the bid document as for S-1 and S-2.</p>

7.3.1 Impact Assessment and Mitigation

A: Environmental Impact Assessment and Mitigation

190. An ESIA and ESMP will be prepared as per the TOR in Annexure VII of the report, (following the requirements of OP 4.01). Apart from the ESMP, sub-projects require specific plans like physical cultural resource plan, natural habitat management plan, they should be furnished along with the ESMP.
191. ESMPs would include important components such as labour camp site management plan, occupation health and safety magement plan. If traffic management plan is required, then it will be prepared by the local authority in consultation with JUIDCO and reviewed by JUIDCO-Environmental and Social Experts.
192. The ESMP should be finalised and approved by the project PMU before finalizing the bid documents. This is required to fully reflect the sections of the ESMP relevant to the contractor in the bid documents and to ensure full integration. The following will be integrated into the contract packages
193. **Mitigation table:** In the Mitigation / Enhancement Measure table, the text describing each measure should not include/repeat what is already covered under the technical specifications, which is being cross-referred. The text should be short, clear and succinct. The description should focus on “what” and “where” of the mitigation / enhancement measure as the “how” of the measure is covered under the specification.
194. **Monitoring requirements table:** There are certain environment quality, health and safety and labour monitoring requirements for the contractor. While developing the monitoring requirements table, those that pertain to the contractor should be clearly separated.
195. **Drawings:** The modifications to the drawings and the additional drawings should be included as Annexes in the ESMP. (The quality of BoQ and technical specifications part of the contract document depends on the degree of detailing in the drawings.)
196. **Cost table:** The items pertaining to the contractor should be clearly separated from those that are to be incurred by JUIDCo or any other government agency or supervision consultant. The contractor’s cost table should also not be attached to the bid/contract documents.

B: Social Impact Assessment and Mitigation

197. All the assessment will be carried out as per the category of the project and the respective mitigation plans will be prepared as per table below.

Table 49: Social Impacts, Mitigation Strategy, and Plans and Implementation Responsibility

Impacts	Mitigation strategy	To be implemented by	Implementation timeline
Loss of private land	As per Land Acquisition Plan (LAP) and RAP	JUIDCO, District Administration and NGO	Before start of civil works
Loss of structures and other assets	As proposed in RAP and ARAP	JUIDCO, District Administration and NGO	Before shifting
Loss of livelihood	As proposed in RAP/ARAP	JUIDCO, ULB and NGO.	Before shifting
Loss of CPR	Relocation and restoration of CPR	District Administration and PIU/JUIDCO/NGO	Throughout the project
Impact on STs	Scheduled Tribes Development Plan	NGO, PIU/JUIDCO, District Administration.	During preconstruction and construction phases
Gender issues	Gender Action Plan	NGO and PIU/JUIDCO	Throughout the project
Citizen Engagement and people's participation	Workshops, meetings and IEC activities	NGO and PIU/JUIDCO	Throughout the project
Disturbance to people during construction and loss of access	Diversions, barricading, providing alternate access and implementation of ESMP.	Contractor, PIU/JUIDCO, CSQC	During construction

7.4 LABOUR INFLUX MANAGEMENT AND CHILD LABOUR

The construction of civil works for which the required labor force and associated goods and services cannot be fully supplied locally for a number of reasons such as worker unavailability and lack of technical skills and capacity. In such cases, the labor force (total or partial) would need to be brought in from outside the project area from nearby municipal towns and villages and sometimes outside the state. This rapid migration of labor to the project area may affect the project area negatively in the terms of additional burden on public infrastructure such as local social and health services, utilities such as water and electricity, housing and social dynamics and thus impact on local communities. Other related issues could be increased risk of spread of communicable diseases, and increased rates of illicit behavior and crime. Some of the adverse environmental impacts are illegal waste disposal sites, inappropriate Wasterwater discharges, camp related noise, access roads and land use issues. Such adverse impacts may get amplified by local-level low capacity to manage and absorb the

incoming labor force, and specifically when civil works are carried out in, or near, vulnerable communities and in other high-risk situations.

About, 90% of labour under the project will consist of local population with only 10% labour/technicians coming from outside; therefore, chances of conflict between immigrant labour force and local community are rare. In this regard, directives will be issued to the contractor to manage the migrant labour. In addition to the above, there may be issues relating to child labour and safety and security of women.. A committee will be set up in each sub project district to look after the issues pertaining to child labour and ensure that children below 14 years are not employed in any of the sub-projects. While the sub project ESIA's would require to assess such potential issues linked to temporary project induced labour influx, the specific impacts can only be assessed once the contractor is appointed and decides to outsource labour.

Some of the risk factors identified are (i) weak institutional capacity of the implementing agency; (ii) many contractors without strong worker management and health and safety policies; (iv) pre-existing social conflicts or tensions; (v) weak local law enforcement, and (vi) prevalence of gender-based violence and social norms towards it in the community (vii) local prevalence of child and forced labor. (Viii) perception of insecurity by the local community due to illicit behavior or crimes including theft, physical assaults, substance abuse, human trafficking etc and (ix) limited availability of affordable accommodation and rents within Municipal area.

There are multiple and comprehensive Acts and Rules at both state and national level that set out the provisions for appropriate working conditions and for good labour management. However, multiplicity of laws and rules sometimes cause confusion in its applicability in a specific context. Further in case of contracted workers and Primary labor suppliers the enforcement weakens.

Hence, the contractor would require to develop sub project specific labour management procedures and mitigation measures in the C-ESMP before the start of works and monitor and update the labour management Plan as necessary during the course of the project. JUIDCO would develop a separate training module with the help of technical partner to build the capacity of JUIDCO, Supervision Consultants and Contractors in preparation and execution of this labour management Plan.

This Labor Management Plan would address specific activities that will be undertaken to minimize the impact on the local community, including elements such as

- Communication and awareness plan on national labour and women harassment laws and its penal implications, leave provisions and other allowances for workers benefit,
- Worker codes of conduct with respect to manual scavenging, engagement with local residents, child labor, nondiscrimination, harassment of coworkers including women and those belonging to SC and STs and other minority social groups.
- Training programs on HIV/AIDS and other communicable diseases, etc.
- Workers' Camp Management Plan addressing specific aspects of the establishment and operation of workers' camps provided the ULB is unable to cater to the demand for affordable housing for this additional workforce in terms of rentals, hostels, apartments etc.
- Compliant handling Mechanism at the sub project level

The responsibilities for managing these adverse impacts would be clearly reflected as a contractual obligations of the Civil Works Contractor and Supervision Consultant, with appropriate mechanisms for addressing non-compliance.

7.5 SUB-PROJECT CYCLE AND ENVIRONMENTAL AND SOCIAL REQUIREMENTS

198. The environmental and social due diligence process to be followed during the sub-project cycle, i.e., during pre-planning, planning, implementation and O&M, is listed in the below table and the flow chart.

Figure 9: Environmental and social requirements to be fulfilled

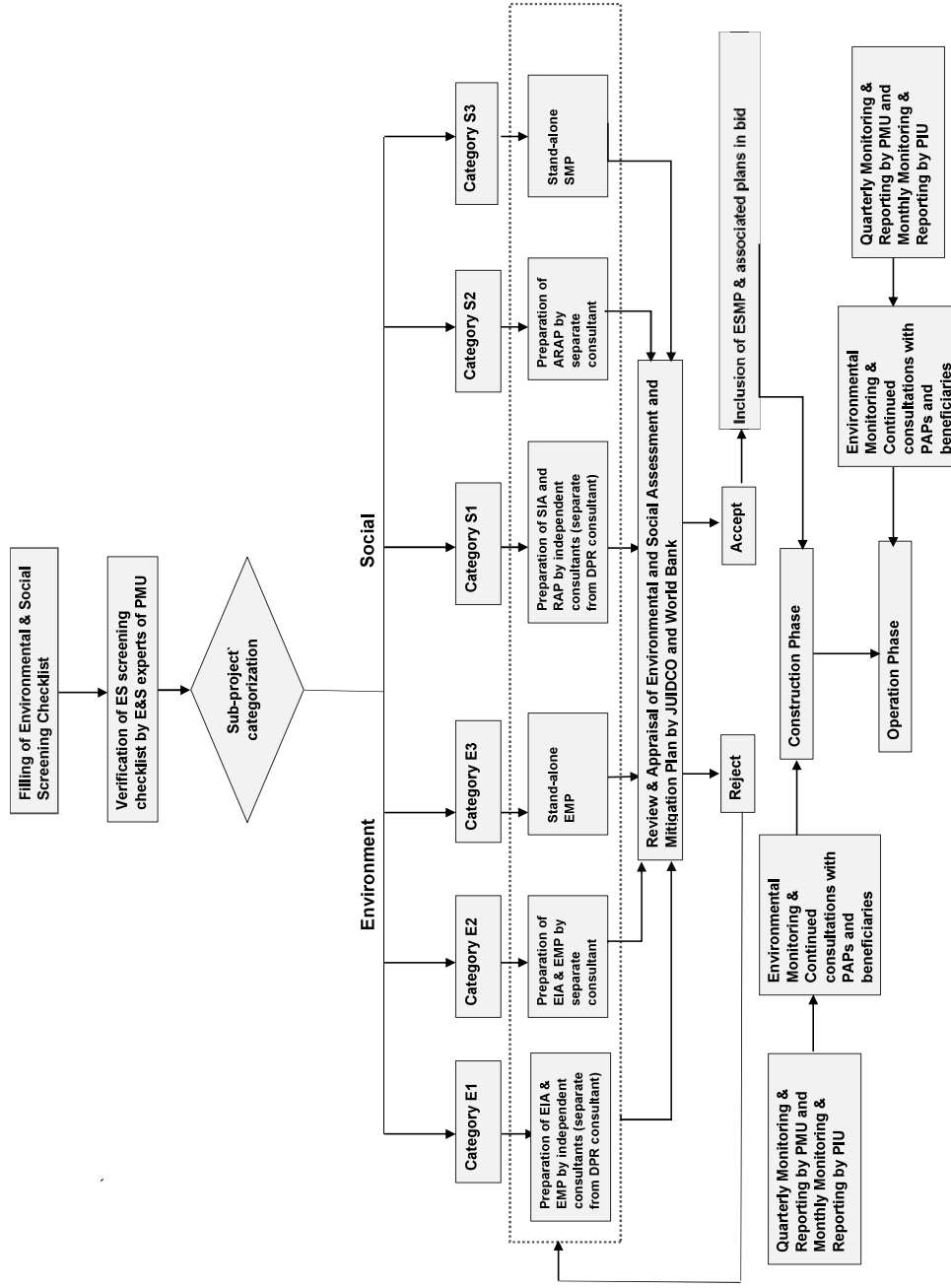


Table 50: Environmental and Social Activities and Responsibilities to be Fulfilled during the Sub-Project Cycle

Phase	ESMF activity	Objectives	Process	Responsibility	Result
Preplanning	Environmental and social data collection	To collect basic information on environmental and social data	The ESMF requires basic environmental and social data pertaining to the proposed sub-project be compiled at the field data collection stage.	PMU	Environmental and social data collection of proposed sub-project
	Screening and categorisation Environmental and social classification of the sub-project	To ensure sub-projects with potentially significant environmental/ social issues are identified at an early stage for detailed environmental/ social assessments	Evaluate all the available information on environmental and social aspects and fill in E and S screening checklist. Based on the level of expected environmental and social impacts (including any field visits if required), assess whether the proposed sub-project is E1/E2/E3 and S1/S2/S3.	PMU	Sub-project classified as E1/E2/E3 and S1/S2/S3. As a part of ESMF process the screening and sub-project Categorisation need to be cleared by The World Bank.
Planning	Preparation Environmental and social assessment and management plans.	To conduct environmental/ social assessment and Prepare management plans for integration into sub-project designs.	For E1/ S1 category sub-projects –Detailed environmental/ social assessment and preparation of ESMF/RAP will be done by JUIDCO with the help of agency independent of DPR. For E2/ S2 category sub-projects –Environmental/ social assessment and preparation of ESMF/ARAP will be done by JUIDCO with or without the help of independent consultant. For E3/ S3 category sub-projects –Standalone ESMF will be done by JUIDCO.	PMU with the help of Independent consultants.	EA/ SA done. ESMF/ RAP/ARAP Prepared and disclosed prior to start of procurement and at-least 120 days(E1/S1) and 60 days(E2/S2) before the award of the contract. Standalone ESMF and SMP to be included in bid document.
	Appraisal Environmental and social appraisal	To ensure relevant environmental and social issues have been identified and appropriate mitigation measures have been designed to address them.	For E3 and S3 sub-projects, there shall be no separate environmental/social appraisal but environmental/ social aspects shall be included in the normal appraisal and evaluation process for the proposed sub-	PMU environmental expert social expert.	Environmental and social appraisal of the project is made and approval of proposed sub-project, with decision to (i) accept scheme as submitted, or (ii) accept scheme with modification

Phase	ESMF activity	Objectives	Process	Responsibility	Result
			<p>project, based on the E&S screening checklist included in the DPR. All these sub-projects need to follow the mitigation measures detailed in the ESMF Guidance.</p> <p>For projects requiring a detailed environmental/ social assessment, including evaluation of environmental/ social impacts, risk assessment if needed, and design of mitigation measures, will be done by PMU environmental and social expert.</p>		<p>suggested in the environmental/ social appraisal.</p>
	<p>Approval Environmental and Social approval required</p>	<p>To ensure mitigation measures and their cost are integrated in scheme design and implementation plans</p>	<p>Approval for the sub-project will not be accorded without the appraisal by PMU and the review and acceptance of ESIA/ESMP/RAP/ARAP/STPP by The WorldBank.</p>	<p>PMU</p>	<p>Technical Sanction for sub-projects with environmental and social mitigation measures and accordingly its costs are integrated in sub-project design and implementation plans</p>
<p>Tender</p>	<p>Bidding and contract documents Incorporation of environmental and social mitigation measures are in the bidding documents.</p>	<p>To ensure mitigation measures to implemented by contractor are in the contract documents.</p>	<p>The prescribed environmental and social mitigation measures as identified will be included in the contract documents. Immediately upon signing the contract, the contractor will submit an action plan to implement environmental and social mitigation measures to be implemented by contractor. Notice to proceed will be issued only upon receiving this action plan. PMU will review the bidding documents to ensure incorporation of ESMP.PMU will also review the various permissions and approvals to be obtained. In order to proceed for signing of</p>	<p>PMU, Contractor</p>	<p>Environmental and Social mitigation measures incorporated in the Bidding Documents.</p> <p>Action plan to implement environmental and social mitigation measures disclosed.</p> <p>All environmental and social permission and approvals from relevant authorities</p> <p>All land acquisition completed and compensation paid and land transferred in the name of the client.</p> <p>RAP and STPP implementation initiated.</p>

Phase	ESMF activity	Objectives	Process	Responsibility	Result
			<p>contracts, PMU to ensure the following are completed:</p> <ul style="list-style-type: none"> ▶ All environmental and social permission and approvals from relevant authorities. ▶ All land acquisition completed and compensation paid and land transferred in the name of the client. ▶ RAP and STPP implementation agency in place. ▶ Training and capacity building activities initiated. 		
Implementation	<p>Supervision, monitoring and evaluation</p> <p>Implementation of environmental and social mitigation measures. Environmental supervision, monitoring and evaluation.</p>	<p>To ensure environmental and social mitigation measures (including construction stage) are implemented.</p>	<p>Supervision will be conducted by the designated environmental officers for all the sub-projects.</p> <p>Daily monitoring will be done by Construction supervision and quality control consultant (CSQCC). Monthly monitoring will be undertaken by PIU and quarterly monitoring by PMU.</p> <p>Implementation</p> <p>Consultant/NGO will be responsible for implementing RAP/ARAP. Implementation Consultant/NGO to submit monthly progress report to PMU</p> <p>Capacity building will be undertaken to enable effective implementation of the ESMF including assessment procedures, supervision, monitoring, etc. as well as for community awareness and sensitization. PMU will submit quarterly report to WB.</p>	<p>PMU PIU ULB Implementation consultant/NGO</p>	<p>CSQCC will submit monitoring report, PIU will submit monthly monitoring report.</p> <p>Implementation Consultant/NGO to submit monthly progress report to PMU</p> <p>PMU will submit quarterly reports to The World Bank on Safeguards Implementation.</p> <p>Training and IEC activity reports by Implementation Consultant/NGO.</p>

Phase	ESMF activity	Objectives	Process	Responsibility	Result
			Skill Development Training and IEC activity will be undertaken by Implementation Consultant/NGO with help of PMU, PIU & ULB.		
	Environmental and social audit Environmental and social audit of the projects in construction/ ready to commission sub-projects.	To ensure the process stipulated in the ESMF is followed and ESMP/RAP/ARAP/SMP complied with.	The sub-projects which are completed/nearly completed are /ready to be commissioned are audited annually on a sample basis by an independent audit consultant. PMU will appoint this consultant .E&S expert will conduct the audits.	PMU independent audit consultant.	Environmental and social audit report of the projects in construction/ ready to commission sub-projects. PMU to submit the E&S audit report to WB.
Operation and maintenance	Operation and maintenance Environmental and social mitigation and management measures.	To ensure that environmental and social aspects are integrated in the O&M phase.	JUIDCO appointed O & M contractor or PIU takes up environmental and social mitigation and management measures as given in ESMP/RAP/ARAP/SMP.	PMU, PIU, O&M Contractor	PIU to submit monthly monitoring report to PMU. PMU will submit quarterly reports to the World Bank on Safeguards Implementation.

8 RESETTLEMENT POLICY FRAMEWORK

8.1 INTRODUCTION

- 199.** JMDP has been formulated to improve the municipal infrastructure in selected cities in Jharkhand. The project has been aligned with India's development plan as outlined in the 12th Plan (2012-17), which aspires for faster, sustainable and inclusive growth. The proposed Project Development Objective (PDO) of JMDP is to improve urban service delivery and urban management capacity in participating ULBs. This objective will be achieved through financing priority infrastructure improvements and by introducing a broad range of improvements in urban policies, planning, and revenue enhancement. The selection of sub-projects will be based on technical, environmental, social and financial sustainability of the investments.
- 200.** The RPF consists of guidelines for addressing any resettlement and rehabilitation issues that may arise in the project and have an impact on PAPs. This policy has been developed based on the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 subject to subsequent supplements by the Gol and GoJ and World Bank Operational Policy 4.12 on involuntary Resettlement.

8.2 OBJECTIVE AND APPROACH

- 201.** The objective of resettlement policy framework is to establish set of principles for avoiding and mitigating the social adverse impacts such as involuntary resettlement of the affected population. The nature and magnitude of social impacts will be assessed through an SIA. The RAP will be prepared based on the SIA and implemented to mitigate the adverse impacts and also to assist the affected people to improve or maintain their current living standards. The specific measures available in the RAP shall be implemented at various stages of project life cycle like which could be before construction, during construction and after construction. The broad categories of economic and social adverse impacts that would be mitigated are:
- a) Loss of land and or loss of structure
 - b) Loss of income or means of livelihood
 - c) Loss of CPR
- 202.** The first two categories represent direct impacts on an identified population. The people likely to be affected will be surveyed and registered, and project monitoring and evaluation will compare long-term impacts against baseline socio-economic data.
- 203.** The third category represents a group impact, where gains and losses of a group-oriented nature are not quantifiable in terms of impact on the individual. Mitigation and support mechanisms will be collectively oriented, and the monitoring will focus on impact on such groups.

204. The Policy of Resettlement and Rehabilitation for this project depends on the relevant acts and rules of the state, country and the Safeguard Policy guidelines of the World Bank. The World Bank Operational Policy 4.12 clearly states that:

- a) Involuntary resettlement should be avoided where feasible, or minimised, exploring all viable alternative project designs.
- b) Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.
- c) Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

205. The policy aims to resettle and rehabilitate the affected persons on account of its sub-projects in a manner that they do not suffer from adverse impacts and shall improve or at the minimum retain their previous standard of living, earning capacity and production levels. It is also the endeavor of JUIDCO, GoJ, that the resettlement shall minimise dependency and be sustainable socially, economically and institutionally. Special attention will be paid to the improvement of living standards of marginalised and vulnerable groups.

206. If there is need of land acquisition, before taking possession of the acquired land and properties, all compensation, resettlement and rehabilitation would be made in accordance with this policy. In case of displacement of a critical mass/group such as 20 PAHs, resettlement sites will be developed as part of the project in association with ULBs. In such circumstances, care should be taken so that there is no/minimum adverse social, economic and environmental impacts of displacement and specific measures would be provided in the RAP to mitigate any such impact.

207. The implementation of R&R Action Plan will be synchronised with any civil works to be conducted under the project. The project will ensure that compensation and assistance to the affected population has been provided in accordance with this policy before impact occurs.

208. This policy recognises that involuntary resettlement dismantles a previous production and livelihood system and the way of life. As a result, all such rehabilitation programs will adopt a

developmental approach rather than the welfare approach. These guidelines detail the assistance provided in re-establishing the homes and livelihoods of the PAPs during the course of projects.

209. All information related to resettlement preparation and implementation will be disclosed to all concerned, and community participation will be ensured in planning and implementation.

8.3 APPLICABLE REGULATIONS FOR RESETTLEMENT FRAMEWORK

210. The table below provides in brief discussions on the relevance of these regulations.

Table 51: Relevant Regulations in Country and World Bank Operational Policies for JMDP

Regulation	Scope	Applicability
National regulations (Gol)		
The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	The Act provides for enhanced compensation and assistances measures and adopts a more consultative and participatory approach in dealing with the PAPs. It recognises the right of tenants and share croppers.	This Act is applicable as land acquisition may be required in the potential sub-projects. Appropriate Resettlement Action Plans have to be developed for PAPs.
The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014	The Act aims to protect the rights of urban street vendors and to regulate street vending activities. It provides for survey of street vendors and protection from eviction or relocation; issuance of certificate for vending; provides for rights and obligations of street vendors; development of street vending plans; organising of capacity building programmes to enable the street vendors to exercise the rights contemplated under this Act.	Sub-projects are likely to impact street vendors, kiosks and hawkers. A census survey of these vendors/hawkers is to be undertaken and necessary rehabilitation/resettlement measures are to be implemented before the start of the construction.
The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.	The Act has been enacted to recognise and vest the forest rights and occupation of forest land in forest dwelling STs and other traditional forest dwellers, who have been residing in such forests for generations, but whose rights could not be recorded. This Act not only recognises the rights to hold and live in the forest land under the individual or common occupation for habitation or for self-cultivation for livelihood, but also grants several other rights to ensure their control over forest resources which, inter-alia, include right of ownership, access to collect, use and dispose of minor forest produce, community rights, etc.	This Act is applicable as land acquisition may be required in the potential sub-projects and it may affect the rights of forest dwelling STs and other traditional forest dwelling communities. Currently, the 5 sub-projects do not have forest dwelling STs and other traditional forest dwelling community.

Panchayats (Extension to Scheduled Areas) Act, 1996. (PESA Act 1996)	Ensuring self-governance through traditional Gram Sabha for people living in the scheduled areas of India. Consent of the concerned Gram Sabha or panchayat for the land acquisition shall be taken as per the PESA Act-1996.	Many areas of Jharkhand come under schedule –V areas and in potential sub-projects there may be scope of land acquisition so this act is applicable. Currently the 5 sub-projects identified do not fall in Schedule –V area.
State Regulations (GoJ)		
Jharkhand Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules-2015	The Rules provide for resettlement and rehabilitation of PAPs due to infrastructure projects in the State of Jharkhand.	These rules are applicable as land acquisition may be required in potential sub-projects. Appropriate Resettlement Action Plans have to be developed for PAPs. Thus, appropriate Resettlement Action Plans have to be developed for PAPs.
Chota Nagpur Tenancy Act, 1908 and amendments thereof	The Act provides for rights of tribal communities/indigenous people in the state of Jharkhand. It protects the transfer of the tribal land to non-tribal population.	The potential sub-projects may be located in tribal belt of the Chota Nagpur Plateau area of Jharkhand and may involve land acquisition
Santhal Parganas Tenancy (Supplementary Provision) Act, 1949. (SPT Act, 1949)	The Act is applicable to districts covered under Santhal Paragana like Dumka, Deoghar, Godda, Pakur, Sahibganj and Jamtara. It also protects the land rights of Santhal tribe of the state of Jharkhand and places restrictions on land transfer of both tribal and non-tribal land.	The current set of sub-projects do not anticipate taking any land from any tribal or nontribal in the Santhal Pargana area. However, the future potential sub-projects may be developed in the Santhal Parganas area where this act may be applicable.
Operational Policies of the World Bank		
OP/BP 4.10: Indigenous People	<p>This policy contributes to the bank’s mission of poverty reduction and sustainable development by ensuring that the development process fully respects dignity, human rights, economies and culture of the indigenous people.</p> <p>Purpose is to ensure indigenous peoples benefit from Bank financed development and to avoid or mitigate adverse effects on indigenous peoples.</p> <p>Applies to projects that might adversely affect indigenous peoples or when they are targeted beneficiaries.</p>	Out of 260 blocks in the state of Jharkhand, 112 blocks fall under Fifth Schedule Areas (spread across 15 districts out of 24 districts). Necessary safeguards will be proposed and will involve the indigenous communities in the projects. This may get triggered in the sub-projects.
OP/BP 4.12: Involuntary Resettlement	The policy aims to resettle and rehabilitate the affected persons on account of its project investments in a manner that they do not suffer from adverse impacts and shall improve or at the minimum retain their previous standard of living, earning capacity and production levels. Special attention is required to be paid to the improvement	The proposed infrastructure improvement activities under the project are likely to require land acquisition in certain cases and displacement of occupants of the public land/right of way resulting in loss of livelihood and involuntary resettlement.

	<p>of living standards of marginalised and vulnerable groups.</p> <p>Requires public participation in resettlement planning as part of SA for project .identification of all those affected irrespective of their legal rights.</p>	
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8.4 GAP ANALYSIS BETWEEN COUNTRIES LAWS AND WORLD BANK SAFEGUARDS POLICY

211. The gap between countries laws and World Bank safeguards policy is detailed out in the table below.

Table 52: Gap between Country Laws and World Bank Safeguards Policy

Country law	World Bank	Gap analysis
The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCTLARR Act, 2013)	World Bank's Operational Policy 4.12	RFCTLARR Act, 2013 recognises the right of the titleholders along with the tenant, rural artisans and sharecroppers residing or depending on land for 3 years or more preceding land acquisition. Whereas World Bank policy recognises the rights of all project affected persons irrespective of their legal rights as on the date of census survey or any other agreed cut off date.
The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014	World Bank's Operational Policy 4.12	The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014 is an umbrella act for overall development of the urban street vendors but differentiate between licensed/registered and non-licensed/non registered vendors. The World Bank Safeguard Policies do not differentiate between any impacted persons and requires commensurate support for loss of income and assets.

8.5 POLICY FRAMEWORK FOR JHARKHAND MUNICIPAL DEVELOPMENT PROJECT

212. Based on the above analysis of applicable legal and policy frameworks of the country and World Bank's Safe guard policy requirements, the broad resettlement principles for this project shall be the following:

- a) To avoid and/or minimise any physical displacement and involuntary relocation to the maximum practical extent through alternative routes, alignments and site selection. In case this is not possible define adequate control measures to mitigate the social impacts to maximum extent possible.

- b) Bridge the gap between World Bank policy on the involuntary resettlement and RFCTLARR act 2013 and other prevailing acts and rules by making all the impacted persons entitled for compensation of lost assets and resettlement and rehabilitation support irrespective of their legal rights to land.
- c) Carry out detailed social surveys to enumerate PAPs, their properties and prepare the entitlement matrix based on such census survey results.
- d) The resettlement will be done with an overall objective and aim of improving their livelihoods and standards of living or at least restoring that existed before the project.
- e) Encourage and promote participatory approach with detailed community participation and consultation during various stages of the project life cycle.
- f) To ensure compensation / assistance as applicable is provided before the impact occurs.
- g) The CPR structures that are impacted are to be relocated/replaced or compensated by the project prior to beginning of construction activities.
- h) The complete cost of all resettlement activities necessary is included in total project cost including provisions if any for contingencies and inflation.
- i) Defining a cut-off date for each of the sub-project which is the start date of the Census survey thus ensuring that people moving in the project area later will not be entitled to any assistance or compensation without adequate justification.

8.6 METHODOLOGY FOR DETERMINATION OF VALUE OF ASSETS AND BUSINESS

213. All lands proposed to be acquired under this project will be compensated as per the provisions of para 26 to para 30, read with the First schedule of RFCTLARR Act, 2013. Records of the lands, as they are on the date of notification, will be taken into consideration. The District Authority will determine the compensation of affected land and assets as per RFCTLARR Act, 2013. The date of determination of the market value shall be the date on which the preliminary notification was issued under section 11. The calculation of the amount of compensation to be paid to the land owner for the land acquired shall include the market value of assets attached to the land. The collector in determining the market value of the building and other immovable property or assets attached to the land or building, will use the services of a competent engineer or any other specialist in the relevant field. Similarly, the services of the experienced persons in the field of agriculture, forestry, horticulture and sericulture will be used for trees, crops etc. The district collector will also take into consideration the damages sustained by the person interested by reason of taking of any standing crops, trees, severance of land, injurious affect on other movable and immovable property, rendering the residual property unviable for residing or pursue business or any other ground which may in the interest of equity, justice and beneficial to the affected families etc.

214. The collector shall adopt the following criteria in assessing and determining the market value of land as below:

- a) The market value, if any, specified in the Indian Stamps Act, 1899 for the registration of sale deeds or agreements to sell, as the case may be in the area, where the land is situated; or
- b) The average sale price of similar type of land situated in the nearest village or nearest vicinity area; or

Whichever is higher will be multiplied by a factor ranging between 1 for urban areas to 2 for rural areas.

215. Solatium amount equivalent to one hundred percent of the compensation amount will be payable to any person whose land has been acquired. In addition to the market value of land, the Collector will, in every case, award an amount calculated at the rate of 12% per annum from the date of first notification till the date of award or the date of taking possession of land, whichever is earlier. However, for non titleholders losing structures on public land, valuation of structure will be done by govt approved charter engineer and compensation will be paid as per market rate without any depreciation. And for loss of any trees the services of the experienced persons from concerned department will be used.

8.7 DEFINITIONS FOR ENTITLEMENT FRAMEWORK

216. For the purpose of the RAP under the ESMF of JUIDCO, the following definitions will be applicable:

- a) **Affected area:** Such area as may be notified by the appropriate Government Authority for the purposes of land acquisition and which land will be acquired under RFCTLARR Act, 2013 through declaration by Notification in the Official Gazette by the appropriate Government or for which land belonging to the Government will be cleared from obstructions.
- b) **Agricultural land:** Land used for the purpose of: (i) agriculture or horticulture; (ii) dairy farming, poultry farming, pisci culture, sericulture, seed farming breeding of livestock or nursery growing medicinal herbs; (iii) raising of crops, trees, grass or garden produce; and (iv) land used for the grazing of cattle.
- c) **Below poverty line (BPL) or BPL family:** As defined by the Planning Commission of India (*now restructured as the Niti Ayog*), from time to time and those included in the BPL list for the time-being in force.
- d) **Building:** House, out house or other roofed structure whether masonry, brick, wood, mud, metal or any other material whatsoever but does not include a tent or other portable and temporary shelter.

- e) **Corridor of impact (Col):** Refers to the minimum land width required for construction of project infrastructure and laying of pipes including embankments, facilities and features such as approach roads, drains, utility ducts and lines, fences, green belts, safety zone, working spaces etc.
- f) **Cut-off date:** In the cases of land acquisition affecting land holders the cut-off date would be the last date of publishing Notification for land acquisition u/s 11 (1) of RFCTLARR Act, 2013 in the local newspaper. Those without any legal right, the cut-off date would be the start date of the Census and Socio-Economic survey. For temporary impacts, the cut-off date would be the date of joint inspection by contractor and PIU representative before initiating construction.
- g) **Encroacher:** A person who has extended their building, agricultural land, business premises or work places into public/government land without any authority.
- h) **Income:** Income of the PAP shall mean the amount prior to the cut-off date from all occupations taken together captured either through the socio economic/ census survey or calculated by an objective assessment³³ or as available through secondary research for a similar occupation.
- i) **Land:** 'Land' includes benefits to arise out of land, and things attached to the earth or permanently fastened to anything attached to the earth.
- j) **'Land acquisition' or 'acquisition of land':** Acquisition of land under the RFCTLARR, 2013.
- k) **Non-agricultural labour:** A person who is not an agricultural labour but is primarily residing in the affected area as on cut-off date or for a period of not less than three years immediately before the declaration of the affected area and who does not hold any land under the affected area but who earns his livelihood mainly by manual labour or as a rural artisan immediately before such declaration and who has been deprived of earning his livelihood mainly by manual labour or as such artisan in the affected area.
- l) **Notification:** Notification issued from time to time by appropriate government for land acquisition under the provisions of RFCTLARR, 2013.
- m) **Project Affected Family (as defined in RFCTLARR Act 2013):** It includes:
 - i. A family whose land or other immovable property has been acquired.
 - ii. A family which does not own any land but a member or members of such family may be agricultural labourers, tenants including any form of tenancy or holding of usufruct³⁴ right,

- share-croppers or artisans or who may be working in the affected area as on cutoff date whose primary source of livelihood stand affected by the acquisition of land.
- iii. The STs and other traditional forest dwellers who have lost any of their forest rights recognised under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 due to acquisition of land.
 - iv. A family whose primary source of livelihood on cutoff date or for three years prior to the acquisition of the land is dependent on forests or water bodies and includes gatherers of forest produce, hunters, fisher folk and boatmen and such livelihood is affected due to acquisition of land.
 - v. A member of the family who has been assigned land by the State Government or the Central Government under any of its schemes and such land is under acquisition.
 - vi. A family residing on any land in the urban areas for preceding three years or more prior to the acquisition of the land or whose primary source of livelihood for three years prior to the acquisition of the land is affected by the acquisition of such land.
- n) **PAP:** Any person affected either directly or indirectly by the project and/or project related activity, irrespective of the legal status and would include:
- a. Title holders
 - b. Encroachers
 - c. Squatters
 - d. Tenants, leaseholders, sharecroppers
 - e. Employees, landless labourers
- o) **Project affected household (PAH):** A social unit consisting of a family and/or non-family members living together, and is who are affected by the project negatively and/or positively.
- p) **Rent:** Whatever is lawfully payable in cash or in kind, partly in cash and partly in kind, whether as a fixed quantity of produce or as a share of the produce, on account of the use or occupation of land or on account of any right in land (which may not be a legal) but shall not include land revenue.
- q) **Replacement cost:** A replacement cost/value of any land or other asset is the cost/value equivalent to or sufficient to replace/purchase the same land or other asset and other applicable taxes to be incurred by the affected person; As per the new RTFCLARR Act 2013, computation of all compensation with additional solatium is more than the replacement cost or market value of affected assets.

- r) **Shop:** Any premises where any trade or business is carried on and where services are rendered to customers.
- s) **Squatter:** A person who has settled on public/government land, land belonging to institutions, trust, etc and or someone else's land illegally for residential, business and or other purposes and/or has been occupying land and building/asset without authority.
- t) **Registered vendors:** All vendors surveyed and registered for issuance of vending licence under the Street Vendors Act 2013.
- u) **Temporary impact:** Impact expected during construction phase of the project in the form of earthspoil, tremors and vibrations, loss of access and disruption of income.
- v) **Tenant:** A person who holds/occupies land-/structure of another person and (but for a special contract) would be liable to pay rent for that land/structure. This arrangement includes the predecessor and successor-in-interest of the tenant but does not include mortgage of the rights of a landowner or a person to whom holding has been transferred; or an estate/holding has been let in farm for the recovery of an arrear of land revenue; or of a sum recoverable as such an arrear or a person who takes from the Government a lease of unoccupied land for the purpose of subletting it.
- w) **Vulnerable households:** Vulnerable PAPs: Vulnerable PAPs are those living below povertyline, SC / ST families, women headed households, physically challenged persons; elderly persons above the age of 60 years.
- x) **Wage earner:** Wage earners are those whose livelihood would be affected due to the displacement of the employer. The person must be in continuous employment for at least six months prior to the cut-off date with the said employer and must have reliable documentary evidence to prove his/her employment.

8.8 POTENTIAL NEGATIVE IMPACTS

217. Though it is envisaged that sub-projects will involve very generic social issues that are manageable, there might be some sub-project activities proposed in due course, that may carry a higher social risk and/or disruptions and/or impacts. The possibility of such issues arising in the sub-projects sites will be identified during the sub-project screening process. For the **construction/rehabilitation/restoration phase**, the main potential social issues are:

- a) **Loss of private land:** No private land taking is foreseen under the 3 sub-projects for which ESIA's are being done. However, land acquisition may be required in the future sub-projects.
- b) **Relocation of structures:** Structures, such as street vendor stalls, hutments, residential and other private and community structures along the road may need to be removed or relocated in order to lay the pipes and other components for urban infrastructure and services. Removal/displacement of such structures may have adverse impacts with regards to physical and economic displacement. Loss of residential structures may result in some of the households become homeless and lose livelihood. This will require action at the sub-project level to compensate for the loss of structures at replacement cost.
- c) **Loss of and/or access to public; common and/or private property:** Construction activities could block access to people's lands or assets. Vendor stalls may need to be moved to be outside the workzone for certain time period (which could reduce the customer base of the vendor).
- d) **Inconvenience during construction:** There could be temporary impacts during construction activities including dust, noise and increased vehicle traffic, and lighting during nighttime hours.
- e) **Loss of livelihood or sources of livelihood:** There may be negative economic impacts on small businesses and individuals formally or informally working in the area under construction. Vendors or small businesses removed or displaced from their original locations may be unable to return to these once they have been relocated, thus facing loss of income. This requires action to avoid adverse impacts, or to restore livelihoods under the applicable resettlement instrument.

8.9 R&R BENEFITS FOR PROJECT AFFECTED PERSONS

218. The resettlement and rehabilitation (R&R) benefits shall be extended to all the PAPs whether they are classified as BPL or non-BPL. The details are provided in the entitlement matrix. For tribal populations, the following provisions will be adhered to:

- a) Each PAP in the ST category shall be given preference in allotment of land.
- b) Tribal PAPs will be resettled close to their natural habitat in a compact block so that they can retain their ethnic/linguistic and cultural identity.

8.10 ENTITLEMENT FOR PAPs

219. The entitlement for different categories of impacts is explained in the following entitlement matrix. The principles of the entitlement matrix are in accordance with the RFCTLARR, OP 4.12 of the World Bank. The entitlement matrix presents the entitlements for different impact categories in the following order:

- a) Impact on title holders which covers:
 - i.Loss of Land
 - ii.Loss of residential structures
 - iii.Loss of commercial structures
- b) Impact on residential and commercial tenants and leaseholders
- c) Impacts on non-title holders including the following:
 - i.Residential squatters
 - ii.Commercial squatters including registerd and non registered vendors
 - iii.Encroachers
- d) Impacts on title holders and non-titleholders for loss of trees, plants and standing crops
- e) Impact on PAPs for loss of livelihoods including non registered and registered vendors
- f) Impacts on vulnerable households
- g) Impacts on community assets
- h) Any other unidentified impacts

220. The table below provides the entitlement matrix to be adopted for implementation of the project.

Table 53: Entitlement Matrix

Category (PAP)	Asset impacted	Entitlement	Any other reference
Titleholder	Loss of land	Land will be acquired by competent authority in accordance with the provisions of RFCTLARR Act, 2013.	Provide the Link to Schedule 1 and 2 of RFCTLARR/ Act 2013. http://dolr.nic.in/dolr/downloads/pdfs/Right%20to%20Fair%20Compensation%20and%20Transparency%20in%20Land%20Acquisition.%20Rehabilitation%20and%20Resettlement%20Act.%202013.pdf
	Loss of residential Structure	The compensation for the structure will be paid as per the provisions of the RFCTLARR Act 2013	"
	Loss of commercial Structure	The compensation for the structure will be paid as per the provisions of the RFCTLARR Act 2013	"
	Impacts to trees, plants and standing crops	The compensation will be paid as per the provisions of RFCTLARR Act, 2013.	"
Non-Titleholder (Squatter)	Impacts to tenants on private land (residential/ commercial/ agricultural)	The assistance is to be paid as per the provisions of the RFCTLARR Act 2013	"
	Loss of residential structure	<ul style="list-style-type: none"> ▲ One-month advance notice to demolish the affected structure ▲ Maximum of <ul style="list-style-type: none"> (i) the replacement cost of residential structure, or (ii) alternative house with minimum area as per Government norms under PMAY/IAY to homeless PAHs. or (iii) Financial assistance equivalent to PMAY/IAY (as per state norm) all those who have to relocate and do not have a house as on cut-off date. ▲ One-month subsistence allowance as per prevalent minimum wage for a semi- skilled worker 	The value of residential structures and other immovable properties will be determined by a third-party government approved valuation agency or a government approved chartered engineer. PAPs shall be consulted for selecting resettlement package options. Resettlement Assistance will be provided as per provision before displacement.

		<ul style="list-style-type: none"> ▶ One-time financial assistance of Rs. 5,000 as transportation cost for shifting of the family, belongings and cattle. ▶ One-month advance notice to demolish the affected structure ▶ Compensation at market value for the affected commercial structure, or ▶ For registered vendors: In consultation with ULB, PAPs may be resettled in the vending zone. ▶ As per Street Vendor Act 2014 vending zone has to be provided to registered vendor. If it is not possible then one time financial assistance will be provided to them as decided by vending committee of the concerned ULB. ▶ One-time financial assistance of Rs. 5,000 as transportation cost for shifting. ▶ One month subsistence allowance as per prevalent minimum wage for a semi- skilled worker ▶ Right to salvage the affected materials. 	<p>The value of commercial structure and other immovable properties will be determined by a 3rd party government approved valuation agency or a government approved chartered engineer</p>
Non-Title holder (Encroacher)	Loss of Residential cum/ Commercial Structure	<ul style="list-style-type: none"> ▶ One-month advance notice to demolish the affected structure ▶ Compensation at market value for the affected residential/commercial structure ▶ Right to salvage the affected material 	<p>The value of commercial structure and other immovable properties will be determined by a third-party government approved valuation agency or a government approved chartered engineer.</p>
	Loss of residential structure		
	Loss of commercial structure		
Loss of Livelihood (Income)- Permanent		<ul style="list-style-type: none"> ▶ Subsistence allowance equivalent to monthly minimum wage for three months for permanent impact, ▶ One adult member of the affected household, whose livelihood is affected, will be entitled for skill development training ▶ Registered vendors: In -consultation with ULBs PAPs may be shifted to vending zone. 	<p>Only agricultural labourers, who are in fulltime / permanent employment of the land owner</p> <p>or</p> <p>those dependent full time on the economic activity affected, will be eligible for this assistance. A training needs assessment in consultations with the PAPs will be carried out</p>

			so as to develop appropriate training programmes suitable to the PAPs skill.
Temporary Loss of Livelihood (Income)		For temporary disruption of livelihood during construction period, disruption allowance is paid for the number of months of disruption calculated on the monthly subsistence allowance equivalent to prevalent monthly minimum wage for semi-skilled.	Only agricultural labourers, who are in full-time / permanent employment of the land owner or those dependent full time on the economic activity affected, will be eligible for this assistance. This will be provided for a maximum of three months during the construction phase of the project depending on the actual duration of disruption during construction period.
Loss of standing crop		<ul style="list-style-type: none"> ▲ One month notice to affected farmer. ▲ Monthly subsistence allowance equivalent to prevalent monthly minimum wage unskilled for three months. 	Payment will be made before the impact occurs.
Vulnerable PAH		<ul style="list-style-type: none"> ▲ The assistance is over and above other assistance to Vulnerable PAH. ▲ One time assistance of Rs 10,000 to vulnerable PAHs who have to relocate. ▲ Priority will be given to vulnerable PAHs during resettlement process in vending zone, in PMAY housing ▲ One adult member of the affected household, whose livelihood is affected, will be entitled for skill development training. 	The PIU with support from the NGO during joint verification will identify the number of eligible vulnerable project affected persons. A training need assessment in consultations with the PAPs will be carried out so as to develop appropriate training programmes suitable to the PAPs skill.
CPRs	Impact to CPRs such as places of worship, community buildings, schools, etc	Relocation or restoration, if feasible, or compensation at replacement cost to set up such similar structures in the vicinity	The PIU will ensure that compensation is handed over to trustee, association, organisation or individual as the case may be.
Unforeseen Impacts encountered during implementation will be addressed in accordance with the principles of this Entitlement Matrix.			

8.11 CONSULTATION FRAMEWORK

221. The consultation framework envisages involvement of all the stakeholders at each stage of project planning and implementation. The project will be responsible for ensuring participation of the community at the sub-project level. Involvement of the community is not limited to interactions with the community but also disclosing relevant information pertaining to the project tasks. Community participation shall be undertaken at the following stages:
- a. **Subproject identification stage:** To sensitise the community about the project and their role.
 - b. **Planning stage:** For disseminating information pertaining to the project, work schedule and the procedures involved; finalisation of project components with identification of impacts, entitled persons, mitigation measures; and grievance redress, and
 - c. **Implementation stage:** For addressing temporary impacts during construction and monitoring for transparency in the project implementation.

8.11.1 Identification Stage

222. Dissemination of project information to the community and relevant stakeholders is to be carried out by the project at this stage. The community at large shall be made aware of the project alternatives and necessary feedback is to be obtained. This should include the process being followed for prioritisation of the identified sub-projects. Community and other stakeholders should be involved in the decision making to the extent possible. In case of scheduled areas, participation of local government representative and active civil society organisations representing SCs and STs must be ensured. The information generated at this stage should be documented for addressing queries arising out of the Right to Information Act, 2005.

8.11.2 Project Planning Stage

223. Sub-project information is to be distributed amongst the community towards increasing their awareness and their roles and responsibilities. The planning stage is intended to be an interactive process with the community at least in two stages – initially while finalising the best fit alternative to a sub-project and second at the finalisation of the detailed designs. This would be the joint responsibility of the consultants undertaking the design if not carried out by the project in-house.
224. Consultations with community/beneficiaries and/or PAPs and their profiling are mandatory as per the requirements of SIA and preparation of RAP. This needs to be done as socio-economic and census surveys as part of the detailed designs. Consultations with respect to this and cultural aspects are to be carried out as part of the SIAs for all alternatives and the selected alternative sub-project option. In case of presence of ST groups with unique characteristics in the Project Impact area, a process of free, prior and informed consultation shall be followed to ascertain their

broad community support on the sub-project design. Participation of project affected from vulnerable communities including SC/ST, Women must be ensured.

8.11.3 Implementation Stage

225. Consultations as part of the implementation stage would be direct interactions of the implementation agency and entities with the community/beneficiaries and/or PAPs. These would comprise consultations towards relocation of the PAPs, relocation of cultural properties, and towards redressal of impacts on CPRs such as water bodies, places of religious importance, community buildings, trees etc.

226. With the implementation of the R&R provisions in progress, consultations and information dissemination is to be undertaken to let the community/beneficiaries and/or affected persons informed of the progress. The implementation stage also involves redress of grievances in case of R&R aspects as well as relocation of CPRs through the grievance redress mechanisms. These would usually be one-to-one meetings of community/beneficiaries and/or PAP with the grievance redress committees established for the project.

8.11.4 Information Disclosure

227. The mechanism of information dissemination, for instance briefing material and community consultation sessions, will be accessible to all. Any briefing material (all to be prepared in local language) can be in the form of:

- a) Brochures (including project information, project benefits; adverse impacts if any, and details of entitlements including compensation and assistance to be given to the PAPs) that can be kept in the offices of local self-government (municipal office in case of urban area and gram panchayat office in case of rural area) and project office;
- b) Posters to be displayed at prominent locations; and
- c) Leaflets that can be distributed in the impacted zone of the sub-project.

228. Consultation meetings should also be organised at regular intervals by the project to acquaint the community/beneficiaries and/or PAPs of the following:

- a) Timeline and progress of the project
- b) Information on benefits / adverse impacts; compensation and entitlements
- c) Timeline for project completion

229. This Information Disclosure Policy is intended to ensure that information concerning the project activities will be made available to the public in the absence of a compelling reason for confidentiality. Information shall be provided in a timely and regular manner to all stakeholders, affected parties, and the general public. Access by the public to information and documentation

held or generated by project will facilitate the transparency, accountability, and legitimacy as well as operations overseen by it. As a part of its disclosure policy, all documents shall be made available to the public in accordance with relevant provisions of the RTI Act, except when otherwise warranted by legal requirements. A designated information officer shall be responsible for ensuring timely and complete dissemination in accordance with this policy.

8.11.5 Information to be Disclosed

230. The following information needs to be disclosed:

- a) Project specific information needs to be made available at each contract site through public information kiosks.
- b) Project information brochures shall be made available at all the construction sites as well as the office of the implementation agency and the project office in charge.
- c) Reports and publications, as deemed fit, shall be expressly prepared for public dissemination, e.g., English versions of the SIA and RAP and executive summary of SIA and RAP in local language.
- d) Wherever civil work will be carried out, a board will be put up for public information which will disclose all desired information to the public, for greater social accountability.
- e) All information will be translated into local language and will be disclosed to the public through the Panchayat, District Magistrate's office, concerned project offices, website of JUIDCO

Table 54: Information to be Disclosed, Frequency and Location

Topic	Documents to be disclosed	Frequency	Location
Resettlement, rehabilitation and land acquisition	RAP	Once in the entire project Cycle, but to remain on the website and other disclosure locations throughout the project period.	<ul style="list-style-type: none"> ▶ World Bank's Infoshop ▶ On the website of JUIDCO <p>The client would make the RAP available at a place accessible to displaced persons and local NGOs, in a form, manner, and language that are understandable to the PAPsin the following offices:</p> <ol style="list-style-type: none"> i. DM's office ii. District libraries iii. Local municipal and iv. Grampanchayatoffice v. Contractor camp vi. Project office
	Resettlement and rehabilitationpolicy translated in local language.	Once in the entire projectcycle	Distributed among PAPs

	Information regarding impacts and their entitlements in local language.	Once at the start of the project and as and when demanded by the PAP.	Through one-to-one contact with PAPs; community consultation; list of PAPs with impacts and entitlements to be pasted in the IA office and website of project.
	R&R and land acquisition/transfer monthly progress report.	10 th day of every month.	Website of project; hard copy in the office of IA and contractor in local language.
	Grievance redress process.	Continuous process throughout the project cycle.	On the website of JUIDCO. The client would make the RAP available at a place accessible to displaced persons and local NGOs, in a form, manner, and language that are understandable to the PAPs in the following offices: i. DM's office ii. District libraries iii. Local municipal and iv. Grampanchayat office v. Contractor camp vi. Project office
Public consultation	Minutes of formal public consultation meetings.	Within two weeks of the meeting.	On the website of JUIDCO The client would make the RAP available at a place accessible to displaced persons and local NGOs, in a form, manner, and language that are understandable to the PAPs in the following offices: i. DM's office ii. District libraries iii. Local municipal and iv. Grampanchayat office v. Contractor camp vi. Project office

8.11.6 Grievance Redressal Mechanism

231. A GRC will be set up at the state and ULB level and wherever investments have been or will be planned before project implementation.

232. The objective is to receive and resolve the affected communities concerns, queries, complaints and grievances about the environmental and social aspects of the Project that could be encountered during implementation as well as to address other social issues pertaining to social cohesion and integration once the sub-projects implemented. Some means of communicating information on JUIDCO's GRM includes the following:

- ▶ Distribution of leaflets to the public places

- ▶ Notice boards
- ▶ JUIDCO's website
- ▶ Telecommunication Tools

233. The Deputy Project Director (JUIDCO, PMU) will be responsible for ensuring that each sub-project establishes an effective multi-level GRM to handle all grievances related to sub-project activities. The GRM will function at 2 levels: at the community level, where every effort will be made to resolve the issue; and at the sub-project level where, a GRC will be established and as an appeal mechanism at state level. the sub-project level GRC shall be constituted with five persons including a female member.

- ▶ One from the ULB/executing agency
- ▶ Any one elected representative (local project area; preferably female)
- ▶ Representative of a community-based group of women such as Mahila Samakhya/Mahila Mandal
- ▶ A person who is publicly known and accepted by the locals (in the project area) to speak on their behalf (to be identified by the elected representatives of the ULB)
- ▶ Community development officer from PIU
- ▶ Medical officer
- ▶ Officer from concerned department such as police, transport and labour
- ▶ ULB-level community organiser or Chief Municipal Officer's representative

234. The PAP will have to clarify the area of grievance. The GRC will entertain only grievances related to construction activities affecting the livelihood or loss of property/utility or restriction of access, labour community conflict, construction site management and quality of service during the O&M period. Grievances related to corruption will only be dealt under the anti-corruption laws of the Jharkhand.

35. The PAP (or his/her representative) may submit his/her complaint in by either written letter, phone, or email to the GRC or, alternatively, raise his/her voice in a public or individual meeting with project staff. A very simple grievance form in local language will also be available at each project site to be filled in by the complainant. Also complaint boxes shall be placed at ULB office, PIU office and Contractors campsite/office. One person in PIU and contractor office will be designated as complaint officer responsible for receiving all the grievances (oral or written) and maintaining the log of such complaints and action taken. This complaint officer shall facilitate filling the grievance form in case of illiterate complainants. NGO engaged for RAP implementation shall act as facilitator in ensuring that all the complaints/suggestions reach the attention of PIU head especially of the PAPs and local

community. The effectiveness of the GRM shall be tracked through progress report of CSQC and NGO facilitating RAP implementation.

36. The contact details of the registering complaints/suggestions at state level is given below:

235.

Grievance Redressal Cell

Jharkhand infrastructure Development Company Limited

3rd Floor, Pragati Sadan, Kutchery Chowk

Ranchi-834001, Jharkhand

Phone No: 651 2243203

Email: grc.jmdp.juidco@gmail.com

236. The GRC will meet to try and resolve the matter at community level and make a recommendation usually within 7-10 working days from receipt of complaint. If there is no decision after 10 days, the PAP or any other aggrieved person can refer the complaint to the Deputy Project Director (JUIDCO, World Bank PMU). The Deputy Project Director (JUIDCO, World Bank PMU) will chair an Appeals Committee, which will then examine and address the complaint within 20 days. It is recognised that some complaints may take longer to resolve due to their complexity, for example, those related to land disputes. In such cases, the greived party shall be communicated the possibility of delays with reasons and next actions within 20 days, All submitted complaints and grievances will be registered at the sub-project level and added to a database of JUIDCO-JMDP PIU, which will be monitored regularly by designated JUIDCO-JMDP staff. In addition to the mechanism explained above, PAPs have the right to approach the judiciary of the country.

8.11.7 Institutional Arrangements for Addressing Resettlement Impacts

237. The project will set up dedicated teams to be based in Ranchi and in concerned ULBs responsible for managing, coordinating and monitoring the execution of its sub-projects.

238. The State PMU in Ranchi at JUIDCO will be responsible for addressing social safeguard measures. The PMU will be supported by competitively selected decentralised teams as PIU at ULB responsible for day-to-day execution of respective sub-projects. Social and environment specialists will be hired by the PMU and PIU to coordinate, review, support and monitor all respective safeguards aspects of the project. The PMU specialists will also train and strengthen the capacities of specialists in the PIUs and other implementing entities. The project may hire qualified civil society organisations for the implementation of Resettlement Action Plan and social mobilisation.

8.11.8 Monitoring and Reporting

239. The concurrent internal environmental social monitoring will be done as part of the regular monitoring by the PIU, implementing agencies, and design and supervision consultants. Respective PIUs will do the regular monitoring of RAP implementation of all sub-projects. PIUs will submit monthly progress report on RAP implementation to the PMU. The PMU, with the help of in-house environmental and social specialists will do the quarterly environmental and social monitoring of sub-projects for safeguards compliance.

240. An external evaluation of the Resettlement Action Plan implementation for sub-projects will also be undertaken through an audit consultant specifically hired for this purpose. Stakeholder consultation workshops with the participating departments and other stakeholders at ULB level will be held once a quarter during implementation, to gather their feedback on the environmental & social issues arising out of implementation of the sub-project.

9 STPP FRAMEWORK

9.1 OVERVIEW OF STs IN INDIA

241. India is the home to large number of STs, who are still untouched by the lifestyle of the modern world. With more than 84.4 million, India has the largest population of the tribal people in the world. These tribal people, also known as the 'adivasis', are the poorest in the country, who are still dependent on hunting, agriculture and fishing. Some of the major tribal groups in India include Gonds, Santhals, Khasis, Angamis, Bhils, Bhutias and Great Andamanese. All these tribal people have their own culture, tradition, language and lifestyle. The ST population of Jharkhand state as per 2011 Census is 70,87,068, constituting 26.3% of the total population of the state. Jharkhand holds 6th and 10th ranks in terms of ST population and percentage share of ST population of the total population of the state respectively. The growth of the ST population was 17.3%, which is lower than the state average growth of 23.3%, during 2001- 2011.

242. Two notable features of Jharkhand are its high proportion of ST population, which is about 26.3% against an all India average of 8%, and a high percentage of area under forest cover, which is about 29% against the Indian average of 23%⁴¹. Among all states and UTs, Jharkhand holds the 6th rank in terms of ST population. It has around 32 tribal groups, major among them being Santhal, Munda, Oraon and Ho. Eight out of the 32 tribes of Jharkhand fall under Primitive Tribal Group (PTG) 1042. They are Asur, Birhor, Birajia, Korwa, Savar, Pahariya (Baiga), Mal Pahariya and Souriya Pahariya. PTGs remains the most isolated and disadvantaged indigenous tribal groups with noticeable reduction in their population. Malnutrition, malaria and dysentery are rampant in PTGs clusters and the access of these communities to the social welfare programmes remains limited.⁴³

243. Out of 32 STs notified in the state, Santhal is the most populous tribe constituting 34% of the ST population of the state. Oraon (19.6%), Munda (14.8%) and Ho (10.5%) are the 2nd, 3rd and 4th largest tribes of the state. Other major tribes are Kharia, Bhumji, Lohra, and Kharwar. There is also presence of other tribes such as Chero, Bedia, Mal, Pahariya and Mahli. Other than these major tribes there are 18 other different tribes whose presence is just 5.3% of the total ST

⁴¹Census of India, 2011; <http://jharkhand.nic.in>

Among scheduled tribes, there are certain tribal communities who have declining or stagnant population, low level of literacy, pre agricultural level of technology and are economically backward. 75 such groups in 17 States and 1 Union Territory have been identified and categorized as Primitive Tribal Groups (PTGs).

⁴² FAD/India/Jharkhand Tribal Empowerment and Livelihood Project

⁴³ The Article 366 (25) of Constitution of India defines scheduled tribes as "such tribes or tribal communities or parts of or groups within such tribes or tribal communities as are deemed under Article 342 to be Scheduled Tribes for the purposes of this constitution".

population. Out of 260 blocks in the state of Jharkhand, 112 fall under the Fifth Schedule⁴⁴ areas (spread across 15 districts out of 24 districts).

244. The JMDP has been identified for improvement of urban basic infrastructure and services with funding from the World Bank may affect the ST populations in the project areas.

9.2 BASIC SOCIAL PARAMETERS OF THE TRIBALS OF JHARKHAND

9.2.1 Demography and Literacy

245. The overall sex ratio of the ST population in Jharkhand is 947 females per 1,000 males, which is higher than the national average at 940 females per 1,000 males. The overall literacy level of the ST population increased from 27.5% at 2001 census to 40.7% at 2011 census. Despite this improvement, the literacy rate among the tribes is much below in comparison to that of all STs at the national level (47.1%).

246. School dropout is not common among the population of the state of Jharkhand. About 95% of the children between the age group of 6 and 14 years attended school. It has been observed that none of the tribal children have dropped out of school.

9.2.2 Occupation and Income

247. The working participation rate of the ST population in the state of Jharkhand is 46.3%, which is slightly

248. lower than the national level at 49.1%. There is significant unrecorded male and female ST population follow their traditional occupation of hunting small animals and collecting roots, stems and herbs from the forest.

9.3 APPLICABLE POLICIES FOR STs

249. The applicable policies for STs are listed below:

- a) Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act-2013 (RFCTLARR Act, 2013)
- b) Jharkhand Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules-2015.
- c) Panchayats (Extension to Scheduled Areas) Act, 1996. (PESA Act 1996)
- d) Chota Nagpur Tenancy Act, 1908. (CNT Act, 1908)
- e) Santhal Parganas Tenancy (Supplementary Provision) Act, 1949. (SPT Act, 1949)

⁴⁴ The Fifth Schedule under article 244 (2) of the Constitution defines "Scheduled Areas" as such areas as the President may by order declare to be Scheduled Areas after consultation with the governor of that State. The criteria for declaring any area as a "Scheduled Area" under the Fifth Schedule are

* Economic backwardness of the area as compared to neighbouring areas

- f) The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act.
- g) World Bank Operational Policy 4.10 on Indigenous People.

250. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 requires prior consent of Gram Sabha for acquiring land in Scheduled Areas where such acquisition is the last resort. Sections 43 to 50 of this Act contain provisions for resettlement and rehabilitation as part of the statute and specific safeguards to STs.

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

251. This Act recognises and vests forest rights and occupation on forest land in forest dwellings to STs and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded. The Act provides for a framework for recording the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land.

Panchayat Extension to Scheduled Areas (PESA) Act

252. The 73rd and 74th Constitutional (Amendments of 1992) accommodate special powers to PRIs, were later extended, with separate provisions to the Scheduled Areas as well through the Panchayat (Extension to the Scheduled Areas) Act of 1996. With the strength and support of PESA Act, 1996 the PRI bodies at the district and village level have been vested special functional powers and responsibilities to ensure effective participation of the tribal people in their own development. This also helps preserve and conserve traditional rights over natural resources.

Limitation of PESA Act, 1996 and FRA Act, 2006.

253. While section 4 (i) of PESA provides the right to Gram Sabhas to be consulted before land acquisition, more stringent provisions exist in Sections 41 and 42 of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (LARR).

254. Unlike PESA, Section 41 of LARR 2013 provides for consent of Gram Sabhas before the process of land acquisition can begin. Section 41 and 42 also provide certain protections just in case the land acquisition is taken up as a last resort. The statement of Section 41 is as follows:

- ▶ As far as possible, no acquisition of land shall be made in the Scheduled Areas.
- ▶ Where such acquisition does take place it shall be done only as a demonstrable last resort.

- ▶ In case of acquisition or alienation of any land in the Scheduled Areas, the prior consent of the concerned Gram Sabha or the Panchayats or the autonomous District Councils, at the appropriate level in Scheduled Areas under the Fifth Schedule to the Constitution, as the case may be, shall be obtained, in all cases of land acquisition in such areas, including acquisition in case of urgency, before issue of a notification under this Act, or any other central act or a state act for the time being in force: Provided that the consent of the Panchayats or the autonomous districts councils shall be obtained in cases where the Gram Sabha does not exist or has not been constituted.
- ▶ In case of a project involving land acquisition on behalf of a requiring body which involves involuntary displacement of the SC or the ST families, a development plan shall be prepared, in such form as may be prescribed, laying down the details of procedure for settling land rights due, but not settled and restoring titles of the STs as well as the SCs on the alienated land by undertaking a special drive together with land acquisition.
- ▶ The development plan shall also contain a programme for development of alternate fuel, fodder and non-timber forest produce resources on non-forest lands within a period of five years, sufficient to meet the requirements of tribal communities as well as the SCs.
- ▶ In case of land being acquired from members of SCs or the STs, at least one-third of the compensation amount due shall be paid to the affected families initially as first instalment and the rest shall be paid after taking over of the possession of the land.
- ▶ The affected families of the STs shall be resettled preferably in the same Scheduled Area in a compact block so that they can retain their ethnic, linguistic and cultural identity.
- ▶ The resettlement areas predominantly inhabited by the SCs and the STs shall get land, to such extent as may be decided by the appropriate government free of cost for community and social gatherings.
- ▶ Any alienation of tribal lands or lands belonging to members of the SCs in disregard of the laws and regulations for the time being in force shall be treated as null and void, and in the case of acquisition of such lands, the rehabilitation and resettlement benefits shall be made available to the original tribal land owners or land owners belonging to the SCs.
- ▶ The affected STs, other traditional forest dwellers and the SCs having fishing rights in a river or pond or dam in the affected area shall be given fishing rights in the reservoir area of the irrigation or hydel projects.
- ▶ Where the affected families belonging to the SCs and the STs are relocated outside of the district, then they shall be paid an additional 25% rehabilitation and resettlement benefits to which they are entitled in monetary terms along with a one-time entitlement of Rs. 50,000.

255. Section 42 states as follows:

- ▶ All benefits, including the reservation benefits available to the STs and the SCs in the affected areas shall continue in the resettlement area.
- ▶ Whenever the affected families belonging to the STs who are residing in the Scheduled Areas referred to in the Fifth Schedule or the tribal areas referred to in the Sixth Schedule to the Constitution are relocated outside those areas, all the statutory safeguards, entitlements and benefits being enjoyed by them under this Act shall be extended to the area to which they are resettled regardless of whether the resettlement area is a Scheduled Area referred to in the said Fifth Schedule, or a tribal area referred to in the said Sixth Schedule, or not.
- ▶ Where the community rights have been settled under the provisions of the STs and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, the same shall be quantified in monetary amount and be paid to the individual concerned who has been displaced due to the acquisition of land in proportion with his share in such community rights.

Chota Nagpur Tenancy Act, 1908 (CNT Act)

256. The CNT Act, enacted in 1908 to stop land alienation, is supposed to be the magna-carta for tribals. It is applicable in North Chhota Nagpur, South Chhota Nagpur and Palamu divisions, including areas under various municipalities and notified area communities. On 25 January 2013, the Jharkhand High Court asked the State Government to also follow the Act for SCs. Section 46 of the CNT Act restricts transfer of land belonging to STs/SCs and backward classes. However, a tribal may transfer his land through sale, exchange, gift or will to a fellow ST member and residents of his own police station area. Similarly, SCs and BCs can transfer land to members of their own community within the limits of the district in which the land is located with prior permission of the Deputy Commissioner.

Santhal Pargana Tenancy Act, 1949 (SPT Act)

257. The Santhal Pargana Act was enacted in 1949 to preserve the identity of the entire paraganas (division) inhabited by santhals. Santhal Pargana area is divided into the Six districts, i.e. Dumka, Jamtara, Deoghar, Godda, Sahibganj and Pakur. According to Section 20 of SPT Act 1949, no transfer by a raiyat of his right in his holding or among persons thereof by sale, gift, mortgage, will, lease or any other contract or agreement express or implied shall be valid. This non-transferability was introduced in the tenancy laws of this division, not for the economic development and welfare of tribals themselves but as a tool to prevent tribal unrest and secure administration in this region. This primitive land tenancy is not only applicable to tribal and tribal land holdings but also non-tribal and non-tribal land holdings of this division.

World Bank OP 4.10 on Indigenous people

258. World Bank OP 4.10 on Indigenous People requires that only where free, prior, and informed consultation results in broad community support to the project by the affected indigenous people the project is financed. Such projects should include measures to (a) avoid potentially adverse effects on the indigenous people communities or (b) when avoidance is not feasible, minimise, mitigate, or compensate for such effects. World Bank projects are also designed to ensure that indigenous people receive social and economic benefits that are culturally appropriate and gender and intergenerationally inclusive.

9.3.1 Requirement of STPP

259. In case screening of an individual program or sub-project identified indicates that it falls in a Scheduled Area or STs in groups are present or have collective attachment to the land in the area of the program or sub-project, JUIDCO should ensure that before the individual program or sub-project is implemented, a social assessment is carried out and an STPP is prepared in accordance with the requirements of this STPPF. JUIDCO should provide each STPP to the World Bank for review and approval before the respective program or sub-project is considered eligible for World Bank financing.

260. STPP will be an integral part of the RAP of any of the infrastructural projects when ST populations is adversely affected or displaced due to the sub-project. STPP is also required if substantial change is anticipated in the project area which might affect the tribal people's traditional right over land or alter their lifestyle in such a manner that they are uprooted or are no longer in a position to follow their tradition and culture.

261. The objectives of STPP are 'promotion of inclusive, equitable and sustainable development through fostering and empowering grassroots tribal institutions in the tribal areas'. The contents of the STPP are annexed as Annexure XI.

262. A socio-economic assessment of the sub-projects in 2 ULBs was undertaken to identify the impacts on the ST population and the requirement of STPP. The findings of the assessment are given below:

- a) The PIA is the existing town and adjoining areas in the ULBs.
- b) The project entails only widening of roads and constructing infrastructure for storm water drainage or drinking water supply within the municipal area. However, some components of the

infrastructure may require to be built outside the municipal area such as intake well and raw water main, outfalls/outlets for storm water drains, STP discharge etc..

- c) There is no land acquisition in 3 ULBs.
- d) Non-title holders of all social strata might be affected due to the project.
- e) 5.5% of the PAPs consist of STs across the 3 sub-project area.
- f) Physical or economical displacement is minimum and the impacts in most of the cases are temporary.

263. Thus, in the known sub-projects there is no impact on the traditional way of life of the ST population. Upgrading the roads and other urban infrastructure of the ULBs shall have a positive impact on the quality of life of the under privileged population including tribal people in the urban areas. Out of the 3 sub-projects identified so far, Khunti Water Supply falls in Schedule V area as notified by the GoI and requires diversion of land under the Scheduled Tribes and Other Forest Dwellers Act. Hence, an STPP is prepared for the Khunti Water Supply Project.

264. The benefits to the STs and other vulnerable population in the urban area envisaged with the projects are listed below:

- ▶ Due to bad road conditions, frequency of public transport is less. As a result, local people have to wait for long to board bus/tracker/auto for reaching their destination. The known sub-projects would enable easy accessibility of the urban infrastructure to the poorer section of the urban areas including the most economically deprived ST population mainly wage earners, labourers, vendors and hawkers.
- ▶ Unavailability of clean and hygienic drinking water at door-step is one of the major challenges faced by the local population. People have to travel long distance to fetch water, which consumes lot of their time and energy. The known sub-projects will enable access to clean water to the local population.
- ▶ The quality of urban infrastructural services would also increase which would benefit the most to the poorer population including the STs.
- ▶ Cost and time for utilising the urban infra-structure would decrease.
- ▶ Quality of living of the poorer section including the ST population would improve.

265. The adverse impact to the ST population would be the followings:

- ▶ There might be a loss of structure both residential and/or commercial.
- ▶ There might be loss of livelihood both temporary and permanent.
- ▶ There might be loss of community structure.

266. The mitigation of the social and resettlement impact will be addressed through Resettlement Action Plan and Environmental and Social Management Plan, vide assistance and compensation like replacement cost of structures, assistance for loss of livelihood for both temporary and permanent, special assistance to vulnerable and replacement cost for the CPRs.

267. For future sub-projects, consultations with the ULBs, block offices and Gram Panchyats will be held for identification of SC and ST population in the project influence area. For the SCs and STs present in the project influence areas with distinct socio-cultural identity and being normally 'excluded', special attentions will be required to ensure their inclusion and equity vide the STPP.

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268. In case any of the sub-project components fall in a Scheduled V area or use the natural resources already being utilised by SC and ST hamlets, the process of free, prior and informed consent of STs as prescribed in the PESA Act will be followed.

- ▶ The Gram Panchayat shall be deemed to be the Executive Committee of the Gram Sabha. The Secretary of the Gram Panchayat will be deemed to be the Secretary of the Gram Sabha and the Gram Sabha will hold a meeting at least once in two months.
- ▶ A person who is a member of an ST will be selected as chairperson for the meeting of the Gram Sabha for one year by consensus. In the case of non-consensus, amongst the members present, the oldest lady from the STs would be the chairperson.
- ▶ The quorum of the meeting of the Gram Sabha will be one-fifth of the total members. There shall be a separate quorum for women, which will be one-third of the general quorum.
- ▶ The Gram Sabha may constitute Standing Committees, viz., Peace Committee, Justice Committee, Resource Planning and Management Committee, Intoxication Control Committee, Debt Control Committee, Market Committee, Sabha Kosh Committee and others as deemed appropriate by the Gram Sabha in order to fulfil its responsibilities regarding various aspects of the working of the village. Members of these committees shall be elected in an open meeting of the Gram Sabha.
- ▶ If under any act on any subject such as forest, irrigation management, etc., a body or committee is constituted by any government department, it will be treated as a Standing Committee of Gram Sabha on that subject. Notwithstanding the provisions in the concerned Act, that body or committee will be accountable to the Gram Sabha.
- ▶ The Gram Sabha will maintain a Gram Sabha Kosh, which will consist of the contribution received in any form including voluntary contributions of cash and goods and the labour of villagers; amount received through the government from minor forest produce, minor minerals etc; and surcharges imposed on the consumption of the resources or fines levied by the Gram Sabha. The

Gram Sabha will have the complete right of usage of the Gram Sabha kosh as per its own decisions.

- ▶ The Gram Sabha will ensure that resources are utilised in such a way that:
 - a) Livelihood means are sustained.
 - b) Inequality amongst the people does not increase.
 - c) Resources are not confined to a few people.

- ▶ The Gram Sabha will ensure that no land belonging to ST is transferred to non-STs. It shall be competent to enquire into any land transactions, or authorise the Peace Committee to do so, on the basis of complaints or suo motto. If the Gram Sabha is of the opinion that attempts are being made to alienate lands belonging to STs, it may issue instructions to prohibit the transaction and its decision in such cases shall be final.
- ▶ Gram Sabha shall be mandatorily involved in all decision relating to land-acquisition; peace and security and dispute resolution; management of natural resources; agriculture and land; mines and minerals; intoxication control; minor forest produce; management of markets; money lending; identification of beneficiaries; approval of plans; supervision and review of social sector schemes as well as local institutions such as schools, hospitals, etc.
- ▶ Gram Sabha is competent to maintain separate registers for the details of the (i) births, (ii) deaths, (iii) marriages, (iv) festivals and (v) persons going outside the village to make livelihood.
- ▶ It will be mandatory for the Gram Panchayat to obtain a certification of utilisation of all funds from the Gram Sabha for works undertaken in its areas.
- ▶ If a Gram Sabha is of the opinion that any state legislation is not in consonance with the customary law, social and religious practices and traditional management practices of the community resources, it may pass a resolution to that effect, and forward it to the State Government through the District Collector. The State Government shall take necessary action on it.

10 INSTITUTIONS

269. It is necessary to highlight and define the roles, responsibilities and institutional arrangements for the implementation of the JMDP, as they are fundamental for effective implementation of the environmental and social safeguard measures outlined in this ESMF. A three-tier management structure is envisaged to enable effective communication and distribution of responsibilities between the three primary stakeholders namely:

- a) At the highest level, the project will be directed by an Empowered Committee (EC), which will provide oversight and policy decisions. The Committee will be chaired by Additional Chief Secretary/Secretary/Principal Secretary, UDHD, and will include Principal Secretary of Planning and Finance Department, Principal Secretary of Drinking Water and Sanitation Department and Director SUDA, who will be the Member Secretary of the Committee. The EC will meet at least twice every year. However, the EC can meet as frequent as possible based on need and requirement.
- b) The second level is a JUIDCO-PMU at the state level
- c) The third level is a JUIDCO-PIU at the ULB level

270. The project management structure has been envisaged to enable effective communication and distribution of responsibilities amongst different participants of the JMDP at all the different levels and has been discussed in detail in the Operations Manual prepared for the project.

271. The PMU and PIU will involve dedicated environmental safeguard specialist and social safeguard specialist. Environment and social specialists have been hired at the PMU level, and have been working throughout the preparation phase of the JMDP project to support preparation of safeguards documentation for JMDP. JUIDCo PIUs will be established at the ULB level, and will be fully operational before the sub projects at the ULB level begin civil works activities. These would also contain a dedicated environment and social specialist. The project will also hire the services of a project management consultant firm to support implementation and strengthen capacity for environment and social due diligence. The PMC firm will also have a dedicated environment and social specialist (see Figure 10 below) to support the PMU. To support the PIU, during the implementation level, a CSQC consultant firm will be hired. Roles and responsibilities of the respective environment and social officers in the PMU and PIU are discussed in detail in the sections below. The details of institutional arrangements and the roles and responsibilities of the various institutions in the implementation of the JMDP are highlighted below.

10.1 OVERALL INSTITUTIONAL STRUCTURE FOR PROJECT IMPLEMENTATION (JUIDCO, ULBs ETC.)

272. JUIDCO will have the primary responsibility for overall project implementation and ensuring that project objectives are achieved. It will be directly responsible for implementation of Component 1 and Component 3, including all procurement, financial management and safeguard activities. A PMU will be set up within JUIDCO.

273. In addition to the PMU, JUIDCO will set up PIUs at ULB level, which jointly with the PMU will be primarily responsible for implementation supervision at the ULB level, as well as for providing O&M quality assurance support to ULBs. The ULBs will be primarily responsible for the O&M of project investments. The PIUs will comprise members of the ULB's engineering team, which will facilitate on-the-job training of ULB engineers on developing, supervising and managing large infrastructure projects. JUIDCO will provide formal mentoring support to ULBs on both project execution and O&M. JUIDCO will procure a PMC to support the PMU and PIU for meeting all project management requirements of the proposed Project.

A tri-partite implementation agreement (TPIA) will be signed by JUIDCO, UD&HD and the concerned ULBs. The TPIA will establish the roles and responsibilities of each of these agencies for implementation of urban investments.

274. The PMU will have the overall responsibility for project management and execution. The PMU will assume direct responsibility for day-to-day project management, coordination and implementation. It will take the lead role in preparing, implementing, and monitoring of project performance in line with the project implementation schedule and the Project Operations Manual (OM). The PMU will also facilitate day-to-day decisions for implementing the project components and will be responsible for inter-agency coordination. The PMU will prepare annual work programs, budgets, procurement plans; disburse funds; review fund execution and accountability; safeguard document preparation and oversee quarterly review meetings, as well as contract and supervise project staff and consultancy assignments, prepare reports and other documents, and provide quality control.

275. JUIDCOPMU will also supervise sub-project implementation and will monitor the financial and physical progress of sub-projects, monitor implementation of ESMP, contract management, and the adequacy of public disclosure, consultation, and grievance redressal (including tasks which will need to be done by ULBs). The suggested scope of safeguards supervision and monitoring is attached in Annex XV.

276. The PMU is headed by a Project Director assigned from the State Government, who will report to the Principal Secretary UDHD. In addition, a full-time Deputy Project Director will be put in place who will lead all day-to-day decision meetings of the PMU. The PMU is staffed by the following key positions (i) Deputy Project Director, (ii) Financial Management Specialist, (iii) Procurement Specialist, (iv) Environmental Safeguards Specialist, (v) Social Safeguards Specialist, (vi) Contract Management Specialist, (vii) Municipal Engineers, (viii) Civil Engineer, (ix) Urban Planner, (x) Institutional Development Specialist and (xi) support staff. The UD&HD will bear the technical responsibility of implementing Component 2. Support will include consultancy packages (scope of consultancy packages to be agreed with UDHD).

277. The ULBs will be responsible for the local level O&M of respective sub-projects. Consistent with the project’s goal to strengthen ULB capacities, ULBs will be given responsibility as well as assistance to develop their capacity to manage the development and operation of infrastructure. The institutional arrangement and staffing arrangement of JUIDCO-JMDP safeguards implementation is explained in **Figure 10** and the overall institutional structure of JUIDCO- JMDP is presented in **Figure 11**.

Figure 10: Institutional Arrangement for safeguards management

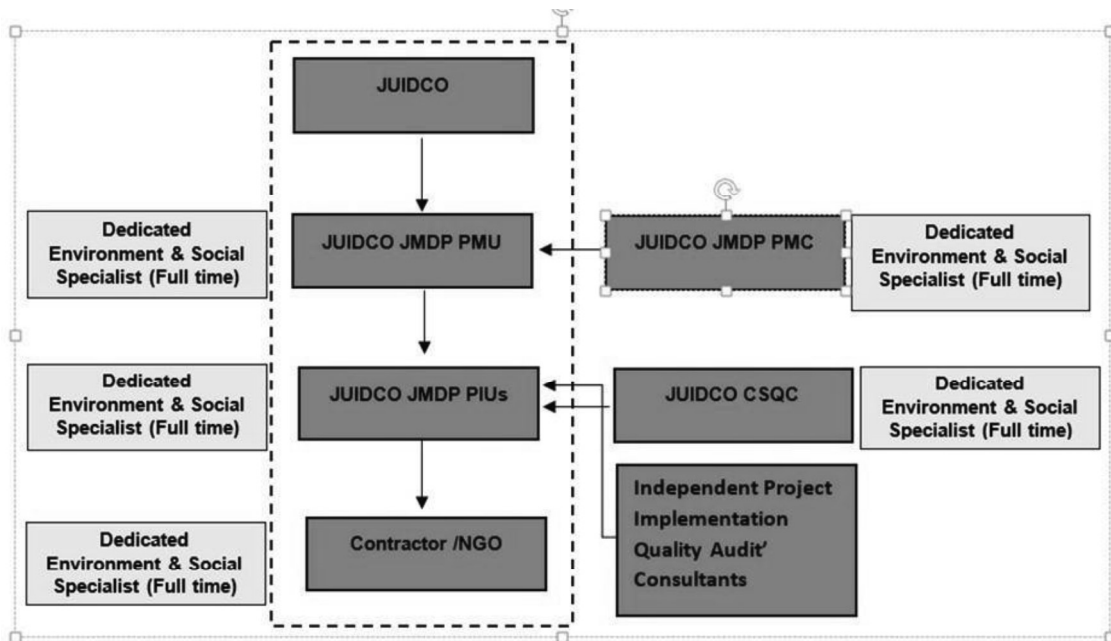
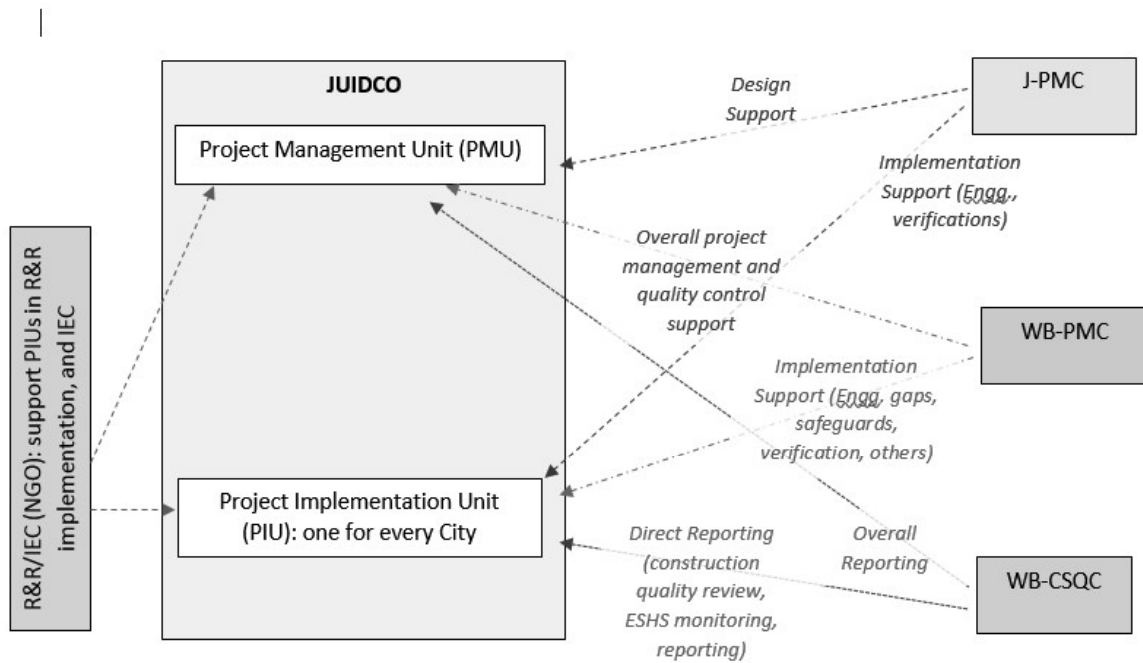


Figure 11: Institutional Arrangement



10.1.1 JUIDCO PMU

278. The JUIDCo PMU has already been staffed and operationalised through project preparation. An environment and social specialist have been recruited and have been supporting safeguards preparation process. The PMU will be responsible for the following:

- ▶ Stakeholder consultations and public engagement.
- ▶ Approval of DPR, ESIA, designs, preparing of bidding documents, tendering schedules, etc.
- ▶ Preparation of TOR for ESIA
- ▶ Preparation of sub-project DPR ESIA and ESMPs.
- ▶ Site visits and inspection of projects under implementation.
- ▶ Appointment of technical assistance consultants and others safeguards management support to the implementing agencies.
- ▶ Quality assurance through third-party audits.
- ▶ Maintaining MIS and quarterly reporting.
- ▶ Progress reporting, financial management, monitoring and reporting.
- ▶ Ensuring compliance with agreed implementation procedures and other World Bank requirements, etc.
- ▶ Attaining all NOCs and clearances needed for sub-projects.

10.1.2 JUIDCO PIU- Environment and Social Functions

The PIU will provide the dedicated support to the PMU to supervise and monitor sub projects in implementation, and provide the link with the ULB to build ownership and capacity to carry out the O&M arrangements. PIUs will be operationalised before NOL is issued to the contractor. A dedicated environment and social specialist will also be hired as part of the core structure. Each ULB will contain a PIU where investments are being implemented. The PIUs will be responsible for the following:

- ▶ Carry out inspection visit o sub-project sites under implementation.
- ▶ Submit to PMU Monthly progress reporting on ESMP implementation.
- ▶ Safeguards compliance reporting during JMDP implementation phase.
- ▶ Progress and expense reporting of ESMP to the PMU.
- ▶ Coordination with district level coordination committees, ULBs etc.
- ▶ PIU is staffed by following key positions (i) Project Manager (ii) Engineers from JUIDCO and ULB (iii) Environment Specialist and (iv) Social Specialist.

10.1.3 ULBs, PIUs Environment and Social Functions

279. The ULBs and PIUs will be responsible for the following:

- ▶ Monitoring ESMP during operations and maintainainence of urban infrastructure created under JMDP, and address all ESMP non-compliance issues.
- ▶ Support contractors in formulation and implementation of traffic management control plans, utility shifting plans and any special arrangements during festivals and pilgrimages for ensuring safety measures.
- ▶ PIU E&S specialists will visit project sites, and compile ESMP inspection checklists
- ▶ For water supply projects, ULB-PIU will carry out the necessary environmental quality monitoring and EHS monitoring during the oerpational phase.
- ▶ Assistance in obtaining necessary government approvals/permits/licenses and orders for implementation of project.
- ▶ Supervsion of Contractors waste management and borrow area management plans.
- ▶ Take part in the implementation of all community awareness and participation activities.
- ▶ Ensure site safety, PPE, EHS arrangemets are being implemented appropriately.
- ▶ Complaint handling and resolution.
- ▶ Maintain account with provisional sums for R&R activities
- ▶ Carry out the social outreach and necessary Information, education and communication (IEC) activities to ensure adequate social acceptability through citizen participation, community engagement and will set up a mechanism for consumer grievance redressal and attend to consumer complaints in a timely manner. It shall also obtain timely feedback of citizens on the

services provided and keep updated JUIDCO from time to time and take due care of needs of the urban poor and minorities.

10.1.4 Project Management Consultants

280. JUIDCo PMU is in the process of hiring a project management consultants using pre-agreed terms of references. The role of the PMC would be to support JUIDCo in overall project management, reporting and technical inputs. The PMC service will beef up the safeguards capacity in at the PMU level. A dedicated environment and social specialist will be hired as part of the PMC team and provide day-to-day support to the JUIDCO PMU safeguards specialists. The role of PMC is summarised below:

- ▶ Technical support and advice on detailed engineering design
- ▶ Environment and social safeguards support in ESIA preparation and sub project screening
- ▶ Financial/Procurement management and project audit
- ▶ Developing the GIS-based reporting and monitoring system
- ▶ Result monitoring and impact evaluation, etc.
- ▶ PMC will support PMU in monitoring and implementation of ESMP/RAP/STPPas per ESMF guidelines, support in preparation of future sub projects ESIAs, ESMP/RAP/STPP, preparation of progress reports and coordination with PMU.

10.1.5 Construction Supervision and Quality Control Consultant

- ▶ To support the PIU at the site the construction supervision and quality control consultant will be hired on pre-agreed terms. A CSQC firm will be hired and will be in place by the time sub project agreements are signed with the contractors. A multi disciplinary team will include An Environment, Social, Health and Safety Officer, the detailed scope of work is attached in Annex XX. The CSQC team will also include a Construction Safety officer for Dhanbad city as there will be two major sub projects in drainage and roads being implemented. A summary of the role of CSQC is listed below:

- ▶ Day-to-day supervision of the work performed by the contractor etc.
- ▶ Check and certify the claims made by the contractor.
- ▶ Verification of bills
- ▶ Verify the ESMP is being implemented according to the approved plan.
- ▶ Verify environmental quality monitoring being undertaken by the contractor.
- ▶ Verify and check construction safety and labour welfare measures.
- ▶ Construction debris management plan is being implemented effectively.
- ▶ Keep records of all accidents, injuries, complaints and incidences reported at the project sites.
- ▶ Controlling the quality of construction.

- ▶ In case of change in scope of work/design, the CSQC, with support from PMC will update the ESMP to incorporate the necessary mitigation measures.
- ▶ CSQC will verify and supervise the implementation of ESMF and ESMP through contractor.

10.1.6 Implementation of RAP, ESMP and Contract Management

281. The implementation of RAP and ESMP and contract management for JMDP project has been presented in **Table 55**.

Table 55: Implementation of RAP, STPP and ESMP

Level	Institution	Capacity	Roles and responsibilities
State	JUIDCO PMU	Full time dedicated Environment Specialist & Social Specialist	Undertake quarterly visits to all project sites, Ensure Grievance management. Ensure compliance with ESMF and timely implementation of ESMP/RAP/STPP. Obtain necessary regulatory clearances.
State	Independent Quality Audit Consultants for Safeguards	1 dedicated Environment & 1 Social Specialist	Audit the implementation of safeguards policy at the sub project level yearly.
State + regional	JUIDCO PMC	Full time dedicated Environment Specialist and Social Specialist, if more than 10 sub-projects, then 2 environment and social specialists	Undertake quarterly visits to all project sites. Support PMU and PIU in fulfilling safeguards obligations.
ULB	JUIDCO PIUs	1 dedicated Environment & 1 Social Specialist	Undertake daily visit to all project sites supervise NGO, Disburse entitlements, Grievance redressal. Coordinate with District administration.

ULB	RAP Implementing Consultant/NGO	Team Leader cum R&R Expert and one Female Social & Gender Expert	Support PIU Implement RAP/STPP at the site and monthly progress report
ULB	CSQC	Full time Environment Health and Safety Engineer & Social	Undertake daily visit to all project sites
Project Site	Contractor	Full time Environment Health and Safety Engineer	Implement ESMP – daily on site

282. RAP will be implemented through an Implementing Consultant/NGO with the help of district administration.

10.2 COORDINATION WITH OTHER AGENCIES AND ORGANISATIONS

283. PMU will establish networking relationships with line departments and other government and non-government organisations. The Revenue Department has an influencing role in land acquisition proceedings, and initiation of resettlement process. Unless the compensation process is prompt and efficient, implementation process will get delayed. Income restoration will be sole responsibility of the project authority. NGO will facilitate linkages to be established with the agencies implementing centrally or state sponsored poverty alleviation programs to restore the income of PAPs.

284. Restoration of community assets such as hand pumps, bore wells will require help from PHED. PMU will extensively work on developing lateral linkages for mobilisation of resources to benefit the PAPs and to achieve the desired results expected from implementation of RAP/ARAP/STPP.

285. The Revenue Department will be responsible for providing land records, acquiring land and other properties and handing them over to the proper authorities.

10.3 ROLES AND RESPONSIBILITIES OF ENVIRONMENT AND SOCIAL SPECIALISTS

286. Within JUIDCO, full-time environment specialist and social specialist will be appointed to handle all matters pertaining to environment and social management under the project, including implementing the ESMP and compliance with it. A full time environment specialist and social specialist will be available for JMDP for the entire project life.

287. The key responsibilities of the environment specialist and social specialist include:

- ▶ Orientation and training of implementing agency teams and the contractors on environmental and social management.

- ▶ Leading/ providing oversight on the ESIA process and its outputs, and approval of safeguard documents
- ▶ Hiring of consultants to undertake ESIA's and Safeguards Audit.
- ▶ Review of monitoring reports submitted by the implementing agencies on ESMP/RAP/TDP implementation.
- ▶ Conducting at least quarterly visits to project sites to review ESMP compliance during sub-project planning, design and execution.
- ▶ Co-ordinate application, follow up processing and obtain requisite environmental clearances required for the project, if required, advise PIU for compliance with statutory requirements.
- ▶ Develop, organise and deliver training programme for the PIU staff, the contractors and others involved in the project implementation, in collaboration with the environmental expert of the PIU.
- ▶ Liaise with various government agencies on environmental and other regulatory matters.
- ▶ Review environmental performance of the project, compile periodically environmental monitoring reports and provide a summary of the same to the project director for necessary follow-up actions.
- ▶ Provide support and assistance to the government agencies and the World Bank to supervise the implementation of the ESMP during the construction as well as operation stages of the project.
- ▶ Document the good practices in the project on incorporation and integration of environmental issues into engineering design and on implementing measures in the construction and maintenance programs of urban infrastructure projects, and dissemination of the same with the assistance of environment and social officers of PIUs.
- ▶ Providing guidance and inputs to the design consultants on environment and social management aspects
- ▶ Reporting to JUIDCO Project Director, and the World Bank .
- ▶ Coordinating with the Environmental quality audit consultants.

288. These specialists will also deal with matters pertaining to integration of Environment and Social concerns into the sub-project design and contract documents; preparation of Terms of References for ESIA; reporting, documentation, monitoring and evaluation on environment and social aspects and will ensure overall coordination with the implementing agencies and PIUs. The PIU offices at the district and block levels will support preparation of E&S screening checklist and detailed EA/SA if required, and preparation and implementation of /STPP/ESMPs wherever required. The environment and social specialists of JUIDCO will be supported by full-time environment and social specialists/ nodal officers positioned in the PIUs. These specialists will be available for the entire project life.

10.4 TRAINING AND CAPACITY BUILDING

289. The project staff will need to have awareness, sensitivity, skills and experience regarding the environmental and social aspects of sub-projects planning and implementation. For sustainability and seamless implementation of the environmental and social principles and safeguards by all the implementing partners, awareness creation and capacity building becomes necessary. This capacity building and IEC strategy has been outlined as part of the ESMF program developed for the project. It aims at building environmental and social awareness and management capacity in the project implementation structure as well as in the intended target communities. Capacity building for environmental and social management will be integrated with overall capacity building component of the project.

10.5 CAPACITY BUILDING OBJECTIVES

290. As the staffing arrangements and support consultancy services for project, environment a social management for JMDP have been agreed, it is necessary to focus on a capacity building and institutional strengthening programme for environmental and social related capacity building for investment/ sub project planning and implementation, i.e., environmental and social safeguards management under JMDP, ESIA requirements, environmental and social screening for planning, and managing Environment, Social, Health and Safety concerns in the construction phase- both for the contractors staff and to ensure public health and safety. The environmental and social specialists in the PMU, who have been supporting the project preparation process, and have been closely involved in the project will need to be provided the basic training sensitisation and orientation training to PIU staff and ULBs required for environmental and social awareness followed by specific issues and challenges of urban sector projects. Furthermore, JUIDCo will conduct orientation workshop for ESMF application for each partner and ULBs. Any cost implications relevant to the development/training will be recorded and financed from the project.

291. Specific training modules can be customised after assessing the capabilities to cover basic principles of environmental and social assessment and management; mitigation plans and programmes, implementation techniques, and monitoring methods. Target groups for training would be the environment and social officers of PMU and PIU for all the sessions and engineers/ planners/ managers for orientation sessions. The training sessions should be followed with site visits to have a 'hands on' approach to the program. Suggested modules for the training sessions the mode of training and duration is presented in table below.

10.5.1 TRAINING DETAILS

292. In view of the specialised training and capacity building envisaged under the ESMF of the project, it is necessary to identify nodal training institutes that will work closely with JUIDCO for conceptualising, designing, conducting and managing training programs on the ESMF. The details of the proposed training programmes are as below:

- ▶ Orientation/learning training programs
- ▶ Training on environmental and social management plan
- ▶ Workshops on ESMF
- ▶ Training on environmental and social management for construction stage impacts

293. The likely participants are key officials of the project, JUIDCO staff, PIUs, participating departments' staff, environment and social experts at the PIUs, resource persons, ULB representatives, community representatives, contractors staff etc. About 20 to 30 trainees would participate in each of the training programs

10.5.2 Tentative Training Schedule

294. The tentative schedule of trainings is presented in **Table 56**.

Table 56: Tentative Training Schedule

Training schedule		Duration	Participants
Program 1-Orientation Program / Workshop for Project Development agency/ Project implementing agency			
<p>Module 1 – ESMF Profile</p> <ul style="list-style-type: none"> ▶ ESMF Concept ▶ Regulatory Requirements-E&S Priority Issues ▶ Project Cycle of JUIDCO ▶ EA/SA Process Outline Reports & Formats 	<p>Module 2 Environmental Impact Assessment Process</p> <ul style="list-style-type: none"> ▶ Environmental Laws & Regulations ▶ EA process ▶ Identification of Environmental Impacts ▶ Impact Identification Methods ▶ Identification of Mitigation Measures ▶ Formulation of Environmental Management Plan ▶ Climate Change adaptation and mitigation Plans ▶ Implementation and Monitoring Institutional Mechanism 	<p>Module 3 Social Impact Assessment Process</p> <ul style="list-style-type: none"> ▶ R&R policies and procedures ▶ National & World Bank's regulatory requirements ▶ LA process ▶ Identification of PAPs ▶ Social Entitlement Frameworks ▶ Social Impact Assessment ▶ RAP Techniques ▶ Beneficiary Assessments ▶ STPP 	<p>JUIDCO staff, PIUs, Participating Departments' staff, IAs, Environment and Social Experts at the PIUs, Resource Persons, ULB Representatives, Community Representatives, NGOs, CBOs, Women Groups, etc.</p>
Program -2 Workshop on Sectoral Environmental and Social Impact Assessment			
<p>Module 1 –</p> <ul style="list-style-type: none"> ▶ ESMF Concept ▶ STPP Concept ▶ Regulatory Requirements-E&S Priority Issues ▶ Project Cycle of JUIDCO ▶ EA/SA Process Outline Reports & Formats 	<p>Module 2 –</p> <ul style="list-style-type: none"> ▶ Generic Modules applicable be developed for <ul style="list-style-type: none"> ▪ Water Supply Scheme ▪ Storm Water Drainage ▪ Transportation including urban roads and traffic management ▪ Building ▪ Sewerage ▶ Regulatory Requirements-E&S Priority Issues ▶ EA/SA/STPP Process Outline ▶ Identification of Environmental Impacts ▶ Identification Mitigation Measures ▶ Formulation of Environmental Management Plan ▶ Climate Change adaptation and mitigation 	<p>Module 3 –</p> <ul style="list-style-type: none"> ▶ Open Forum Feedback and comments from the Participants. 	<p>JUIDCO staff, PIUs, Participating Departments' staff, IAs, Environment and Social Experts at the PIUs, Resource Persons, ULB Representatives, Community Representatives, NGOs, CBOs, Women Groups, etc.</p>
		<p>5 days (1st, 3rd 5th and 7th year of the project)</p>	
		<p>5days (every alternate years) (Introduction will be common to all participants will be split according to their respective sectors)</p>	

Training schedule		Duration	Participants
	<ul style="list-style-type: none"> ▶ Implementation and Monitoring ▶ Social Entitlement Frameworks ▶ Social Impact Assessment ▶ RAP Techniques ▶ Case Studies 		
Program -3 Experience Sharing			
Module – Experiences and Best Practices <ul style="list-style-type: none"> ▶ Experiences on implementation of ESMF in implemented projects. ▶ Best Practices-Site visits to project towns/sites. 		5 Days (5 th & 7 th year of the project)	JUIDCO staff, PIUs, Participating Departments' staff, IAs, Environment and Social Experts at the PIUs, Resource Persons, ULB Representatives, Community Representatives, NGOs, CBOs, Women Groups, etc.
Program -4 Contractor Staff Training on Environment Social, Health and Safety Aspets			
Module – Training of Contractor on the following topics <ul style="list-style-type: none"> ▶ Occupational Health & Safety Training ▶ Staff & Labour Code of Conduct ▶ HIV/AIDS prevention Training ▶ Best hygiene practices ▶ Emergency Response System ▶ Behavioural Training ▶ Implementation of ESMP provisions 		5 days (Every year of the project)	Contractor Staffs and Labours ;CSQC; JMDP-PMU,JMDP-PIU

11 MONITORING AND SUPERVISION

- 295.** The ESMF requires detailed monitoring and supervision of implementation and evaluation of the environment and social impacts of the project. In order to carry out this, PMU will have specific arrangements made at state and ULB level. This includes appointment of an environmental specialist and a social specialist within the JUIDCO PMU and PIUs for the project period. In order to achieve the objectives of this ESMF and to ensure the implementation of safeguards in a proper manner, the following provisions are made in this ESMF:
- ▶ Environmental and social supervision of sub projects by PMU and PIU environment and social specialists.
 - ▶ PIU will carry out regular site inspections and address ESMP non-compliance issues. (a template for monitoring and inspection has been included in Annex XXIV)
 - ▶ Concurrent environmental and social monitoring and evaluation
 - ▶ Submission of quarterly environmental and social monitoring reports to the World Bank by the PMU.
 - ▶ Annual environmental and social audit of ESMF implementation by independent consultants
 - ▶ Environmental and social management capacity building of JUIDCO, PIU and implementing agencies including consultants, contractors and NGOs

11.1 SAFEGUARDS SUPERVISION

- 296.** A designated as social and environment specialist/officer within the project PMU at JUIDCO will be responsible for the implementation of ESMF tasks, JMDP PIUs at the field level, will also contain social and environmental specialists with the assistance and participation of construction supervision and quality control consultants (CSQC) who will supervise implementation of the ESMPs.
- 297.** These officers will also have the responsibility of implementing safeguard activities along with other project components, such as training of contractor's staff, joint verification surveys, weekly field level monitoring of ESMPs and for coordination amongst different agencies, such as the ULBs and Forest Department. During implementation, meetings will be organised by the JUIDCO PMU inviting all PIUs in the state for providing information on the progress of the project and safeguards related work.

- 298. For projects in preparation:** For category investments, E1, E2, S1 and S2, the PMU will engage external agencies to undertake preparation of the ESIA, ESMP, RAP as relevant in line with the requirements of ESMF. While initiating the studies, the external agency will be guided by the model Terms of Reference presented in Annexure VII, (and guidance provided in Annex III, IV and V), and shall interact with the environmental and social specialists in JUIDCO to seek guidance in the finalisation of scope of work in the ToR specific to the sub project.
- 299. At the feasibility stage:** The environment and social specialists in the PMU will be responsible for the following:
- a) Review the feasibility studies
 - b) Study the project information to appreciate the context within which the screening should be carried-out
 - c) Select sample corridors and carry out a reconnaissance survey with ESIA consultants
 - d) Undertake preliminary consultations with selected stakeholders
 - e) Conduct a preliminary analysis of the nature, scale and magnitude of the impacts and complete the environment and social screening checklist in Annexure 1. Accordingly, the categorisation of the project will be agreed and finalised, and the safeguards documents that need to be prepared will be agreed.
- 300.** If significant environment and social impacts are anticipated, the E&S specialists in the PMU, based on inputs from ESIA consultants, may recommend (wherever possible or required) alternatives on siting of main infrastructure components, location-specific design recommendations regarding alignment (major/minor shifts in pipeline, drainage lines, roads etc.) and mitigation and enhancement measures.
- 301.** The environment and social specialist will appraise the sub-project preparation leading to the approval of the detailed project report, and the necessary safeguards documents. This will include the following aspects:
- a) Adequacy and comprehensiveness of the ESIA, ESMP (including RAP, as relevant) as per the ESMF
 - b) Compliance with regulatory requirements and clearances and the World Banks safeguard Policy requirements.
 - c) Integration of environmental and social mitigation measures in to the project engineering design, wherever relevant/required.

- d) Appraise the adequacy of implementation arrangements for implementation of ESMP (including RAP, as relevant), including institutional capacity, manpower required and contractual provisions.
- e) Inclusion of ESMP (including RAP, as relevant) budgets in the project cost and bidding contract documents- including designs and costs for implementing ESMP.
- f) ESMP (including RAP, as relevant) monitoring and reporting arrangements
- g) In addition, contract documents will include references to various Legal provisions/ acts and clauses relating to the environmental and social performance, (compliance with ESMP), labour management , occupational health and safety management, and the implementation of the same will be monitored by JUIDCO PIUs and PMU.

302. For projects in implementation: All the sub-projects will be visited at regular intervals by PMU and PIU staff to check if all safeguard requirements are met and to identify any issues that need to be addressed. PMU would submit quarterly progress reports to the World Bank on safeguards implementation, the E&S specialists in the PMU conduct quarterly visits to all project sites, to carry out site inspection visits, verify ESMP implementation and progress reporting by the PIU, and quality of supervision by the CSQC.

303. At the sub-project level, the contractor's team would include an environment health and safety specialist, and a social specialist to implement the safeugards provisions, monitoring as per the ESMP, check site consitions are in compliance with ESMP any environmental and social non-compliances or deviations in implementing social and environmental measures. A monthly progress report on ESMP implementation will be provided by Environment and Social Specialist which will be submitted by PIU on the basis of the monitoring checklist provided in annex XXIV.

304. The CSQC team will include a suitably qualified Environment Social Health and safety Specialist (ESHS) to undertake the day-to-day supervision of contractors in all matters concerning compliance with the ESMP, and the occupational health, safety (OHS), Waste Management, Labour Camp Management and care of the works and workers and the community. The Consultant's team may also include a Construction Safety engineer who shall visit the active construction sites for monitoring and assessing hazardous and unsafe situations and developing measures to assure site safety. The engineer will validate the OHS supervisions and independently confirm compliance with the Contractor's OHS plan. For the detailed scope of work for environment, social, health and safety supervision for construction works is included in Annex XX.

Table 57: Monitoring Roles and Responsibility

Level	Institution	Capacity	Monitoring role
State	JUIDCOPMU	Full time dedicated Environment Specialist.	Undertake atleast quarterly visits to all project sites.
State	JUIDCO/PMC	Full time dedicated Environment Specialist, if more than 10 sub-projects, then 2 environment specialists.	Undertake atleast quarterly visits to all project sites.
ULB	JUIDCO/PIU	1 dedicated Environment Specialist	Undertake visits atleast every 15 days to project sites.
ULB	CSQC	Full time Environment Social Health and Safety Engineer.(ESHSE)	Undertake daily visit to project sites.
Project Site	Contractor	Full time Environment Health and Safety Engineer.	Implement ESMP – daily presence on site required.

Table 58: Monitoring Milestones (PMU environment and social specialist)

Milestones	Objectives	Process	Output
1. Sub- Project Screening (at the Feasibility stage)	To approve categorisation of proposed sub-projects.	Discussions with Engineering consults on overall scope of project. Undertake reconnaissance visits and stakeholder consultations. Conduct Environment and Social Screening and early impact identification. PMU may seek expert opinion on E&S issues. PMU will submit the FR along with proposed impact	Identification of impact category and decision to proceed or not.

		categorisation, and inputs from screening process.	
2. Sub- Project (at the DPR stage)	To ensure satisfactory compliance with ESMF and TOR for ESIA	Detailed appraisal of the safeguard reports (ESIA, ESMP along with RAP/STPP, where relevant), including site visits/ investigations if necessary assess suitability of site, adequacy of ESMPs, risk analysis and regulatory clearances.	Approve safeguard reports as part of DPR for approval Or Reject and instruct to resubmit DPR/ESIA
3. Approval of safeguard documents	To ensure safeguard documents are integrated with the overall engineering design and part of the contract documents.	<ul style="list-style-type: none"> a. PMU to submit safeguards documents to the word World Bank for clearance. b. Disclose safeguard document drafts acceptable to Bank for public access and feedback c. Include ESMPs as applicable in Bid documents. 	Approval of sub-project.
4. ESMP Implementation Monitoring and Review	Ensure Implementation of agreed ESMP (including RAP, where applicable)	<ul style="list-style-type: none"> a. Prepare quarterly progress reports to the world bank based on inputs by PIU and CSQC, b. Schedule field visits to all project sites as required. c. Carry out environment and social safeguards audit. 	Quarterly progress report Safeguards Audit report

11.2 CONCURRENT MONITORING AND QUARTERLY REPORTING

305. The Concurrent internal environmental social monitoring will be done as part of the regular monitoring by the PIU, implementing agencies, and design and supervision consultants. PIU CSQC, and the implementing agencies will do the regular monitoring of ESMP implementation of all sub-projects. PIU will submit monthly progress report on ESMP implementation to PMU. PMU, with the help of in-house environmental and social specialists will do the quarterly environmental and social monitoring of sub-projects for safeguards compliance. JUIDCO PMU,

with inputs from PMC service, PIUs and CSQC consultants will collect all quarterly inputs and furnish an overall report on safeguards implementation to the World Bank on a quarterly basis.

11.2.1 Safeguards Monitoring and Reporting Plan

Table 59 Reporting Schedule

Institution	Schedule of reporting
JUIDCo PMU	Quarterly reports on safeguards implementation to the World Bank
PIUs	Monthly report to PMU on ESMP implementation
CSQC	Monthly progress reporting all on all aspects of sub project ESMP compliance.

306. Apart from the quarterly monitoring reports submitted to The World Bank, JUIDCO will prepare an annual report of the environmental and social situation of the sub-projects including data and analysis of relevant parameters and will submit this report to The World Bank. The ESMF will be reviewed annually by the Bank on the basis of this document. The PMU, through the respective PIUs will monitor all the approved investments under the JMDP to ensure conformity to the requirements of the ESMF. The monitoring will cover all stages of construction. The monitoring will be carried out through the environmental and social safeguard compliance reports that form a part of quarterly progress reports for all investments and regular visits by the environmental and social specialists of the PMU and PIUs.

11.2.2 Independent Safeguards Audits

307. An independent environment and social/compliance monitoring audit will be conducted by third party inspection agency to review implementation of ESMF of JMDP. The audit will review sub-projects in preparation and construction phase in terms of (i) screening of sub-projects, (ii) environmental and social categorisation of investments, (iii) preparation of environmental and social management plans for the respective sub-projects as per the policies and procedures agreed by the ESMF, (iv) the deviations in implementing social and environmental measures, if any, (v) positive measures taken at the sub-project level, if any, (vi) suggestions for further improvement of social and environmental management practices at the sub-project level and (vii) capacity building and training requirements for the project staff, support consultants and contractors if needed. The audit consultancy will also review the action taken by JUIDCO after the submission of the audit report, and to submit an audit compliance report. A sample terms of reference for the audit is presented in Annexure-IX. This will be conducted on a yearly basis,

for a minimum of 50% of ongoing sub-projects in category E2 and S2 and 100% in category E1, S1.

11.2.3 Public Consultation and Participation

- 308.** Consultations are required for preparation of all safeguards mitigation documents and these consultations should be an on-going activity over the life of the project. Stakeholder consultation workshops with the participating departments and other stakeholders will be held once a quarter during implementation to gather their feedback on the environmental and social issues arising out of implementation of the project. Throughout the duration of the project, stakeholder consultation workshops with the participating departments and other stakeholders, to gather their feedback on the environmental and social issues arising out of implementation of the project, further remedial measures if required. The requirements of public consultation and disclosure are applicable for all cities considered under the JMDP.
- 309. Sub-project preparation:** This stage is intended to be an interactive process with the stakeholders and the community at least in two stages: initially while finalising the best fit alternative to a sub-project and then at the finalisation of the detailed designs. This would be joint responsibility of the consultants undertaking the design, ESIA consultants and the PIUs.
- 310.** Consultations should be carried out with all relevant stakeholders identified through stakeholder analysis. The objective of the consultation sessions shall be to improve the project's interventions with regard to environmental and social management. Two rounds of consultations shall be carried out – the first to seek views from the stakeholders on the environmental issues and the ways these could be resolved, and the second to provide feedback to the stakeholders that their views have been taken considered the project (when the ESIA and ESMPs are nearly complete).
- 311.** Consultations with PAPs and their profiling are mandatory as per the requirements of preparing a RAP. This needs to be done as socio-economic and census surveys as part of the detailed designs.
- 312. Sub-project implementation:** Before commencement of infrastructure works, an information education and communications programme should be initiated by judicators increasing citizen awareness and their roles and responsibilities during implementation. This can be in the form of the following:

- a) Brochures that can be kept in the municipal office.
- b) Posters to be displayed at prominent locations.
- c) Leaflets that can be distributed throughout the length of the project corridors.

313. Consultations as part of the implementation stage would be direct interactions of PIU staff, contractor's staff, CSQC consultant and PAPs to understand the perspectives/concerns of the stakeholders. These would comprise consultations towards relocation of cultural properties, utilities, and addressal of impacts on environmental resources as water bodies, trees, etc. amongst other concerns raised by the affected communities.

314. During sub-project implementation the ULB, and other city level agencies will be involved. Stakeholder meetings would need to be conducted to discuss the sub-project progress reports, any EHS & Social issue and make recommendations for modifications.. Consultations are required for preparation of all safeguards mitigation documents and these consultations should be an on-going activity over the life of the project. Project monitoring reports would be disseminated in the public consultation meetings in the ULB. The stakeholder meetings would discuss the sub-project progress reports, any EHS & Social issue and make recommendations for sub-project control and modifications.

11.2.4 Disclosure

315. Information disclosure is intended to ensure that information concerning the JMDFP activities will be made available to the public. Information shall be provided in a timely and regular manner to all stakeholders, affected parties, and the general public.

316. At the state level, JUIDCO shall disclose the ESMF and ESIA's along with ESMP/ RAP/STPP on their website. The executive summary of ESMF and the RPF will be translated into Hindi and, if required, into vernacular language, hosted on the website. The RAP and STPP will also be translated in hindi and hosted on the website At the ULB level, apart from hoisting of the above mentioned documents on the website of ULBs, they would also be displayed at the designated places for information and reference of the common people.

Disclosure by the World Bank on its Website

- 317.** The World Bank will disclose this ESMF and any future ESIA along with ESMP/ RAP/STPP for downloading and reference by interested parties on its webpages. During the implementation phase, all the sub-project ESIAs shall be disclosed by JUIDCO and the implementing agencies both at the local level and at the state level and also on Info-shop of the World Bank, after clearance is received from the World Bank on an acceptable document that complies with the Bank's safeguard policies.
- 318.** Additional remedial measures if required will be proposed and requisite modification/updating to the ESMF will be made with the concurrence of the World Bank.

12 ESMF Budget

12.1 R& R BUDGET

319. Estimated R&R budget for the JMDP has been presented in table below:

Table 60: R&R Budget

S. no.	Phase	Budget
1	Phase –I (Known sub-projects)	Rs. 40 crore
2	Phase-II(Future sub-projects)	Rs. 35 crore

12.2 RAP AND STPP IMPLEMENTATION BUDGET

320. The RAP and STPP implementation budget is presented in Table 61.

Table 61: RAPandSTPP Implementation Budget

Budget for employment of RAP andSTPPimplementing agency or NGO		
The employment of the contractor would be done through competitive bidding for each sub-projectand implementation ngo for each sub-project or may be centrally for Phase-I and Phase-II projects.		
Hiring of NGO for RAP/ARAP/STPP		
Phase –I (Known sub-projects)	Rs.	75,00,000
Phase-II(Future sub-projects)	Rs.	1,25,00,00

12.3 TOTAL BUDGET

321. The tentative budget for environmental and social management activities underJMDP has been worked out as Rs.1,000 million. The detailed breakup of the budget is presented Table 62.

Table 62: Total Budget

S. no.	Expenses	Cost(INR)
1	Stationary	1,00,00,000
2	Vehicle for field visit	35,00,000
3	Engagement of E&Sstaff at PMU and PIU	3,00,00,000
4	Preparation fordifferent ESIAproposed sub-projectsunder JMDP Phase-II	2,00,00,000
5	External environmental monitoring	7,00,00,000
6	Environmental social audit by the external agency	9,35,00,000
7	Any cost assumed for organising GRC meetings at different ULBs and locations	30,00,000
8	RAP and STPP implementation	2,00,00,000
9	R&R budget	75,00,00,000

S. no.	Expenses	Cost(INR)
Total (Rs.)		1,00,00,00,000



**-DRAFT-
ENVIRONMENT AND
SOCIAL MANAGEMENT
FRAMEWORK-Volume II**

**Jharkhand Urban Infrastructure
Development Company Limited (JUIDCO)
Jharkhand Municipal Development Project
(JMDP)**

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ANNEXURE I: ENVIRONMENT AND SOCIAL SCREENING CHECKLIST

Jharkhand Municipal Development Project

Environmental and Social Screening Format

Part A

Name of the City/Municipality: _____

Names & Designation of the Officers responsible:

1	JUIDCO	Environment Specialist _____ Social Specialist _____
2	ULB	City Engineer _____ City Manager _____
3	Consultant	

Name of the proposed sub project:	
Name of the proposed site:	
Proposed sub component/functions at the site: e.g. Intake point/STP/WTP/Rising main/Distribution main/distribution line etc.	
Current land use of the proposed site(s):	

Part B

(Please tick mark ✓ in the appropriate column and provide relevant information)

Sl. No	Social Screening Questions	Probable social Impacts		
		Yes	No	Comments/Remarks
1	Is land in the possession of Municipality? What is the area?			
2	Is the current ownership status of the proposed site clear? Who is the current owner?			
3	Is there any land transfer formalities to be completed before using the site for proposed function?			
4	Will there be loss perennial crops			

Sl. No	Social Screening Questions	Probable social Impacts		
		Yes	No	Comments/Remarks
	(yielding and/or fruit bearing and other trees?			
5	Will the project displace residential structures (Houses)?			
6	Will the project displace commercial structures (shops workshops, factory and other establishments)?			
7	Will there be loss of structures other than buildings? (Compound wall/gate/water tanks/ slabs/ wells/ septic tanks, etc.			
8	Are any cultural properties (place of worship, religious structure, memorial, monument, cemetery, etc.) affected or displaced?			
9	Are any community properties (hand pump, well, tap, chabutra, community hall etc.) affected or displaced?			
10	Are any tenants running enterprises or operating from the structures that would be displaced?			
11	Are there any tenants residing in the structures that would be displaced?			
12	Are there residential squatters within the proposed site boundary?			
13	Are there commercial squatters/vendors/Hawkers within the proposed site boundary?			
14	Will there be loss of incomes and livelihoods of employees of affected establishments/ structures?			

Sl. No	Social Screening Questions	Probable social Impacts		
		Yes	No	Comments/Remarks
15	Will people lose access to common facilities, services, or natural resources?			
16	Will there be loss of existing access to private properties and services?			
17	Is there any Tribal community members residing in group/cluster in close proximity to the site?			
18	Is there possibility of any conflict/Grievances by the surrounding land users due to proposed activities on the site?			
19	Is there a requirement for migrant labour?			

Sl. No	Environmental Aspect	Possible Impacts			
		Yes	No	Possible	Comments/Remarks
Analysis of Environment Baseline					
19	Is the sub-project likely to have significant adverse environmental impacts (based on type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts)? Significant adverse impacts are generally: (i) large-scale (ii) irreversible (iii) sensitive (iv) may affect an area broader than the sites or facilities financed by the				Please describe the primary adverse impacts and their possible 'significance'

Sl. No	Environmental Aspect	Possible Impacts			
		Yes	No	Possible	Comments/Remarks
	project.				
20	Will this sub-project involve creation/use of water storage structures in any way? Is this structure above 15m height?				Reject- if yes
21	Is the sub project in an eco-sensitive area or adjoining an eco-sensitive area, contain any schedule 1 species? (Protected area, Forest, Wetland, important bird areas, sacred forests etc.) If Yes, which is the area? Elaborate accordingly.				
22	Are there any cultural heritage sites; known heritage sites, VECs in the project area, or broader area of influence?				
23	Are there any sensitive human receptors within proximity of the project site? E.g. school or hospital				
24	Will the project involve significant removal of vegetative cover/tree cutting?				
25	Is there Forest Land (reserve or protected forest areas) located within the project area, and area of influence				
26	Is the current ownership status of the proposed infrastructure sites clear? Please list all the sites and their ownership				

Sl. No	Environmental Aspect	Possible Impacts			
		Yes	No	Possible	Comments/Remarks
Anticipated Environmental Impacts					
27	Will the activities proposed at the site(s) impact water quality and water resource availability and use? Please clarify if sub project involves STP.				
28	Does the project have the potential to pollute the environment, involve dredging activities or contravene any environmental laws and regulations?				
29	Will the project cause increased disruption to common property, accessibility, traffic movements and/or possible conflicts with and/or disruption to local community within the urban area?				
30	Will there be loss of productive land?				
31	Will the project implementation impact any cultural or historic properties? <input type="checkbox"/> Protected buildings, monuments, ASI/state protected <input type="checkbox"/> Place of worship/ religious structures, memorials <input type="checkbox"/> Burial grounds <input type="checkbox"/> Natural heritage sites (water body/waterfall/sacred trees etc.)				
32	Will there be any temporary/permanent loss or relocation of structures other than				

Sl. No	Environmental Aspect	Possible Impacts			
		Yes	No	Possible	Comments/Remarks
	buildings? <input type="checkbox"/> Utilities <input type="checkbox"/> water tanks <input type="checkbox"/> hand pumps <input type="checkbox"/> storm water drains <input type="checkbox"/> septic tanks				
33	Does the Sub project have potential to cause impacts on the following environmental components? <input type="checkbox"/> Low lying lands/flood plains <input type="checkbox"/> Air Quality <input type="checkbox"/> Ambient noise <input type="checkbox"/> Construction Hazards and accident risk for workers <input type="checkbox"/> Water source sustainability				
34	Is the performance of the proposed water supply scheme dependent on the performance of an existing dam (above 15m height) ?				
Clearances Required					
35	Will the project require prior clearances either from the MoEFCC or from a relevant State/Central Government Department? <input type="checkbox"/> NOC SPCB for establishment and operation of STP/WTP <input type="checkbox"/> NOC Forest Department for either the conversion of forest land or for tree-cutting. <input type="checkbox"/> NOC for establishment of water supply intake <input type="checkbox"/> NOC for water withdrawal from surface water source.				

Please attach photographs of key locations and location maps along with this completed Environmental & Social Information Format for Screening. This Screening sheet must be completed for each of the proposed sites by respective cities/towns and forwarded to the Environment and Social Specialist in PMU, JUIDCO.

Conclusions of Project Screening (To be Filled by PMU)

The Project is Categorized as E1 E2 E3 S1 S2 S3

The project requires

ESIA

ESMP

RAP/ARAP

STPP

Other _____

Date

Signature and Name of the Officer Responsible

ANNEXURE II: APPLICATION PROCESS FOR MAJOR E&S NOC

Application at Design Stage

S.No	Requirement	NOC process
1.	Requisition for Land Acquisition/ Land Transfer	Application/letter to concerned Deputy Commissioner
2.	NOC for National Highway(NH)	Application/letter to NH Division, Executive Engineer
3.	NOC from Road Construction Department	Application to RCD Division, Executive Engineer
4.	NOC for Water Source	Application to Water Resource Department /Chief Engineer -DVRR (Damodar Valley River Regulation)/ DVC (Damodar Valley Corporation) depending on jurisdiction.
5.	NOC for Railway division	Application to Divisional Railway Manager
6.	NOC for Electricity Division	Application to Executive engineer, Electricity supply division.
7	NOC for Forest land/ Tree Cutting	Application to concerned DFO(Divisional Forest Officer)
8	Construction of Road (Road Sub project, haul/service roads)	RCD or NH regarding construction of road.
9	Shifting of Water Supply Pipeline	Application to DWSD (Drinking Water & Sanitation Department) or DWSD II or MADA application to Chief engineer or GM
10	Shifting of BSNL tower (telecommunications)	Application to General Manager, BSNL
11	NOC for Electricity	General Manager, Jharkhand Urja Vikash Nigam Ltd.

Application Process for Permits and Licenses Before Construction

S. No.	Legal Requirement	Process Required	Reference
1.	Consent to Establish (CTE)	<p>Consent means the sanction of the authority of the Pollution Control Board for the discharge of the effluent (sewage or trade effluent into a stream or well or sewer or on land) or emission of air pollutant into the atmosphere.</p> <p>The consent is issued by PCB under section 25/26 of the Water (Prevention and Control of Pollution) Act 1974 is known as water consent and under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 is known as air consent,</p> <p>As per section 25 of the Water (Prevention and Control of Pollution) Act 1974, no person shall without the</p>	<p>As per Water (Prevention And Control Of Pollution) Cess Act, 1977 and The Air (Prevention And Control Of Pollution) Act, 1981, there are three types of consent required.</p> <p>I. Consent to Establish</p> <p>II. Consent to Operate</p> <p>III. Renewal of Consent to Operate</p>

		<p>previous consent of the State Board, Establish or take any steps to establish any industry, operation or process, or any treatment and disposal system or any extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream or well or sewer or on land; or Bring into use any new or altered outlets for the discharge of sewage; or Being to make any new discharge of sewage.</p> <p>As per section 21 of the Air (Prevention and Control of Pollution) Act, 1981, no person shall without previous consent of the State Board, establish or operate any industrial plant in an air pollution control area.</p>	<p>Consents should be applied through Jharkhand State Pollution Control Board (JSPCB) Online Consent Management & Monitoring System portal.</p> <p>Upon submission of the application online JSPCB will review it and provide the consent or if any clarification is needed the same will be communicated through the same portal.</p>
2.	Consent to Operate	<p>As per the Water Act 1974 and Air Act 1981, it is mandatory to obtain Consent to Operate (CTO) from respective State pollution Control Board prior to commencement of activities.</p> <p>Consent to operate can be renewed for every 1 to 5 years depending on the category whereas consent to establish is one time activity.</p>	<p>Link for JSPCB Online Consent Management & Monitoring System website: http://jhkocmms.nic.in/OCMMS/http://jhkocmms.nic.in/OCMMS/</p>
3.	Labour license from Department of Labour	<p>Registration of Establishments: Application for registration of Establishment Employing Contract Labour shall be submitted through online. http://shramadhan.jharkhand.gov.in/home.action</p> <p>The application shall be accompanied by a treasury receipt showing payment of registration fee.</p> <p>Grant of certificate of registration: On receipt of the application a Certificate of Registration is issued via online.</p>	<p>Contract Labour (Regulation & Abolition) Central Rules, 1971</p>
4.	Contractor who employs or who employed five or more Inter-State migrant workmen need to obtain	<p>Contractor should apply for license for recruitment in Form IV, should apply for license to employment in Form V.</p> <p>Details of migrant workers should be maintained in Form VI by the contractor.</p> <p>The Principal Employers and the</p>	<p>The Inter-State Migrant Workmen (Regulation Of Employment And Conditions Of Service) Act, 1979</p>

	registration of interstate workmen migrant license from labour commissioner	contractors are required to maintain registers and other records giving particulars of Inter-State Migrant workmen employed along with the nature of jobs performed by such workmen and the rate of wages paid to them.	
5.	Obtain NOC for transportation and storage of diesel, oil and lubricants etc.	Please refer to the table no 8.1.1	Petroleum Rules, 2002 PESO Website: http://peso.gov.in/index.aspx
6.	Environmental Clearance (necessary only for a few categories of construction projects and area development projects under the new EIA Notification, 2006)	All category A proposals (as per Gol category A) should be submitted in the Online Submission and Monitoring of Environment Clearance (Category - A Proposals) portal. Link: http://environmentclearance.nic.in/deiaa.aspx http://environmentclearance.nic.in/deiaa.aspx Online Submission and Monitoring of Environment Clearance (Category - B Proposals) portal. (as per Gol category B) Link: http://environmentclearance.nic.in/Statercord.aspx?State_Name=Jharkhand http://environmentclearance.nic.in/Statercord.aspx?State_Name=Jharkhand	http://environmentclearance.nic.in/
7.	PUC for Vehicle	Obtain Pollution under Control certificate from motor vehicle department, Jharkhand for all construction machinery and vehicles.	http://jhtransport.gov.in/pollution-control.html
8.	NOC for water abstraction	Obtain permit from Regional Director of CGWA (Groundwater Authority)	http://cgwa-noc.gov.in/LandingPage/GuidelinesonlineFilling/steps_for_online_filling_of_application-19012015.pdf

NOC for Transportation & Storage of Petroleum, Diesel and other Lubricants

Sl. NO.	PURPOSE	Whether Licence is required (with form) or Approval is required	Licensing/Approving Authority
1.	Transport of petroleum by tank lorry	Licence (form IX)	Ranchi Sub Circle Office Deputy Chief Controller of Explosives Sri Mohan, 3 rd Floor, Sita Compound, 5 Main Road, Behind Sushila Automobiles, Ranchi – 834001 Phone: 0651-2332689, 0651-2332690 Email: dyccehazaribagh@explosives.gov.in
2.	Storage of petroleum class A in barrels up to 300 litres.	Licence (form X)	District Authority
3.	Storage of petroleum class B in barrels up to 25000 litres.	Licence (form XI)	District Authority
4.	Storage of petroleum in tanks in installations	Licence (form XIII)	Chief Controller of Explosives A Block CGO Complex Fifth floor Seminary Hills Nagpur, Maharashtra – 440006 Phone: 0712-2510248 Email: explosives@explosives.gov.in
5.	Storage of petroleum in barrel for petroleum class A exceeding 300ltrs, petroleum class B exceeding 25000 litres & petroleum class C exceeding 45,000 litres in barrels.	Licence (form XIV)	Ranchi Sub Circle Office Deputy Chief Controller of Explosives Sri Mohan, 3 rd Floor, Sita Compound, 5 Main Road, Behind Sushila Automobiles, Ranchi – 834001 Phone: 0651-2332689, 0651-2332690 Email: dyccehazaribagh@explosives.gov.in

ANNEXURE III: CONTENT FOR SOCIAL ASSESSMENT IN ESIA

An SIA report for JUIDCO should focus on the significant social impact of the proposed project, whether it is, or includes, new construction, rehabilitation, or expansion. The report's scope and level of detail should be commensurate with the project's potential impacts.

The SIA report should include the following items:

(a) **Executive summary:** Concisely discusses significant findings and recommended actions.

(b) **Policy, legal, and administrative framework:** Discusses the policy, legal, and administrative framework within which the SIA is carried out. Identifies relevant regulations of the state and country along with the safeguard policies of the World Bank.

(c) **Project description:** Concisely describes the proposed project and its geographical, economical, social, and temporal context, including any off-site investments that may be required (e.g., access roads, water supply and housing facilities). Also indicates the need for resettlement action plan. Normally includes a map showing the project site and the project's area of influence.

(d) **Baseline data:** Assesses the dimensions of the study area and describes relevant physical and socioeconomic conditions, including any changes anticipated before the project commences. Also takes into account current and proposed development activities within the project area but not directly connected to the project. Data should be relevant to decisions about project location, design, operation, and mitigation measures. The section indicates the accuracy, reliability, and source of the data.

(e) **Social impacts:** Predicts and assesses the project's likely positive and negative impacts, in quantitative terms to the greatest extent possible. Identifies mitigation measures and any residual negative impacts that cannot be mitigated. Explores opportunities for enhancement of quality of life. Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions, and specifies topics that do not require further attention.

(h) **Analysis of alternatives:** Systematically compares feasible alternatives to the proposed project site, technology, design, and operation—including the “without project” situation—in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. For each of the alternatives, quantifies the social impacts to the greatest extent possible and attaches economic values where feasible. States the basis for selecting the particular project design and justifies the same.

(i) **Resettlement Action Plan (RAP):** Resettlement plans will be prepared based on the results of the detail census survey and from information drawn from the baseline socio-economic sample survey;. Resettlement plan preparation will be governed by the involuntary resettlement impacts

identified during the census. All resettlement plans will be reviewed and approved by WB prior to the award of any contracts related to the subproject. Resettlement plans will be prepared in consultation with JUIDCO. The affected persons and local representatives will be consulted. Resettlement issues will be coordinated with JUIDCO, who will ensure that all subprojects comply with involuntary resettlement safeguards in this resettlement framework. The draft resettlement plan will be shared with affected persons and beneficiaries. The resettlement plan will be translated in local language for disclosure to affected persons and beneficiaries. The completed resettlement plan will include the census of affected persons and their entitlements to restore losses, institutional mechanisms and schedules, budgets, assessment of feasible income restoration mechanisms, GRM, and participatory results monitoring mechanisms.

(j) Gender Impacts and Mitigation Measures: The resettlement plan will formulate measures to ensure that socio-economic conditions, needs and priorities of women are identified and ensured that the project related impacts do not disadvantage women. The resettlement plan will ensure that gender impacts are adequately addressed and mitigated. Women focus group discussions will be conducted to address issues specific to women. During disbursement of compensation and provision of assistance, priority will be given to female-headed households. For replacement of assets, joint ownership in the name of husband and wife will be provided in case of male-headed households.

(k) Requirement of Schedule Tribe Development Plan: Scheduled Tribe Development Plan (STDP) will be an integral part of the RAP of any infrastructural project when a considerable number of Schedule Tribe population is affected or displaced from their natural resource. STDP is also required if substantial change is anticipated in the region which might affect the tribal people's traditional right over land or alter their lifestyle in such a manner that they are uprooted or are no longer in a position to follow their tradition and culture.

(l) Consultation, Participation and Disclosure (CPD): The CPD Plan identifies consultation and disclosure activities with specific reference to resettlement planning and implementation to be followed for each activity and the institution responsible.

(m) Formation of Grievance Redress Mechanism: There is a need for an efficient grievance redress mechanism, which will assist the PAPs in resolving queries and complaints. Any disputes will be addressed through the grievance redressal mechanism.

Formation of Grievance Redressal Committee (GRC) at PIU level is most important for grievance redressal and it is anticipated that most, if not all grievances, are settled by the GRC. Detailed investigation will be undertaken which may involve field investigation with the concerned PAPs. The GRCs are expected to resolve the grievances of the eligible persons within a stipulated time.

(n) Summary of impacts: The adverse social impacts including loss of land, loss of structures, loss of livelihood, loss of CPRs and impacts during construction for which mitigation is required should be identified and briefly summarized.

(o) Description of mitigation measures: The SIA identifies feasible and agreed measures to reduce potentially significant adverse social impacts. Each mitigation measure should be briefly described with reference to the impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies). These should be accompanied by, or referenced to, designs, equipment descriptions, and operating procedures that elaborate on the technical aspects of implementing the various measures. **(p) Description of monitoring program:** Monitoring should be designed to ensure that mitigation measures are implemented and have the intended result, and that remedial measures are undertaken if mitigation measures are inadequate or the impacts were underestimated within the SIA report. It should also assess compliance with national standards and World Bank Group requirements or guidelines. The monitoring program should clearly indicate the linkages between impacts identified in the SIA report, indicators to be measured, methods to be used and definition of thresholds that will signal the need for corrective actions.

(q) Institutional arrangements: Responsibilities for mitigation and monitoring should be clearly defined. The SIA should identify arrangements for coordination between the various institution responsible for mitigation.

(j) Appendixes

- (a) List of SIA report preparers—individuals and organizations.
- (b) References—written materials, both published and unpublished, used in study preparation.
- (c) Record of interagency and consultation meetings, including consultations for obtaining the informed views of the affected people and local nongovernmental organizations (NGOs). The record specifies any means other than consultations (e.g., surveys) that were used to obtain the views of affected groups and local NGOs.
- (d) Tables presenting the relevant data referred to or summarized in the main text.
- (e) List of associated reports (e.g., socioeconomic baseline survey, resettlement plan)

ANNEXURE IV: CONTENT OF ABBREVIATED RESETTLEMENT ACTION PLAN

Content of Abbreviated Resettlement Action Plan

Beneficiary Assessment

A baseline beneficiary assessment will be carried out for all the sub-projects wherever appropriate, through relevant instruments including sample household surveys, FGDs, secondary information through Census, NSSO data etc. to collect relevant baseline information related to the sub-projects.

Socio-Economic Information

Screening of the Project as per Screening Check List in the approved ESMF .

Estimation of the Impacts of the project by Census survey and making of inventory of losses.

- ▶ **Census.** The purpose of the census is to register and document the status of potentially affected persons (PAPs) within the subproject impact area. The census will cover 100% of affected persons. The census will provide a demographic overview of the population and will cover assets owned by the people and their main sources of livelihood. The census will help prepare a detailed inventory of losses for each affected person in terms of type and extent of impact with respect to land, structure, livelihoods and access to common property resources, if any. The date of census will also be the cut-off date for identification of eligible affected persons.
- ▶ **Inventory of losses and assessment of losses.** The inventory of losses for each affected person will be prepared based on the data collected from the census about the type and extent of impact on each affected person. It will include all types of losses incurred by affected persons like type of loss, level of impact, type and area of affected structures, number of affected trees by type, loss of income and/or livelihood, loss of employment, etc.

Preparation of Abbreviated Resettlement Action Plan (ARAP)

- ▶ Resettlement plans will be prepared based on the results of the census survey; the database on affected persons should be complete before resettlement plan preparation. Resettlement plan preparation will be governed by the involuntary resettlement impacts identified during the census.

- ▶ Resettlement plans will be prepared in consultation with JUIDCO. The affected persons and local representatives will be consulted.
- ▶ Resettlement issues will be coordinated by JUIDCO, who will ensure that all subprojects comply with involuntary resettlement safeguards in this resettlement framework.
- ▶ The draft abbreviated resettlement action plan will be shared with affected persons and host communities, and their views will be reflected. The resettlement plan will be prepared in local language or translated and disclosed to affected persons and the public through posters and/or resettlement information handouts. The completed resettlement plan will include the census of affected persons and their entitlements to restore losses, institutional mechanisms and schedules, budgets, assessment of feasible income restoration mechanisms, GRM, and participatory results monitoring mechanisms.

Consultation, Participation and Disclosure (CPD)

The CPD Plan identifies consultation and disclosure activities with specific reference to resettlement planning and implementation to be followed for the project.

It will also provide adequate opportunities for consultation/participation to all stakeholders and inclusion of the poor/vulnerable/marginalized and project-affected persons in the project process. Relevant information about any major changes to project scope will be shared with beneficiaries, affected persons, vulnerable groups, and other stakeholders.

Compensation, Income Restoration, Assistance, and Relocation

A. Income Restoration and Compensation

- ▶ The strategy for income restoration will be prepared prior to project implementation, based on the information collected from the census surveys, income restoration strategies will be framed and activities planned. The strategy will consider the resource base of affected persons and their socio-economic characteristics and preferences to develop appropriate income restoration schemes.
- ▶ The objective of income restoration is to ensure that each affected person will have at least the same or improved income after the subproject. The RP will identify the number of eligible affected persons based on the 100% census of the affected persons.
- ▶ The project will provide short-term income restoration activities intended to restore affected persons' income in the period immediately before and after relocation focusing on relocation and providing short-term allowances such as
 - transitional allowance; and
 - Shifting assistance.

- ▶ Special Vulnerable Assistance to be given to the PAP.
- ▶ Vulnerable households will be given priority in project construction employment.

B. Assistance for Temporary Impacts

- ▶ Temporary loss is expected to be minimal. Should there be temporary losses, affected persons will be provided with:
 - Compensation for assets lost at replacement value, including compensation for tree and crop loss in accordance with the entitlement matrix.
 - Restoration of land to previous or better quality.
 - Restoration or replacement of common resources.
- ▶ Subprojects requiring work on rights-of-way (ROW) such as construction of water supply and sewerage networks are not expected to have major impacts or affect structures. However, there are possible minimal impacts on access and livelihood. affected persons will be provided with:
 - 30 days advance notice regarding construction activities, including duration and type of disruption.
 - Contractors' actions to ensure there is no income or access loss. This includes: leaving spaces for access between mounds of soil, providing walkways and metal sheets to maintain access across trenches for people and vehicles where required; increased workforce to finish work in areas with impacts on access; timing of works to reduce disruption during business hours; phased construction schedule; and working one segment at a time and one side of the road at a time.
 - Assistance to mobile vendors/hawkers to temporarily shift for continued economic activity. For example, assistance to shift to the other side of the road where there is no construction.
- ▶ For construction activities involving unavoidable livelihood disruption, compensation for lost income or a transitional allowance for the period of disruption, whichever is greater, is to be given.

C. Relocation

- ▶ The entitlement matrix provides for compensation at replacement value for loss of assets and trees/crops.
- ▶ The population expected to be displaced due to project activities are all squatters. It is understood that this landless population will move to another place and set up habitation. It is ironical that a project seeking to enhance beautification of an area will result in

unplanned settlement in another part of the city. It is recommended that JUIDCO may consider constructing multi-storeyed housing on cost sharing basis for the displaced PAPs.

Grievance Redressal Mechanism

There is a need for an efficient grievance redressal mechanism, which will assist the PAPs in resolving queries and complaints. Any disputes will be addressed through the grievance redressal mechanism.

Entitlement Framework

Three types of displaced persons may be present in any project area. Based on ES which clearly states that the land belongs to government, it is evident that all PAPs here are either i) squatters, encroachers, sharecroppers and wage laborers or ii) leaseholders on govt. land (this is subject to surveys). These PAPs who have no recognizable claims are entitled to assistance if the 'works' affect their livelihoods and impacts their quality of life adversely.

The Entitlement Matrix provides a detailed description of specific compensation measures and assistance applicable to each category of affected person. Eligibility of an affected person to a combination of compensation measures and resettlement assistance will depend on the category to which he/she belongs including his/her social and economic vulnerability, based on the Entitlement Matrix of the approved ESMF.

List of Common Property Resource affected

The list of the common property resources affected by the sub-projects should be presented as per the below table”

Chainage/Location	Side	Structure	Picture of the structure
Coordinates/ chainage of Road	LHS/RHS of the existing road	Type of structure like Temple/statute/shed/house/commercial space/school/hospital	Picture of the structure captured during survey

ANNEXURE V: CONTENT OF EIA AND EMP

The contents of this annex can be utilized for carrying out the impact assessment study, it has been prepared following World Bank OP 4.01 Annex B¹. The terms of reference to carry out the ESIA study have been drafted to give a guidance to the consultant to carry out the ESIA study for each of the planned intervention.

The ESIA report should include the following items:

- ▶ *Executive summary*: Concisely discusses significant findings and recommended actions in a non-technical ESIA Summary Report for public disclosure.
- ▶ *Project description*. Concisely describes the proposed project and its geographic, ecological, social, and temporal context, including any off-site investments that may be required (e.g., dedicated pipelines, access roads, power plants, water supply, housing, and raw material and product storage facilities). Indicates the need for any resettlement plan. Normally includes a map showing the project site and the project's area of influence.
- ▶ *Policy, legal, and administrative framework*: Discusses the policy, legal, and administrative framework within which the ESIA is carried out. This will include International/National/State level regulations applicable to the project along with applicable environmental and social safeguard policies.
- ▶ *Stakeholder Consultations*: The consultants shall undertake community consultation sessions within the designated ULBs. Consultations should be carried out with all relevant stakeholders identified through stakeholder analysis. The objective of the consultation sessions shall be to improve the project's interventions with regard to environmental management. Two rounds of consultations shall be carried out – the first to seek views from the stakeholders on the environmental issues and the ways these could be resolved, and the second to provide feedback to the stakeholders that their views have been taken considered the project (when the EMPs are nearly complete). Further, the residual feedbacks received shall be analysed, and the consultants shall determine how these can be addressed in the final EMP and in the project designs.

¹<https://spappscsec.worldbank.org/sites/OPSMANUALS/Pages/ViewPage.aspx?docid=3902&ver=current>

- ▶ *Baseline data.* Assesses the dimensions of the study area and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences. Also takes into account current and proposed development activities within the project area but not directly connected to the project.
 - a. Collect information from secondary sources that are relevant to understanding the baseline, as well as design and mitigation of enhancement measures, as pertaining to physical, biological and socio-cultural environments.
 - b. Environmental quality (air, water, soil and noise) monitoring shall include an adequate number of samples, as established on a sampling network, so as to provide a representative sample of the entire project / activity.
 - c. All VECs, recognized environmental resources and features within the project influence area shall be clearly identified and studied in relation to the activities proposed. Typically, these will include tree cover stretches, environmental and common property resources such as forests, water bodies, and major physical cultural properties.
 - d. The baseline should cover all environment and social features of project within study area, environmental settings & features of project, existing sources of pollution, description of physical environment including topography; drainage pattern; land use pattern; habitations along the project site; archaeological protected areas; wastewater & waste management facilities in the area; seismicity; soil quality; meteorology (wind speed & direction, relative humidity, temperature, rainfall, calm periods, cloud cover, history of floods & HFL; water resources & quality; air quality; noise levels, description of biological environment including the terrestrial ecology (flora & fauna); forest cover, eco-sensitive zones in study area; RET species, description of social environment including demography; occupation/livelihood pattern; health facilities; infrastructure (transportation, industries, educational institutes); public utilities in the area (sewerage system of area, all type solid waste disposal sites in area); cultural heritage and archaeological sites; fest & festivals; tourism sites. (Data should be relevant to decisions about project location, design, operation, or mitigation measures)
 - e. Maps on GIS platform should be prepared to show the study area & project site, environmental settings of project site, drainage pattern, contours, land use, project alignments and identify the corridor of impact (COI). Primary & secondary baseline monitoring data should be presented in the maps.

- ▶ *Analysis of alternatives.* Systematically compares feasible alternatives to the proposed project site, technology, design, and operation—including the “without project” situation—

in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. For each of the alternatives, quantifies the environmental impacts to the greatest extent possible and attaches economic values where feasible. States the basis for selecting the particular project design and justifies recommended emissions levels and approaches to pollution prevention and abatement.

- ▶ *Environmental impacts*. Asses the project's likely positive and negative impacts, in quantitative terms to the greatest extent possible. Identify mitigation measures and any residual negative impacts that cannot be mitigated. Explores opportunities for environmental enhancement. Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions, and specifies topics that do not require further attention.
- ▶ An Impact identification matrix for each project activity & development stage on the above defined baseline components during the pre-construction, construction & operation stage of the project along with the impact avoidance & mitigation measures and a matrix detailing the residual impact of the project after implementation of mitigation measures. Quantification of impacts should be carried out by using modelling and calculation methods for estimating air emissions, GHG emission, noise levels, sewage generation etc.
- ▶ *Environmental management plan (EMP)*. This section should include details of the management initiatives to be implemented during both the pre-construction, construction and operational phase of the project. This Covers mitigation measures, monitoring, budget requirements, and funding sources for implementation as well as institutional strengthening and capacity building requirements. The EMP should have three main components:
 - a. Environmental mitigation implementation program; and
 - b. Monitoring program
 - c. Institutional capacity issues
- ▶ Description of mitigation measures: The EMP identifies feasible and cost-effective measures to reduce potentially significant adverse environmental and social impacts to acceptable levels. Each mitigation measure should be briefly described with reference to the impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies). These should be accompanied by, or referenced to, designs, equipment descriptions, and operating procedures that elaborate

on the technical aspects of implementing the various measures. Where mitigation measures may result in secondary impacts, their significance should be evaluated.

- ▶ Description of monitoring program: Environmental performance monitoring should be designed to ensure that mitigation measures are implemented and have the intended result, and that remedial measures are undertaken if mitigation measures are inadequate or the impacts were underestimated within the ESA report. It should also assess compliance with national standards and World Bank Group requirements or guidelines. The monitoring program should clearly indicate the linkages between impacts identified in the ESA report, indicators to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions. Although it is not essential to have complete details of monitoring in the EMP, it should describe the means by which final monitoring arrangements will be agreed.
- ▶ Institutional arrangements and Supervision: Responsibilities for mitigation and monitoring should be clearly defined. The EMP should identify arrangements for coordination between the various actors responsible for mitigation. The EMP shall specify the environmental supervision, monitoring and auditing requirements. The monitoring programme shall specify parameters, reference standards, monitoring methods, frequency, duration, location, reporting responsibilities, and what other inputs (e.g., training) are necessary.

In addition, the EMP will specify what action should be taken and by whom in the event that the proposed mitigation measures fail, either partially or totally, to achieve the level of environmental protection expected. Specifically, the EMP provides a specific description of institutional arrangements – who is responsible for carrying out the migratory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training).

- ▶ The EMP shall list all mandatory government clearance conditions, and the status of procuring clearances.
- ▶ Costs for EMP implementation typically range between ½ to 5% of project costs, though in some special cases costs may be higher. Responsibilities, implementing agencies or consultants, costs and sources of funds should be specified.
- ▶ The standards, guidelines or targets for performance measurement for the monitoring program should be specified as well. Performance standards are typically based on national legislation and the guidelines contained in the World Bank's Pollution Prevention and Abatement Handbook.

- ▶ The. EMP should cover the following management plans (as applicable to the sub project context)
 - a. Construction and Labour camp management plan and monitoring checklist
 - b. Construction Debris Management Plan and monitoring checklist
 - c. Borrow Area Management Plan and monitoring checklist
 - d. Occupational Health & Safety Management Plan and monitoring checklist
- ▶ Additionally, the EMPs shall include as separate attachments, if applicable a Cultural Properties Plan to satisfy the requirements of the World Bank safeguard policies.
- ▶ Following documents may be appended to ESIA report.
 - a. Screening checklists
 - b. Field Data Questionnaires
 - c. Consultation Questionnaires
 - d. Record of interagency and consultation meetings, including consultations for obtaining the informed views of the affected people and local nongovernmental organizations (NGOs). The record specifies any means other than consultations (e.g., surveys) that were used to obtain the views of affected groups and local NGOs.
 - e. Tables presenting the relevant data referred to or summarized in the main text.
 - f. References—written materials, both published and unpublished, used in study preparation.
 - g. List of associated reports (e.g., socioeconomic baseline survey, resettlement plan)
 - h. List of EA report preparers—individuals and organizations.

ANNEXURE VI: TERMS OF REFERENCE (TOR) FOR NON-GOVERNMENT ORGANIZATION (NGO) FOR IMPLEMENTATION OF RAP

Project Background

Jharkhand Municipal Development Project (JMDP) has been formulated to improve the municipal infrastructure in selected cities in Jharkhand. The Project has been aligned with India's development outlined in the Twelfth Plan (2012-17), which requires faster, sustainable and more inclusive growth. The urban sector priorities of Gol have been detailed below:

- ▶ Increasing investment in urban infrastructure;
- ▶ Strengthening urban governance, institutional capacity, improve long-term urban planning for sustainable and inclusive urban development;
- ▶ Improving environment sustainability; and
- ▶ Improving financial sustainability of ULBs.

The portfolio of sub-projects to be implemented under the JMDP is given in table below. **Error! Reference source not found.** The implementation of these sub-projects is spread across several cities and/or towns within Jharkhand.

Table 1: Portfolio of sub-projects under JMDP

S.No	Portfolio of sub-projects	Portfolio Components
1	Water Supply Scheme	Water supply augmentation with new or existing source/intake works/raising main Water supply distribution lines ESR Water Treatment Plants River Intake works
2	Storm Water Drainage	Provision for an entirely new Drainage network Development or Extensions to existing drainage networks in some parts of cities/towns to include areas with no drainage network or to newly developed areas in the recent years
3	Strengthening, Development and Beautification of Arterial, Sub-arterial and Collector streets	Development of new roads and beautification, widening of road network in some parts of cities/towns Street furniture
4	Sewerage Scheme	Provision for an entirely new sewerage network including individual house connections Provision of STPs Pumping Stations Septic Tanks Trunk sewers and outfalls Extensions to existing sewerage networks in some

S.No	Portfolio of sub-projects	Portfolio Components
		parts of cities/towns to include areas which do not have sewage network or to newly developed areas in the recent year
5	Building	Development of new or existing municipal buildings

JMDP has prepared a Resettlement Action Plan (RAP) that addresses social issues arising out of squatting and encroachments that require to be removed. This will result in social and/or economic displacement to households/individuals/community, either direct or indirect. The RAP is in compliance with the National and State laws and WB's Safeguard Policy. The executing agency is JUIDCO and a Project Management Unit (PMU) has been established. The PMU is headed by a full time Project Director. The PMU will be supported by Project Implementation Units (PIUs) established in the respective ULBs. Resettlement planning and implementation will be under the responsibility of the PIUs.

To assist the PIU in the implementation of the RAPs, JUIDCO invites the services of eligible NGOs with the following requirements:

- ▶ The team will assist in implementing the resettlement action plans (RAPs) in a timely manner, and to ensure that /affected persons will not be worse off due to the project, and will be compensated for their losses.
- ▶ The following personnel are required:
 - a) Team Leader cum R&R Specialist
 - b) Social and Gender Specialist
 - c) Field Coordinator
 - d) Field Support Staff

Scope of Work

- ▶ The team will assist the project management unit (PMU) and project implementation units (PIU) in implementing the RAPs, and will also work closely with (i) local revenue officer responsible for impacted areas, (ii) and project affected people. The team will be responsible for the following activities:
 - a) Verify the information already contained in the census survey to ensure that all project-affected persons (PAPs) have been correctly and completely recorded.

- b) The organization shall update and maintain database of all PAPs..
- c) The organization will prepare photo identity card and individual micro plan for each PAP.
- d) The organization shall be responsible for maintaining records of all the assistance/compensation related payments released to the PAP's.
- e) In close coordination with PIU , assist PAPs on the following:
 - Educate the PAs on their rights to entitlements and obligations.
 - Ensure that the PAPs are given the full entitlements are disbursed as per the Micro plan.
 - Assist the PAPs in relocation and rehabilitation, including counselling, and coordination with local authorities.
 - Provide support and information to PAPs for their relocation and income restoration. Explain the RAP to the PAPs in detail. This will include (i) communication to the squatters and encroachers about when the PAPs are expected to move out from the project areas,(ii) if any support is required by the PAPs for relocation either by self or with project assistance, and (iii) the timeframe for their relocation.
 - Assist in the PAPs to take salvaged materials.
 - Assist the PAPs in opening bank accounts if PAPs do not have In addition to counselling and providing information to the PAPs, the consultant will carry out periodic consultation with the PAPs and other stakeholders to ensure that RAPs have been properly implemented.
 - Assist the PAPs in redressing their grievances through the Grievance Redress Committee (GRC) set up for the subproject.
 - Record the grievance and bring it to the notice of the GRM team within the required days as stated in the GRM procedure.

Individual Terms of Reference

a) Team Leader (TL) cum R&R specialist

The Team leader cum R&R specialist should be a postgraduate in social science with at least 10 years overall experience and at least 5 years' experience in implementing resettlement plans. He

/She shall have experience of working in WB or ADB funded projects. He should be proficient in Hindi and English.

Key tasks will include liaising with client in matters related to RAP implementation and manage the team in carrying out various tasks envisaged in the RAP implementation. The team leader cum R&R specialist will be responsible for consultations, disclosure activities envisaged during RAP implementation including (i) identifying suitable income generating schemes for those losing their livelihood; (ii) periodic consultations and disclosure of relevant project information in Hindi to the PAPs and other stakeholders; (iii) He should be available during site visits conducted by PMU/WB to review the progress of the RAP implementation. .

b) Social and Gender Specialist

Should be at least a graduate in social sciences. She/he should have at least 5 years of working experience of which at least 2 years in R&R or rural development projects. Should have sound understanding of the land acquisition process, experience in developing, implementing vocational training and participatory management. Knowledge of local language is a necessary qualification

c) Field Coordinator (FC)

The field coordinator should be a graduate with minimum years' experience in implementing rural development livelihood projects preferably in Jharkhand. Should be proficient in Hindi and with working knowledge of English. Should have knowledge and ability to use MS Office (Excel / Word) applications. Should have prior experience in implementing resettlement and rehabilitation projects.

The field coordinators will be fielded in the subproject areas and will be the single point contact for PAPs seeking clarification on eligibility, entitlement, RAP implementation schedule and GRM. He will assist PIU in: (i) verification of PAPs; (ii) updating of census and socio economic survey data; (iii) updating/ appending the survey data in the database; (iv) disclosing the gist of the RP including details of contact of GRC; (v) Preparation of ID cards of PAPs; (vi) issuing of identity cards; (vii) obtaining bank particulars of PAPs for disbursement purpose; (viii) assisting PIU in disclosing draft list of PAPs along with details of impact and entitlements (ix) assisting PIU and revenue cell in receiving and hearing concerns and complains with regard to draft list of entitlement published; (x) disbursement of assistances; (xi) providing guidance and counselling during the transition period (xii) facilitating disclosure of relevant information in a timely manner in Hindi; (xiii) holding periodic consultations with PAPs; and (xiv) identifying suitable training for skill development. Will also assist PAPs in approaching the GRC, whenever required, and assist PIU in maintaining a record of grievances received/lodged and action taken/compliance. Besides he

shall attend review meetings at PMU and be available at site during visit of WB and any other external audit.

Deliverable Outputs:

- ▶ Submit an inception report within 1 weeks of signing up of the contract including a work plan for the whole contract period and staffing and personnel deployment plan.
- ▶ Submit a completion report at the end of completing the RAPs' implementation.
- ▶ Record all minute of meeting from all consultation meetings with PAPs and submit the same to JUIDCO

Client's inputs and counterpart personnel:

- ▶ JUIDCO/ULB will provide details of area to be affected and provide all relevant reports to the team. PIU staff of JUIDCO will be available to work with the consultant.

ANNEXURE VII: TERMS OF REFERENCE FOR THE ESIA

INTRODUCTION

Objectives of the ESIA

The objectives of the ESIA are to:

- a. To carry out the site visits to understand the site specific environmental and social sensitivities associated with the project sites and activities involved in all the stages and their interface with the environment, referring to the DPR, available literature and studies of similar project
- b. To carry out a detailed environment legislative framework should be developed for the project which should define the applicability of the environmental legislations on the project at respective stage, clearances to be obtained and concerned authority
- c. To identify the stakeholders to be affected by the project at any stage of development in consultation with the client. Carrying out public consultations to obtain the view of the stakeholders on the project development, impacts on their life and environment due to project development and mitigation which should be taken.
- d. To carry out the environmental screening to define the impacted environment due to the project development and operation of the sub project
- e. To define the project influence area on basis of screening exercise and considering the potential impacts of the project derived during the above exercise.
- f. To collect the primary and secondary data of the likely to be affected environments, PAPs as identified during screening exercise to obtain their existing condition. Baseline monitoring should be conducted for Environmental quality (air, water, soil and noise), and any other parameter identified during the scoping phase as per CPCB guidelines and methods of monitoring and analysis.
- g. To examine and understand the aggregate affects from the development of the sub project that could affect the environmental and social dimensions of the study area w.r.t its location, nature of developments and interface with the different environments.
- h. To recommend specific measures, to be implemented for addressing the Environmental and social impacts and issues over and above the mitigation and/or management measures for

project-specific impacts, which will be incorporated into an Environmental Management Plan.

- i. ESMP should essentially include the institutional mechanism for implementation of the ESMP, grievance redressal mechanism, health and safety management system and environmental budget for the project. Measure to prevent and reduce significant negative impacts to accepted levels during construction and operation phase

► **Inception Phase**

- a. During the inception period the Consultants shall (a) study the project information to appreciate the context within which the ESIA should be carried-out, (b) identify the sources of secondary information on the project, on similar projects and on the project area, (c) select sample locations and carry out a reconnaissance survey, and (d) undertake preliminary consultation with selected stakeholders in the government and the public. The consultants shall use the inception period to familiarize with the project details. The consultants should also recognize that due care and diligence planned during the inception stage helps in improving the timing and quality of the ESIA reports. Consultant shall prepare work plan and disclosure plan.
- b. Following the site visits and stakeholder consultations, as well as a review of the conditions of contract between the consultant shall analyse the adequacy of the allocated manpower, time and budgets and shall clearly bring out major/minor deviations, if any. The consultants shall study the various available surveys, techniques, models and software in order to determine what would be the most appropriate in the context of this project.
- c. The consultants shall interact with the engineering consultants to determine how the EIA and SIA work fits into the overall project preparation/ project cycle; how overlapping areas are to be jointly addressed; and to appropriately plan the timing of the deliverables of the EA process. These shall be succinctly documented in the Inception Report

► **Screening and Scoping**

- a. Environment and Social screening is done in the early stages of the project preparation to determine the appropriate extent and type of project EIA and SIA to be undertaken, provides information/input that are required for assessing technical, economic and financial feasibility of the project, and recommends possible modifications in the preliminary project design. The Consultants shall carry out environmental and social screening as per the work plan and methods described in the Inception Report and the screening checklist outlined in Annex 1.

- b. Surveys: The consultants shall collect information on the existing environment and Social scenario from secondary sources, and identify gaps to be filled, relevant to the environmental screening needs from primary surveys. Primary surveys shall include baseline (air, soil quality, water and noise) pollution monitoring at representative and sensitive locations, and identification of all macro-level environmental issues within the project's influence area. The consultants shall extensively use the video records of the project footprint
- c. The consultants shall survey the environmental and social sensitive locations on and along the project footprint, as well as within the project's influence area. All regionally or nationally recognized environmental resources and features within the project's influence area shall be clearly identified, and studies in relation to the proposed scope of the project.
- d. Census and socio economic surveys: Sample socio economic survey of beneficiaries and 100% census of all those adversely affected by the project losing land, structures and livelihood. Determination of CoI and marking of CoI will be done by DPR consultant videography and/or photography, geo coding
- e. Stakeholder Assessment & Consultation: The consultants shall carry out consultations with communities that are likely to be affected, NGOs, selected government agencies and other stakeholders to (a) collect baseline information, (b) obtain a better understanding of the potential impacts and (c) appreciate the perspectives/concerns of the stakeholders. Consultations shall be preceded by a systematic stakeholder analysis, which would (a) identify the individual or stakeholder groups relevant to the project and to environmental issues, (b) include expert opinion and inputs, and (c) determine the nature and scope of consultation with each type of stakeholders, (d) determine the tools to be used in contacting and consulting each type of the relevant stakeholders. Consultation with the stakeholders shall not be treated as a session to disseminate project information, but be used to improve the plan and design of the project. The frequency, level and location of consultations are required to be commensurate with sub project specific concerns and in agreement with JUIDCO.
- f. Identification of the Valued Environment Components (VECs): The consultants shall determine the VECs considering the baseline information (from both secondary and primary sources), the preliminary understanding of the activities proposed in the project and, most importantly, the stakeholder consultations.
- g. Preliminary Analysis of Impacts and Management Measures: The consultants shall conduct a preliminary analysis of the nature, scale and magnitude of the impacts that the project is

likely to cause on the environment and people, especially on the identified VECs, and classify the same using established methods. For the negative impacts identified, alternative mitigation/management options shall be examined, and the most appropriate ones suggested. For the positive measures identified, alternative and preferred enhancement measures shall be proposed.

The consultants shall define boundaries of the project ESIA after a careful consideration of the baseline scenario, likely impacts on the identified VECs and people, high social impact locations and the proposed mitigation and enhancement measures. The scoping shall include what shall be covered in the project ESIA along with the “how, when and where” of each activity recommended. It shall include a listing of other environment issues that do not deserve a detailed examination in the project ESIA (covering induced impacts that may be outside the purview of the client) along with a justification. This shall identify need for detailed social assessments with respect to physical and economic displacement and relocation sites, land acquisition, presence of Scheduled tribes etc; Screening Report and inputs to feasibility study & preliminary project design: The ESIA consultants shall make location-specific design recommendations, wherever possible or required, related to pipeline, road, drainage alignment (major/minor shifts or bypasses or altogether different route alternative), road cross-sections, construction material use, and mitigation and enhancement measures. In the cases of very significant environmental losses or benefits, the consultants shall estimate the economic/financial costs of environment damage and the economic/financial benefits the project is likely to cause. In the cases, the impacts or benefits are not too significant, qualitative methods could be used. In addition, wherever economic and financial costs of the environmental impacts cannot be satisfactorily estimated, or in the cases of significant irreversible environmental impacts, the consultants shall make recommendations to avoid generating such impacts. This shall be succinctly documented in the Screening Report

► Environmental and Social Impact Assessment

- a. Baseline Surveys:² The consultants will (a) collect information from secondary sources that are relevant to understanding the baseline, as well as the design of mitigation and enhancement measures, as pertaining to physical, biological and socio-cultural

► ²All surveys shall be carried out in compliance with the GoI standards/guidelines/norms. Wherever such guidelines/norms are not available, the techniques, tools and samples employed for the surveys shall conform to international practice.

environment, safety, employment opportunities, EHS (b) carry out site visits and investigations of all the environmental and social sensitive locations (based on the inventory of valued eco-system components) and document them on the base maps to identify conflict points with preliminary designs (including verification of these from authentic sources of information, such as from the revenue and forest records); and (c) prepare detailed specific maps showing details of candidate sites for environmental enhancements.

- b. Socio economic survey: The consultant shall (a) collect information from secondary sources that are relevant to understanding the socio economic profile of the project impact area, (b) conduct primary survey to collect baseline socio economic profile of likely project beneficiaries based on sample basis to identify the Key social issues and barriers, gender concerns, expectations etc. from the project.
- c. Census Surveys: Consultant shall Identify, and assess quantum of impact and create baseline profile of all likely to be affected by the project based on a 100 percent census survey with corridor of Impact(Marked by the DPR consultant). All efforts should be made to avoid and minimize the adverse impacts.
- d. Environmental quality monitoring (air, water,soil and noise) shall include an adequate number of samples, as established on a sampling network, so as to provide a representative sample of the entire project corridor (in addition to the samples collected during environmental screening).
- e. Additional sample data for sensitive environmental/ecological receptors, if any, shall be collected such as to analyze and predict the possible impacts to a degree and precision of acceptable professional standards. Further, additional specialized surveys, such as biodiversity assessment survey, and hydrological surveys shall be conducted, if and when recommended by environmental scoping described earlier.
- f. The consultants shall also collect information on the various prevailing environmental and forest laws/ regulations and other country specific regulations so as to carry out the project ESIA in conformity to these.
- g. Stakeholder Consultation: The consultants shall undertake community consultation sessions at the state, district, village and site specific levels, as per the consultation plan prepared during the environmental and social screening stage. Consultations should be carried out with all relevant stakeholders identified through stakeholder analysis. This shall include Free, Prior and informed consultation and Gram Sabha as prescribed under Schedule Tribe and other forest dwellers Act.

- h. Analysis of Alternatives: As the overall alignments are final at this stage, the environmental analysis of alternatives shall focus on alternatives from an environment management and social impacts perspective. This analysis shall also cover comparisons in relation to siting, design, technology selection, construction techniques and phasing, and operating and maintenance procedures.
- i. Impact Prediction & Management: The consultants shall determine the potential impacts due to the project through identification, analysis and evaluation on sensitive areas (natural habitats; sites of historic, cultural and conservation importance), urban settlements and villages/agricultural areas or any other identified VEC. To distinguish between significant positive and negative impacts, direct and indirect impacts, immediate and long-term impacts, and unavoidable or irreversible impacts.
- j. The consultant shall determine the quantum and significance of adverse impact on Assets and livelihood and on women and other economically and socially disadvantaged groups including STs and prepare the RAP/ARAP and STDP accordingly.
- k. For each impact predicted as above, feasible and cost effective mitigation measures shall be identified to reduce potentially significant adverse environmental impacts to acceptable levels.
- l. Institutional Arrangement to Manage Environment and Social Impacts Effectively: The consultants shall identify institutional/organizational needs to implement the recommendations of the project ESIA and to propose steps to strengthen or expand, if required. This may extend to new agency functions, intersectoral arrangements, management procedures and training, staffing, operation and maintenance, training and budgeting.
 - ▶ *Environmental and Social Management Plan*: The ESMP shall be prepared as per the guidance in ESMF and specify the environmental supervision, monitoring and auditing requirements. The monitoring programme shall specify parameters, reference standards, monitoring methods, frequency, duration, location, reporting responsibilities, and what other inputs (e.g., technology, capacity building, training) are necessary. In addition, the program will specify what action should be taken and by whom in the event that the proposed mitigation measures fail, either partially or totally, to achieve the level of environmental protection and social impacts expected.
 - ▶ The ESMP shall list all mandatory government clearance conditions, and the status of procuring clearances. Additionally, the ESMPs shall include as separate attachments, if applicable, Natural Habitat Plan, RAP/ARAP, STPP, Gender Action Plan and/or Cultural

Properties Plan to satisfy the requirements of the World Bank safeguard policies and Environmental and Social Management Framework of the project including RPF and STPF.

- ▶ The scope of the ESMP shall also include:
 - a. Design modifications recommended by the project ESIA
 - b. Detailed specification of bill of quantities, execution drawings and contracting procedures for execution of environmental mitigation and enhancement measures suggested, separate for pre-construction, during construction and operation stages
 - c. Recommendation of feasible and cost-effective measures to prevent or reduce significant negative environmental and social impacts to acceptable levels
 - d. Responsibilities for execution and supervision of each of the mitigation and enhancement measures identified in the project ESIA including RAP, STDP, ESMP etc.
 - e. Identification of opportunities for enhancement of environmental quality (of specific locations, water bodies, scenic areas, etc.) in the project area
 - f. Formation of specific plans for reduction of the use of water and if possible for making all construction energy and material efficient (including reuse of construction wastes, and use of fly ash).
 - g. Plan for ensuring labour/workers welfare and health and safety
 - h. Specifications for good practices for construction and upkeep of treatment plants and machinery,
 - i. Develop general codes of practice for planning and design, construction, supervision and monitoring and operation of water supply, drainage, roads, building and sewerage scheme projects. The codes of practice should be supported by necessary check lists, formats and supporting information, so as to enable the operator to adopt the codes directly for the respective projects.
 - j. For each contract to be awarded, the consultants will prepare an ESMPs including all the studies and analyses above. These should be in a form so that the appropriate parts can be readily incorporated in the respective contract documents.

- ▶ **Clearances and Permits:** The consultants shall support the Client to furnish any relevant information required for obtaining clearance from various state and central government agencies. This may include (a) assisting the client in the submission of application for the Clearance of Forest Departments; (b) completion of forms and submission of the same for

obtaining No-objection Certificates (NoC) under the Water and Air Acts from the State Pollution Control Boards; (c) assistance in submission for any other clearance requirements with respect to the environmental components relevant to the project. (d) Gram Sabha/AamSabha consultation to meet requirements for PESA, Forest Rights Act (2006), and Land Acquisition Act (2013)

- ▶ Co-ordination among the Engineering and ESIA Consultants
 - a. The consultants, with assistance from the client, shall establish a strong co-ordination mechanism with the other project-preparation consultants – engineering, and/or institutional development.
 - b. The consultants shall keep in mind the specific requirements of the project in general, and the engineering/design studies in particular, and plan their outputs accordingly. The consultants shall detail out in the Inception Report, how the required inputs would be provided to the other consultants in a timely manner. The consultants shall make formal presentations, coordinated by the Client, at key milestones on the (i) proposed work plan after submitting the Inception Report; (ii) recommendations from the ESIA and alternatives analysis; and (iii) details of ESMP, RAP STDP and design recommendations. The consultants shall co-ordinate with the engineering and/or institutional development consultants at each of these formal presentations.

Suggested Team Composition

a) Team Leader

- ▶ A post-graduate / doctoral degree holder in Environmental or Social Sciences or a related field with at least 15 years of experience in delivering ESIA's for development projects. S/he should have demonstrated experience of working with and leading multisectoral teams and should be conversant with relevant regulations and multilateral funding agencies like the World Bank. S/he should be fluent in English and similar level of competency in Hindi would be an advantage.

b) Social Experts

- ▶ A post-graduate/doctoral degree holder in Social Sciences, or a related field with at least 10 years of undertaking (E)SIA studies, preferably for development projects, with funding support from multilateral agencies like World Bank
- ▶ S/he should have experience of organizing consultations with potentially affected persons
- ▶ Familiarity with the relevant regulations would be an advantage
- ▶ Fluency in English & Hindi languages

c) Environmental Experts

▶ A post-graduate/doctoral degree holder in Environmental science/engineering/ Planning or related field with at least 10 years of experience in undertaking E(S)IA studies, preferably for development projects, with funding support from multilateral agencies like World Bank. S/he should have experience of organizing and analysing environmental survey results and incorporating the findings into the report.

d) Urban Infrastructure Specialist

▶ Drainage specialist (bachelor in civil engineer)and experience of 10 years with at least 5 years in India. Have expertise in designing, construction management. supervision of large integrated PHE projects related with waste water projects, sewer lines, waste water processing plants, pumping stations, etc

e) Road SafetySpecialist

▶ Degree in Civil Engineering from a reputed Institute of Technology or a recognized university. Should have at least 10 yrs. experience in road safety. Should be well versed in the field of road/ highway/bridge engineering.

f) EHS engineer

▶ Degree in Environmental Engineering with sufficient experience in managing large construction project

ANNEXURE VIII: MODEL ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN

Environmental Management Plan for Water Supply Projects

S. No	Activities	Proposed mitigation measures	Responsible Agency
Planning			
1	Design Stage Parameters	<ul style="list-style-type: none"> ▶ Ensure that Water Supply line is above sewer line (i) lateral separation at 3 m between water main and sewer line and (ii) vertical separation between bottom of water main and top of sewer = 0.5 m ▶ Ensure Water main neither pass through nor come in contact with any part of Manhole ▶ Follow IS 1172:1993 for basic requirements of water supply ▶ Ensure that ESRs are not sited in highly populated areas ▶ Follow IS 11682:1985 for design guidelines of ESRs ▶ Follow IFC industry guidelines for Water and Sanitation for EHS guidelines relevant to the operation and maintenance of potable watertreatment and distribution systems³ 	JUIDCO ESIA and DPR consultants
Pre-Construction			
2	Joint Field Verification of EMP measures	▶ The Project Engineer, Contractors Team will carry out joint field verification of the EMP. The efficacy of the mitigation measures suggested in the EMP will be checked. If required, the Engineer will modify the EMP and BoQs associated with the mitigation measures.	Contractor, CSQC, Social and Environmental Specialists, JUIDCO
3	Orientation of contractors and	▶ JUIDCO shall organize orientation sessions for all contractor staff of and field level implementation staff of Contractor and all consultants on environment and	JUIDCO

³<http://www.ifc.org/wps/wcm/connect/e22c050048855ae0875cd76a6515bb18/Final%2B-%2BWater%2Band%2BSanitation.pdf?MOD=AJPERES>

S. No	Activities	Proposed mitigation measures	Responsible Agency
4	ULB Utility Relocation	<p>social management.</p> <ul style="list-style-type: none"> ▶ All utilities and common property resources impacted (permanently) due to the project will be relocated with prior approval of the concerned state and ULB agencies before construction starts. (Shifting of electrical poles, telephone poles, optical fibre cables and water mains / taps, etc. along the site as mentioned in BOQ). ▶ Prior information to affected people, relocation shall be conducted with inputs from the community ▶ Provisions such as foot over bridge with hand rails in the residential areas in case accessibility to properties/movement has been impacted due to utility relocation. 	JUIDCO / ULB/ Concerned agency/Contractor
5	Tree Cutting	<ul style="list-style-type: none"> ▶ Trees shall not be felled unless they represent a safety hazard during construction. ▶ The Design consultant, ESIA consultant and JUIDCO will identify the number of trees that will be affected with girth size, species type along the mains, pumping / lifting station sites and water treatment plant site. The details to be indicated in a strip map plan. ▶ Trees shall be removed from the construction sites before commencement of construction with prior permission from the concerned department. ▶ Trees to be retained, should be provided adequate protection to the with tree guards. ▶ Disposal of cut trees should be undertaken immediately so that it does not pose a safety hazard and cause obstructions. ▶ Compensatory plantation by way of Re-plantation of at least twice the number of trees cut /or directed by regulatory authority should be carried out in the project area. 	JUIDCO/ ULB /Contractor
6	Replacement of common amenities	<ul style="list-style-type: none"> ▶ All affected common amenities such as community sources of water, bus shelters, cultural properties, etc., will be relocated wherever necessary. The relocation site identification will be in accordance with the choice of the community and completed before construction starts. A stakeholder meeting with 	Contractor&CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
		the community will be held to discuss the relocation aspects, the structures, and accessibility to the structures.	
7	Planning Temporary Traffic diversion and Pedestrian safety	<ul style="list-style-type: none"> ▶ Detailed traffic control plans will be prepared by local authorities and the contractor teams and submitted to the engineers for approval, one week prior to commencement of works. ▶ The traffic control plans shall contain details of temporary diversion, details of arrangements for construction under traffic, details of traffic arrangement after work each day, signage's, safety measures for transport of hazardous materials and arrangement of flagmen. Special consideration will be given to the preparation of the traffic control plan for safety of pedestrians and workers at night. ▶ The mitigation measures should refer the traffic management measures as per SP 55 of IRC Codes Provision of MORTH 112 shall apply. 	Contractor&CSQC
8	Storage of construction materials	▶ The contractor shall identify the site for temporary use of land for construction sites /storage of construction materials including pipes etc. These sites shall not cause any inconvenience to local population / traffic movement. These locations shall be approved by the engineer in charge.	Contractor and CSQC
9	Construction of vehicles and machinery	▶ All vehicles, equipment and machinery to be procured for construction will conform to the relevant Bureau of Indian Standard (BIS) norms. Noise limits for construction equipment to be procured such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws will not exceed 75 dB (A), measured at one metre from the edge of the equipment in free field, as specified in the Environment (Protection) Rules, 1986.	Contractor and CSQC
10	Identification of Sites for Solid Waste and Debris disposal	▶ Municipal landfill sites for disposal of debris refuse to be identified. These disposal sites shall be finalized such that they are not located within any designated forest or other eco-sensitive areas, does not impact natural drainage courses and no endangered / rare flora is impacted by such disposal.	Contractor and CSQC
11	Construction	▶ Procurement of construction material only from permitted sites and licensed /	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
	material sourcing (sand, borrow material and stone material)	<p>authorized quarries. Farm land and forest belts shall <u>not</u> be used for material sourcing or borrow sites.</p> <ul style="list-style-type: none"> ▶ Arable land shall not be selected as borrow sites as much as possible. If excavation has to be done in arable land, top soil layer (30 cm) shall be saved and returned after construction work is completed, so as to minimize impacts. ▶ The Contractor will identify materials from existing licensed quarries with the suitable materials for construction. the Project Engineer's representative will verify the legal status of the quarry operation. ▶ The quarry operations will be undertaken within the rules and regulations in force. ▶ The Contractor will be responsible for arranging adequate supply of water for the entire construction period. The contractor shall consult the local people before finalizing the locations. ▶ The contractor will preferentially source and pump all water requirements from surface water bodies. ▶ Boring of any tube wells will be prohibited. Any groundwater to be extracted requires permission from the competent authorities ▶ The contractor will identify sand quarries with requisite approvals for the extraction of sand. 	
12	Protection of Religious Structures and Shrines	<p>All necessary and adequate care shall be taken to minimize impact on cultural properties (which includes cultural sites, places of worship including temples, mosques, churches and shrines, etc., graveyards, monuments and any other important structures as identified during design and all properties/sites/remains notified under the Ancient Sites and Remains Act). No work shall spill over to these properties, premises and precincts. Access to such properties from the road shall be maintained clear and clean.</p>	Contractor and CSQC
13	Labour Requirements	<ul style="list-style-type: none"> ▶ The contractor will use unskilled labour drawn from local communities to avoid any additional stress on the existing facilities (medical services, power, water supply, etc.) 	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<ul style="list-style-type: none"> ▶ Planning of labour camps, if required, needs to be done ensuring adequate water supply, sanitation and drainage etc., in conformity with the Indian Labour Laws and guidelines in Annex of ESMF. ▶ All the units of treatment plant shall be designed in such a way that it can withstand maximum load and without compromising performance. 	
14	Infrastructure Design		
15	Involuntary Resettlement & Rehabilitation	<ul style="list-style-type: none"> ▶ Land Acquisition Plan (LAP) ▶ Resettlement Action Plan (RAP) 	JUIDCO
16	Impact on Scheduled Tribes	<ul style="list-style-type: none"> ▶ Scheduled Tribes Development Plan 	JUIDCO
Construction			
1.	Replacement/Disposal of existing installations on the pipeline route	<ul style="list-style-type: none"> ▶ If asbestos is located on the project site, it shall be marked clearly as hazardous material (Asbestos cement pipes often are found in underground utility conduits and municipal water, sewer and drainage systems. Asbestos cement pipes buried below ground are considered non-friable if they are in good condition. It should be noted that active asbestos cement pipe that is exposed and is not intended to be replaced or removed and is not disturbed by repair or replacement activities may remain in place and be backfilled) ▶ When possible the asbestos will be appropriately contained and sealed to minimize exposure. The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust ▶ Asbestos will be handled and disposed by skilled & experienced professionals ▶ If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site. ▶ The removed asbestos will not be reused 	Contractor&CSQC
2.	Barricading and Signage	<ul style="list-style-type: none"> ▶ The contractor shall provide, erect and maintain information/safety signs, hoardings written in English and local language, wherever required or as suggested by the Engineer. 	Contractor& CSQC
3.	Vegetation Loss	<ul style="list-style-type: none"> ▶ Construction vehicles to ensure that they operate only within the area to be disturbed by access routes and other works ▶ Retention of trees and shrubs, where possible on the potential sites for screening 	Contractor& CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
4.	Sanitation and Sewage System at construction camps	<p>of the visual impact</p> <ul style="list-style-type: none"> ▶ Where the proposed route requires the removal of any vegetation, care will be taken to minimize the destruction or damage of trees. ▶ The contractor will ensure that - <ul style="list-style-type: none"> ▶ the sewage system for the camp are designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place ▶ separate toilets/bathrooms, wherever required, screened from those from men (marked in vernacular) are to be provided for women adequate water supply is to be provided in all toilets and urinals ▶ all toilets in workplaces are with dry-earth system (receptacles) which are to be cleaned and kept in a strict sanitary condition night soil is to be disposed by putting layer of it at the bottom of a permanent tank prepared for the purpose and covered with 15 cm. layer of waste or refuse and then covered with a layer of earth for a fortnight. ▶ Adequate health care is to be provided for the work force during the entire phase. 	Contractor & CSQC
5.	Waste Disposal at construction camps	<ul style="list-style-type: none"> ▶ The contractor will provide garbage bins in the camps and ensure that these are regularly emptied and disposed in a hygienic manner. Unless otherwise arranged by local sanitary authority, arrangements for disposal of night soils (human excreta) suitably approved by the local medical health or municipal authorities or as directed by ULB will have to be provided by the contractor. 	Contractor, CSQC and ULB
6.	Disposal of construction debris and excavated materials.	<ul style="list-style-type: none"> ▶ A suitable approved from regulatory site should be identified for safe disposal, in relatively low lying areas, away from the water bodies etc. ▶ Maximize the re-use of excavated materials in the works as far as feasible to ensure that no permanent spoil dumps are created ▶ Properly dispose off the spoil in the identified by the design team and approved by the confirmed land owners; ▶ Care should be taken to avoid spoil location in land that could otherwise be used for productive purposes. 	Contractor, CSQC and monitored by ULB
7.	Downstream users (impacts arising due to construction of check	<ul style="list-style-type: none"> ▶ Ensure that the stream is not obstructed, affecting the downstream users. 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
8.	Water quality in the source / water bodies	<ul style="list-style-type: none"> ▶ Establish the baseline water quality prior to initiation of construction and to be periodically monitored and report sent to the Engineer. 	Contractor, CSQC
9.	Restoring river bed/ water source	<ul style="list-style-type: none"> ▶ Ensure the restoring of river bed to its natural shape free from any debris or construction junk material that may obstruct the flow. 	Contractor, CSQC
10.	Laying of pipelines	<ul style="list-style-type: none"> ▶ Adequate precautions should be taken while laying the water supply mains to avoid the possibility of cross connection with sewer lines. 	Contractor, CSQC
11.	Temporary flooding due to excavation.	<ul style="list-style-type: none"> ▶ Proper drainage arrangements to be made, to avoid the overflowing of existing drains due to excavation during the laying of sewer mains. 	Contractor, CSQC
12.	Dust Pollution near settlements	<ul style="list-style-type: none"> ▶ All earth work will be protected in manner acceptable to the engineer to minimize generation of dust. Area under construction shall be covered & equipped will dust collector. ▶ Construction material shall be covered or stored in such a manner so as to avoid being affected by wind direction. ▶ Unpaved haul roads near / passing through residential and commercial areas to be watered thrice a day. ▶ Trucks carrying construction material to be adequately covered to avoid the dust pollution and to avoid the material spillage ▶ Spraying of water to suppress fugitive dust emission 	Contractor, CSQC
13.	Protection of residential / sensitive receptors.	<ul style="list-style-type: none"> ▶ Preventive maintenance of construction equipment and vehicles to meet emission standards and to keep them with low noise. ▶ Provision of enclosing generators and concrete mixers at site. ▶ Sound barriers in inhabited areas shall be installed during the construction phase. ▶ Adequate barricading / other measures to protect dust pollution near sensitive receptors like schools and hospital etc. to be ensured. 	Contractor, CSQC
14.	Vehicular pollution at residential/ sensitive receptors.	<ul style="list-style-type: none"> ▶ Idling of temporary trucks or other equipment should not be permitted during periods of loading / unloading or when they are not in active use. The practice must be ensured especially near residential / commercial /sensitive areas. ▶ Stationary construction equipment will be kept at least 500m away from sensitive receptors. ▶ All possible and practical measures to control noise emissions during drilling shall be employed. 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
15.	Noise from vehicles, plants and equipment	<ul style="list-style-type: none"> ▶ Servicing of all construction vehicles and machinery will be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced. ▶ Maintenance of vehicles, equipment and machinery shall be regular and up to the satisfaction of the Engineer to keep noise levels at the minimum. 	Contractor, CSQC
16.	Stockyards	<ul style="list-style-type: none"> ▶ Location for stockyards for construction materials will be identified at least 1000 m from water course and separated and sufficiently away from the labour camps. ▶ Separate enclosures shall be planned for storing construction materials containing fine particles such that sediment-laden water does not drain into nearby storm water drain & underground sewerage pipes. 	Contractor, CSQC
17.	Pollution from Fuel and Lubricants/ Contamination	<ul style="list-style-type: none"> ▶ Contractor will ensure that all vehicle/machinery and equipment operation, maintenance and refuelling will be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground. Oil interceptors will be provided for vehicle parking, wash down and refuelling areas as per the design provided. ▶ In all, fuel storage and refuelling areas, if located on agricultural land or areas supporting vegetation, the top soil will be stripped, stockpiled and returned after cessation of such storage. ▶ Contractor will arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites (list to be submitted to Engineer) and approved by Engineer. All spills and collected petroleum products will be disposed in accordance with MoEFCC and JSPCB guidelines. ▶ Engineer will certify that all arrangements comply with the guidelines of JSPCB/MoEFCC or any other relevant laws. 	Contractor, CSQC
18.	Operation of construction equipment and vehicles	<ul style="list-style-type: none"> ▶ Notwithstanding any other condition of contract, noise level from any item of plants must comply with the relevant legislation for levels of noise emission. ▶ The contractor will ensure that the AAQ concentration at these construction sites are within the acceptable limits of industrial uses in case of hot mix plants and crushers and residential uses around construction camps. 	Contractor, CSQC
19.	Transporting construction materials	<ul style="list-style-type: none"> ▶ All vehicles delivering materials to the site will be covered to avoid spillage of materials. All existing highway and roads used by vehicles of the contractor, or any of his sub – contractor suppliers of materials and similarly roads which are part of the work will be kept clean and clear of dust/ mud or other extraneous materials dropped by such vehicles. 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
20.	Pollution from Construction Wastes	<ul style="list-style-type: none"> ▶ The fall height shall be kept low so that least amount of dust is airborne, during unloading of materials. The unloading of materials at construction sites close to settlement will be restricted today time. ▶ The Contractor shall take all precautionary measures to prevent the wastewater generated during construction from entering into streams, water bodies or the irrigation system. All waste arising from the project is to be disposed in a manner that is acceptable to the Engineer. 	Contractor, CSQC
21.	Accidental Spills	<ul style="list-style-type: none"> ▶ Maintain vehicles and machineries at manufacturers specifications ▶ Ensure proper storage of chemicals / materials; 	Contractor, CSQC
22.	Occupational Health and Safety of Workers	<ul style="list-style-type: none"> ▶ The Contractor will follow the OHS management plan recommended as part of the ESIA, and update the plan based on site verifications. ▶ Training of workers on environment and social impacts in construction stage, and safe construction practices. ▶ Maintain good housekeeping in the construction area ▶ Barricade excavated areas. ▶ Implement work permit system for work at height. ▶ Provision of personal hygiene facilities in good condition with adequate water supply ▶ Ensure awareness raising on proper sanitation and personal hygiene to promote proper health. Provide training to construction workers on safe work practices. ▶ Record and investigate accident, injuries to workers. ▶ All the personnel employed should be adults and should possess valid national identification cards ▶ Adequate provisions for night time work such as reflective PPE, Lighting. ▶ Provide PPE to construction workers <ul style="list-style-type: none"> ▪ Safety shoes, hard hat/ helmet and hand gloves with grip facility to all workers ▪ Nose masks for those working in dusty area ▪ Earplugs for those working in high noise areas ▪ Nitrile rubber gloves to those engaged in painting activities ▪ Face shield for those engaged in welding ▪ Provide medical aid to affected local and migrant workers which will control the movement of disease vectors (through contaminated water and between people) 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
Operation			
23.	Storage and use of chemicals	<ul style="list-style-type: none"> ▶ A suitable site should be identified / constructed for the safe storage and handling of chemicals and other hazardous materials with proper display of requirements and marking as protected area. ▶ Provide the following measure at the chlorine application unit: <ul style="list-style-type: none"> i. Chlorine neutralization pit with a lime slurry feeder ii. Proper ventilation, lighting, entry and exit facilities iii. Facility for isolation in the event of major chlorine leakage iv. Provide PPE and specific appliances for safe working for the operators in the chlorine plant v. Provide training to the staff in safe handling and application of chlorine; this shall be included in the contract of Chlorinator supplier ▶ Apply quicklime treatment to dewatered sludge in order to create a pathogen and odour free product; ▶ A suitable site should be identified for the safe disposal of dried sludge generated at the WTP site and get approved by regulatory agency. The Contractor should prepare a sludge disposal plan and adhere to the same. ▶ Only ULB approved, appropriate disposal sites will be used. ▶ Ensure leak control system in the design and monitoring. ▶ Increase awareness on water conservation and explore options like metering. 	Operator / ULB
24.	Disposal of sludge	<ul style="list-style-type: none"> ▶ ULB and JUIDCo to provide a sanitary sewerage system with sufficient treatment capacity to suffice to increased domestic wastewater generation ▶ Plan and cost for adequate centralized/decentralized sewage disposal and treatment, and sanitation facilities. ▶ Use of energy efficient pumps ▶ Periodical maintenance 	Operator / ULB
25.	Wastage of water due to leakage or indiscriminate use	<ul style="list-style-type: none"> ▶ The design shall propose noise and vibration proofed systems. These shall be monitored during operation and if the values go above ambient or specifications, the necessary measures in serving and systems improvement will be undertaken ▶ Monitor the health of workers within the project site to identify adverse health effects, and conduct health check-ups for relevant parameters like BP, sugar, 	Operator / ULB
26.	Generation of additional quantity of wastewater		Operator / ULB
27.	High energy demand for pumping operation.		Operator / ULB
28.	Noise and Vibration Management		Operator / ULB
29.	Occupational Health and Safety		Operator / ULB

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<p>Chest X ray as per Factories Act.</p> <p>Necessary provisions like enclosure, vibration control mechanism and periodical maintenance shall be implemented to maintain the noise levels within the standards.</p> <p>Operators staff shall be provided with necessary PPE such as approved respiratory equipment like air masks-full face for working in leak area, canister type gas mask. ammonia torches, emergency require kit, safety helmets, goggles, rubber boots, gloves and coloured vests (aprons) etc. shall be made available.</p> <p>Display Charts of PFD, safety checks, maintenance procedure, etc.</p> <p>Emergency Action Plan shall be prepared as applicable and be made available at the site.</p> <p>Operators shall be provided with necessary training periodically.</p> <p>EHS guidelines of World bank shall be ensured during project implementation. ⁴</p> <p>Hazardous chemicals used in the operation shall comply with the manufacture, storage and import of hazardous chemical rules 1989.</p>	
30.	Backwash and Rejected water	<p>Recycle the treated backwash water to the channel leading to the filters;</p> <p>The quality of reject water after blending will comply with the discharge standards for disposal into an inland water body</p>	Operator / ULB
31.	Protection of water source	<p>The site will be enclosed with chain link fence, lockable gates, designed to discourage entry by unauthorized persons and animals.</p>	Operator / ULB
32.	Emergency Preparedness Plan	<p>Emergency Preparedness Plan shall be prepared by the operator and submitted to the ULB and get approved prior to operation.</p>	Operator / ULB
33.	Downstream Flow	<p>The operator/ ULB to the safest maximum abstract able water quantities of throughout the project life;</p> <p>Adhere to WRD water allocation NOC</p>	Operator / ULB

⁴<https://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final+-+General+EHS+Guidelines.pdf?MOD=AJPERES>

Environmental Management Plan for Road projects

S. No	Activities	Proposed mitigation measures	Responsible Agency
Planning Phase			
1.	Issues from stakeholder Consultations	<ul style="list-style-type: none"> ▶ Various issues raised by stakeholders on alignments and relocation of assets in the RoW were examined and suitably incorporated based on merit and other road safety measures. 	ESIA and Design consultants
2.	Design phase – good practice	<ul style="list-style-type: none"> ▶ Planting of pollution absorbing species where space is available will be identified in the DPRs and appropriately budgeted. ▶ Follow good practices in NHAI Guidelines for Green Highways Project ▶ Review Locations for installation of noise screens in case of excessive noise pollution have to be identified during the DPR stage so as to reduce the noise during operation stage. These need to be appropriately budgeted in the DPR and phased for implementation ▶ Review of accident black spot areas to provide for adequate signalling and signage ▶ The proposed alignment should be selected/adjusted (within IRC/MORTH specifications) to minimize land disturbance and to avoid culturally and environmentally sensitive areas, cultural properties, water bodies etc. ▶ Location and basic facilities at site (construction camps, hot mix plants, labour camps) should cause minimum interference with the local system. 	ESIA and Design consultants
Pre-Construction			
3. 1	Joint Field Verification of EMP measures	<ul style="list-style-type: none"> ▶ The Project Engineer, Contractors Team will carry out joint field verification of the EMP. The efficacy of the mitigation measures suggested in the EMP will be checked. If required, the Engineer will modify the EMP and BoQs associated with the mitigation measures. 	Contractor, CSQC, Social and Environmental Specialists, JUIDCO
4. 2	Orientation of contractors and ULB	<ul style="list-style-type: none"> ▶ JUIDCO shall organize orientation sessions for all contractor staff of and field level implementation staff of Contractor and all consultants on environment and social management. 	JUIDCO
5.	Utility Relocation	<ul style="list-style-type: none"> ▶ All utilities and common property resources impacted (permanently) due to the project will be relocated with prior approval of the concerned state and ULB agencies before construction starts. (Shifting of electrical poles, telephone poles, optical fibre cables and water mains / taps, etc. along the site as mentioned in BOQ). 	JUIDCO / ULB/ Concerned agency/Contractor

S. No	Activities	Proposed mitigation measures	Responsible Agency
6.	Tree Cutting	<ul style="list-style-type: none"> ▶ Prior information to affected people, relocation shall be conducted with inputs from the community ▶ Provisions such as foot over bridge with hand rails in the residential areas increase accessibility to properties/movement has been impacted due to utility relocation. ▶ Trees shall not be felled unless they represent a safety hazard during construction. ▶ The Design consultant, ESIA consultant and JUIDCO will identify the number of trees that will be affected with girth size, species type along the available RoW. The details to be indicated in a strip map plan. ▶ Trees shall be removed from the construction sites before commencement of construction with prior permission from the concerned department. ▶ Trees to be retained, should be provided adequate protection to the with tree guards. ▶ Disposal of cut trees should be undertaken immediately so that it does not pose a safety hazard and cause obstructions. ▶ Compensatory plantation by way of Re-plantation of at least twice the number of trees cut /or directed by regulatory authority should be carried out in the project area. 	JUIDCO/ Contractor ULB
7.	Replacement of common amenities	<ul style="list-style-type: none"> ▶ All affected common amenities such as community sources of water, bus shelters, cultural properties, etc., will be relocated wherever necessary. The relocation site identification will be in accordance with the choice of the community and completed before construction starts. A stakeholder meeting with the community will be held to discuss the relocation aspects, the structures, and accessibility to the structures. 	Contractor
8.	Planning Temporary Traffic diversion and Pedestrian safety	<ul style="list-style-type: none"> ▶ Detailed traffic control plans will be prepared by the contractor and local authorities, and JUIDCO and submitted to the engineers for approval, at least one week prior to commencement of works. ▶ The traffic control plans shall contain details of temporary diversion, details of arrangements for construction under traffic, details of traffic arrangement after work each day, signage's, safety measures for transport of hazardous materials and arrangement of flagmen. Special consideration will be given to the preparation of the traffic control plan for safety of pedestrians and workers at night. ▶ The mitigation measures should refer the traffic management measures as per SP 55 of IRC Codes Provision of MORTH 112 	Contractor

S. No	Activities	Proposed mitigation measures	Responsible Agency
9.	Storage of construction materials	<ul style="list-style-type: none"> ▶ The contractor shall identify the site for temporary use of land for construction sites /storage of construction materials including pipes etc. These sites shall not cause an inconveniences to local population / traffic movement. These locations shall be approved by the engineer in charge. 	Contractor and CSQC
10.	Construction of vehicles and machinery	<ul style="list-style-type: none"> ▶ All vehicles, equipment and machinery to be procured for construction will conform to the relevant Bureau of Indian Standard (BIS) norms. Noise limits for construction equipment to be procured such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws will not exceed 75 dB (A), measured at one metre from the edge of the equipment in free field, as specified in the Environment (Protection) Rules, 1986. 	Contractor and CSQC
11.	Identification of Sites for Solid Waste and Debris disposal	<ul style="list-style-type: none"> ▶ Municipal landfill sites for disposal of debris refuse to be identified. These disposal sites shall be finalized such that they are not located within any designated forest or other eco-sensitive areas, does not impact natural drainage courses and no endangered / rare flora is impacted by such disposal. 	Contractor and CSQC
12.	Construction material sourcing (sand, borrow material and stone material)	<ul style="list-style-type: none"> ▶ Procurement of construction material only from permitted sites and licensed / authorized quarries. Farm land and forest belts shall not be used for material sourcing or borrow sites. ▶ Arable land shall not be selected as borrow sites as much as possible. If excavation has to be done in arable land, top soil layer (30 cm) shall be saved and returned after construction work is completed, so as to minimize impacts. ▶ The Contractor will identify materials from existing licensed quarries with the suitable materials for construction. the Project Engineer's representative will verify the legal status of the quarry operation. ▶ The quarry operations will be undertaken within the rules and regulations in force. ▶ The Contractor will be responsible for arranging adequate supply of water for the entire construction period. The contractor shall consult the local people before finalizing the locations. ▶ The contractor will preferentially source and pump all water requirements from surface water bodies. ▶ Boring of any tube wells will be prohibited. Any groundwater to be extracted requires permission from the competent department. 	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
13.	Protection of Religious Structures and Shrines	<ul style="list-style-type: none"> ▶ The contractor will identify sand quarries with requisite approvals for the extraction of sand. ▶ All necessary and adequate care shall be taken to minimize impact on cultural properties (which includes cultural sites, places of worship including temples, mosques, churches and shrines, etc., graveyards, monuments and any other important structures as identified during design and all properties/sites/remains notified under the Ancient Sites and Remains Act). No work shall spill over to these properties, premises and precincts. Access to such properties from the road shall be maintained clear and clean. 	Contractor and CSQC
14.	Labour Requirements	<ul style="list-style-type: none"> ▶ The contractor will use unskilled labour drawn from local communities to avoid any additional stress on the existing facilities (medical services, power, water supply, etc.) ▶ Planning of labour camps, if required, needs to be done ensuring adequate water supply, sanitation and drainage etc., in conformity with the Indian Labour Laws and guidelines in Annex of ESMF. 	Contractor and CSQC
15.	Identification and selection of borrow pits	<ul style="list-style-type: none"> ▶ Arrangement for locating the source of supply of materials for embankment and sub grade as well as compliance to environmental requirements, as applicable, will be the sole responsibility of the contractor. ▶ Location identified by the contractor shall be reported to the ULB. Planning of haul roads for accessing borrows materials should be routed to avoid agriculture areas. ▶ In addition to testing for the quality of borrow materials by the Road Construction Department, the environmental personal of the department will be required to inspect every borrow area location prior to approval. Locations finalized by the contractor shall be reported to the Environmental Expert of JUIDCO. ▶ The Contractor will not start borrowing earth from select borrow area until the formal agreement is signed between land owner/panchayat and contractor and a copy is submitted to the Highways department and the PIU. 	Contractor/ ULB/ JUIDCO
16.	Siting of Asphalt Mixing plants	<ul style="list-style-type: none"> ▶ Asphalt mixing plants will be sited over 1000 m (refer CPCB/SPCB,) from any communities. 	
17.	Water	<ul style="list-style-type: none"> ▶ The contractors shall consult the local people before finalizing the locations. The contractor will source the requirement of water preferentially from surface water bodies, such as rivers and tank in the project area. Boring of any tube wells will be prohibited. To avoid disruption / disturbance to other water users, the contractor will extract water from fixed locations. ▶ Only at locations where surface water sources are not available, the contractors can contemplate extraction of groundwater. Consent from the engineer that no surface water 	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<p>resource is available in the immediate area for the project is a pre – requisite prior to extraction of groundwater. The contractor will need to comply with the requirements of the regulatory authority and seek their approval for doing so.</p> <ul style="list-style-type: none"> ▶ The use of surface water by the contractor shall be allowed only after written permission/consent of the community/panchayat/owner indicating the quantum of water allowed to be drawn. In case of Irrigation sources, consent shall be obtained by the competent authority and any such use shall be informed to the local community in advance 	JUIDCO
18.	Involuntary Resettlement & Rehabilitation	<ul style="list-style-type: none"> ▶ Land Acquisition Plan (LAP) ▶ Resettlement Action Plan (RAP) 	JUIDCO
19.	Impact on Scheduled Tribes	<ul style="list-style-type: none"> ▶ Scheduled Tribes Development Plan 	JUIDCO
Construction			
20.	Interference of existing installations on the route	<ul style="list-style-type: none"> ▶ If asbestos is located on the project site, it shall be marked clearly as hazardous material (Asbestos cement pipes often are found in underground utility conduits and municipal water, sewer and drainage systems. Asbestos cement pipes buried below ground are considered non-friable if they are in good condition. It should be noted that active asbestos cement pipe that is exposed and is not intended to be replaced or removed and is not disturbed by repair or replacement activities may remain in place and be backfilled) ▶ Asbestos will be handled and disposed by skilled & experienced professionals ▶ If asbestos material is to be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site. ▶ When possible the asbestos will be appropriately contained and sealed to minimize exposure. The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust ▶ The removed asbestos will not be reused 	Contractor and CSQC
21.	Drainage management	<ul style="list-style-type: none"> ▶ Debris generated due to the excavation of foundation or due to the dismantling of existing structure will be removed. ▶ Silt fencing has to be provided on the mouth of discharge into natural ponds. ▶ Side drains are provided on both sides of the road, obstruction if any to be removed immediately 	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
22.	Sanitation and Sewage System at construction camps	<ul style="list-style-type: none"> ▶ Lined drain is provided at built-up locations for quick drainage. ▶ Increased runoff due to increased impervious surface is countered through increased pervious surface area through soak pits during construction <p>The contractor will ensure that -</p> <ul style="list-style-type: none"> a) the sewage system for the camp are designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place b) separate toilets/bathrooms, wherever required, screened from those from men (marked in vernacular) are to be provided for women c) adequate water supply is to be provided in all toilets and urinals d) all toilets in workplaces are with dry-earth system (receptacles) which are to be cleaned and kept in a strict sanitary condition e) Night soil is to be disposed off by putting layer of it at the bottom of a permanent tank prepared for the purpose and covered with 15 cm. layer of waste or refuse and then covered with a layer of earth for a fortnight. f) Adequate health care is to be provided for the work force during the entire phase. 	Contractor and CSQC
23.	Topsoil management	<p>Top soil will be safeguarded from erosion and will be reused as follows.</p> <ul style="list-style-type: none"> ▶ Covering all borrow areas after excavation is over. ▶ Dressing of slopes of road embankment ▶ Agricultural field, acquired temporarily 	Contractor and CSQC
24.	Waste Disposal at construction camps	<ul style="list-style-type: none"> ▶ A suitable approved from regulatory site should be identified for safe disposal, in relatively low lying areas, away from the water bodies etc. 	Contractor and CSQC
25.	Stockyards	<ul style="list-style-type: none"> ▶ Location for stockyards for construction materials will be identified at least 1000 m from water course and separated and sufficiently away from the labour camps. ▶ Separate enclosures shall be planned for storing construction materials containing fine particles such that sediment-laden water does not drain into nearby storm water drain & underground sewerage pipes. 	Contractor and CSQC
26.	Crushers, Hot Mix plant & Batching Plants	<ul style="list-style-type: none"> ▶ Specification of crushers, Hot Mix plants and batching plants will comply with the requirement of the relevant current emission control legislations and should be included in the contract document. Hot Mix plants and batching plants will be sufficiently away from habitation, agriculture operations or industrial establishments. Such plants will be located at 	Contractor/ULB

S. No	Activities	Proposed mitigation measures	Responsible Agency
27.	Other construction vehicles, equipment and machinery	<p>least 1000m away from the nearest habitation, preferably in the downwind direction</p> <ul style="list-style-type: none"> ▶ The discharge standards promulgated under the Environmental Protection Act, 1986 will be strictly adhered. ▶ All vehicles, equipment and machinery to be procured for construction will conform to the relevant bureau of Indian standard (BIS) norms. ▶ Noise limit for construction equipment to be procured such as compactors, rollers, front loaders, concrete mixers, cranes (movable), vibrators and saws will not exceed 75 dB (A), measured at one meter from the edge of the equipment in free field, as specified in the Environmental (Protection) Rules, 1986. The Contractor shall maintain a record of PUC for all vehicles and machinery used during the contract period. 	Contractor and CSQC
28.	Generation of Debris from dismantling of pavement structures and non-bituminous waste disposal.	<ul style="list-style-type: none"> ▶ Debris generated shall be suitably reused in the proposed construction, subject to the suitability of the materials with the approval of the engineer. ▶ Contractor shall utilize at least 30% of debris generated for road construction purposes including <ul style="list-style-type: none"> ▶ Sub grade of the existing pavement shall be used as embankment fill material. ▶ The existing base and sub –base material shall be recycled as sub-base of the road or access roads. ▶ The existing bituminous surface debris may be considered for the paving of crossroads, access roads and paving works in construction camps, traffic diversion roads, haulage routes etc. ▶ Unutilized debris materials shall be suitably disposed by the contractor; either through filling up of borrow areas created for the project or at pre-designed dump locations, subject to the approval of the engineer. Debris generated from other construction activities shall be disposed such that it doesn't contaminate water bodies in the project area. ▶ The contractor shall identify the sites for debris disposal and should be finalized prior to start of the earthworks; taking into account the following <ul style="list-style-type: none"> a) The dumping does not impact natural drainage courses b) no endangered / rare flora is impacted by such dumping c) Settlement are located at least 1.0 km away from the site. d) Should be located in non-residential areas located in the downwind side e) Located at least 100m from the designated forest land. f) Avoid disposal on productive land. g) Should be located with the consensus of the local community , in consultation with the 	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
29.	Bituminous wastes disposal	<p>engineer and shall be approved by the highways department</p> <ul style="list-style-type: none"> ▶ The disposal of residual bituminous wastes will be done by the contractor at secure land fill sites, with the required approval for the same from the concerned government agencies. ▶ Location of disposal sites should be finalized prior to start of the earthworks and shall take into account the following features: <ul style="list-style-type: none"> a) The dumping does not impact natural drainage courses b) no endangered / rare flora is impacted by such dumping c) Settlement are located at least 1.0 km away from the site. d) Site should be located with the consensus of the local community. e) Should be located in non residential areas located in the downwind side. f) Located at least 100m from the designated forest land. g) Avoid disposal on productive land. ▶ In case of non-availability of secured landfill, the contractor shall dispose at locations approved by engineer/ULB/JUIDCO for disposal of residual bituminous wastes, the disposal will be carried out over a 60 mm thick layer of rammed clay so as to eliminate the possibility of leaching of wastes into the ground water. The contractor will ensure that the surface area of such disposal pits is covered with a layer of soil. 	Contractor and CSQC
30.	Cutting/ filling near surface water bodies	<ul style="list-style-type: none"> ▶ Earth works shall be undertaken such that the existing embankments of water bodies are not disturbed. In case of cutting of embankments, the same shall be reconstructed with appropriate slope protection measures and adequate erosion control measures. 	Contractor and CSQC
31.	Drainage requirement at construction site	<ul style="list-style-type: none"> ▶ In addition to the drainage requirement, the contractor will take all desired measures as directed by the engineer such measures to prevent temporary or permanent flooding of the site or any adjacent area. 	Contractor and CSQC
32.	Pollution from Fuel and Lubricants/Contamination	<ul style="list-style-type: none"> ▶ Contractor will ensure that all vehicle/machinery and equipment operation, maintenance and refuelling will be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground. Oil interceptors will be provided for vehicle parking, wash down and refuelling areas as per the design provided. ▶ In all, fuel storage and refuelling areas, if located on agricultural land or areas supporting vegetation, the top soil will be stripped, stockpiled and returned after cessation of such storage. ▶ Contractor will arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites (list to be submitted to Engineer/JUIDCO) and approved by JUIDCO. All spills 	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<p>and collected petroleum products will be disposed in accordance with MoEF&CC and JSPCB guidelines.</p> <ul style="list-style-type: none"> ▶ JUIDCO will certify that all arrangements comply with the guidelines of JSPCB/MoEF&CC or any other relevant laws. 	
33.	Noise from Vehicles, Plants and Equipment	<p>The Contractor will confirm the following:</p> <ul style="list-style-type: none"> ▶ a) All plants and equipment used in construction (including the and PIU, aggregate crushing plant) shall strictly conform to the MoEF&CC/CPCB noise standards. ▶ b) All vehicles and equipment used in construction will be fitted with exhaust silencers. ▶ c) Servicing of all construction vehicles and machinery will be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced. ▶ Limits for construction equipment used in the project such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws shall not exceed 75 dB (A) (measured at one meter from the edge of equipment in the free field), as specified in the Environment (Protection) Rules, 1986. ▶ Maintenance of vehicles, equipment and machinery shall be regular and up to the satisfaction of the Engineer to keep noise levels at the minimum. ▶ Idling of temporary trucks or other equipment shall not be permitted during periods of unloading or when they are not in active use ▶ At the construction sites within 150 m of the nearest habitation, noisy construction work such as crushing, concrete mixing, batching will be stopped during the nighttime between 9.00 pm to 6.00 am. ▶ No noisy construction activities will be permitted around educational institutes/health centres (silence zones) up to a distance of 100 m from the sensitive receptors i.e., school, health centres and hospitals between 9.00 am to 6.00 pm. ▶ Contractor will provide noise barriers to the suggested locations of select schools/ health centres. ▶ Monitoring shall be carried out at the construction sites as per the monitoring schedule and results will be submitted to JUIDCO. JUIDCO will be required to inspect regularly to ensure the compliance of EMP. 	Contractor and CSQC
34.	Operation of construction equipment and	<ul style="list-style-type: none"> ▶ Notwithstanding any other condition of contract, noise level from any item of plants must comply with the relevant legislation for levels of noise emission. ▶ The contractor will ensure that the AAQ concentration at these construction sites are within 	Contractor

S. No	Activities	Proposed mitigation measures	Responsible Agency
35.	vehicles Transportation of construction materials	<p>the acceptable limits of industrial uses in case of hot mix plants and crushers and residential uses around construction camps.</p> <ul style="list-style-type: none"> ▶ All vehicles delivering materials to the site will be covered to avoid spillage of materials. All existing highway and roads used by vehicles of the contractor, or any of his sub – contractor or suppliers of materials and similarly roads which are part of the work will be kept clean and clear of dust/ mud or other extraneous materials dropped by such vehicles. ▶ The fall height shall be kept low so that least amount of dust is airborne, during unloading of materials. ▶ The unloading of materials at construction sites close to settlement will be restricted today time. 	Contractor and CSQC
36.	Dust	<ul style="list-style-type: none"> ▶ All earth work will be protected in manner acceptable to the engineer to minimize generation of dust. Area under construction shall be covered & equipped will dust collector. ▶ Construction material shall be covered or stored in such a manner so as to avoid being affected by wind direction. ▶ The contractor will take every precaution to reduce the level of dust along construction sites involving earthworks, by frequent application of water 	Contractor and CSQC
37.	Occupational Health and Safety of Workers	<p>The contractor will follow the OHS management plan prepared as part of the ESIA, and update the same based on site verifications.</p> <p>World Bank Environment Health and Safety Guidelines will be followed ⁵</p> <p>Implement measures recommended to prevent and mitigate impacts of air and noise pollution.</p> <ul style="list-style-type: none"> ▶ Training of workers on safe construction practices. ▶ Maintain good housekeeping in the construction area. ▶ Barricade excavated areas. ▶ Provide training to construction workers on safe work practices. ▶ Record and investigate injuries to workers. ▶ Provide PPE to construction workers ▶ a) Safety shoes, hard hat/ helmet and hand gloves with grip facility to all workers ▶ b) Nose masks for those working in dusty area ▶ c) Earplugs for those working in high noise areas 	Contractor and CSQC

⁵<https://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final+--+General+EHS+Guidelines.pdf?MOD=AJPERES>

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<p>d) Nitrile rubber gloves to those engaged in painting activities</p> <p>e) Face shield for those engaged in weldin</p>	
Operation & Maintenance			
38.	Traffic and Pedestrian Safety	<p>▶ The ULB will keep track of the pollution levels in the project area. If they are found to exceed the prescribed standards, it is necessary to introduce measures to reduce the pollution levels through air quality management measures. These measures usually being at the policy level, should involve the city administration.</p> <p>▶ Enforce Pollution Under Control (PUC) Programs. The public will be informed about the regulations on air pollution of vehicles.</p> <p>▶ HORN PROHIBITED sign post will be enforced at sensitive receptors.</p> <p>▶ The public will be informed about the regulations on noise pollution. And Monitoring of noise pollution will be done regularly as per frequency and location mentioned in EMPs</p> <p>▶ Lighting of major junctions near settlements- Solar lighting can be proposed</p> <p>▶ Provision of Traffic lights, road markings, Zebra crossing, sign posts, speed breakers and foot paths in urban areas to be maintained.</p>	PIU and ULB
39.	Maintenance of roadside storm water drainage system	<p>▶ Provision of waste collection bins at every bus bay/shelter and critical locations to prevent solid waste dumping in the roadside drains</p> <p>▶ Cleaning/ removing of spoils will be ensured before/ during the monsoon rains.</p>	PIU and ULB
40.	Increased noise and air pollution from increased traffic volume.	<p>▶ Plant suitable trees or noise barriers at sensitive receptors.</p> <p>▶ Dust generation due to vehicle will be reduced due to increased/widened paved surface.</p> <p>▶ Avenue plantation to be maintained</p> <p>▶ Major junctions should be proposed for peripheral plantation and landscaping.</p> <p>▶ Maintenance of roads will be ensured.</p>	PIU and ULB
41.	Maintenance of roads	<p>▶ Repair potholes on an immediate basis</p> <p>▶ Follow practices provided for construction phase during major maintenance activities.</p> <p>▶ Regular maintenance of sign post, painting/removal of bills.</p> <p>▶ Road marking will be maintained.</p> <p>▶ People will be educated about the safety in traffic rules.</p> <p>▶ Speed limit will be enforced at sensitive locations.</p> <p>▶ Mitigative/preventive measures for accident black spots</p>	PIU and ULB

Environmental management plan for Storm Water Drainage Projects

S. No	Activities	Proposed mitigation measures	Responsible Agency
Design Stage Elements			
1	Cleaning and Rehabilitation of existing drains and water channels	<ul style="list-style-type: none"> ▶ The construction and operation of <i>nallahs</i> shall be properly planned to improve aesthetics and improve river water quality, disposal of floating matter. ▶ Storm water drainage systems may be designed considering the water carrying capacity of existing drains, hence, de-sludging and lining of <i>nallahs</i>, to reduce water logging, seepage in ground water, restore its alignment, manual/mechanical screens arrangement and improve river water quality. 	JUIDCO and ESIA consultants
2	Design Stage Considerations	▶ Refer to IFC EHS guidelines for environmental wastewater and ambient water quality. ⁶	JUIDCO and ESIA consultants
Pre-Construction			
1	Joint Field Verification of ESMP measures	▶ The Project Engineer, Contractors Team will carry out joint field verification of the EMP. The efficacy of the mitigation measures suggested in the EMP will be checked. If required, the Engineer will modify the EMP and BoQs associated with the mitigation measures.	Contractor, CSQC, Social and Environmental Specialists, JUIDCo
2	Tree Cutting	<ul style="list-style-type: none"> ▶ Trees shall not be felled unless they represent a safety hazard during construction. ▶ The Design consultant, ESIA consultant and JUIDCO will identify the number of trees that will be affected with girth size, species type along the available RoW, mains, pumping / lifting station sites and water treatment plant site. 	JUIDCO/ ULB /Contractor

⁶<http://www.ifc.org/wps/wcm/connect/026ddb004886583db4e6f66a6515bb18/1-3%2BWastewater%2Band%2BAmbient%2BWater%2BQuality.pdf?MOD=AJPERES>

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<ul style="list-style-type: none"> ▶ Trees shall be removed from the construction sites before commencement of construction with prior permission from the concerned department. ▶ Trees to be retained, should be provided adequate protection to the with tree guards. ▶ Disposal of cut trees should be undertaken immediately so that it does not pose a safety hazard and cause obstructions. ▶ Compensatory plantation by way of Re-plantation of at least twice the number of trees cut /or directed by regulatory authority should be carried out in the project area. 	
3	Orientation of contractors and ULB	<ul style="list-style-type: none"> ▶ JUIDCO shall organize orientation sessions for all contractor staff of and field level implementation staff of Contractor and all consultants. 	JUIDCO
4	Utility Relocation	<ul style="list-style-type: none"> ▶ All utilities and common property resources impacted (permanently) due to the project will be relocated with prior approval of the concerned state and ULB agencies before construction starts. (Shifting of electrical poles, telephone poles, optical fibre cables and water mains / taps, etc. along the site as mentioned in BOQ). ▶ Prior information to affected people, relocation shall be conducted with inputs from the community ▶ Provisions such as foot over bridge with hand rails in the residential areas increase accessibility to properties/movement has been impacted due to utility relocation. 	JUIDCO / ULB/ Concerned agency/Contractor
5	Replacement of common amenities	<ul style="list-style-type: none"> ▶ All affected common amenities such as community sources of water, bus shelters, cultural properties, etc., will be relocated wherever necessary. The relocation site identification will be in accordance with the choice of the community and completed before construction starts. A stakeholder meeting with the community will be held to discuss the relocation aspects, the structures, and accessibility to the structures. 	Contractor, CSQC and ULB
6	Planning Temporary Traffic diversion and	<ul style="list-style-type: none"> ▶ Detailed traffic control plans will be prepared by Local Authorities, ULB and the Contractor and submitted to the engineers for approval, at least one 	Contractor, CSQC and ULB

S. No	Activities	Proposed mitigation measures	Responsible Agency
	Pedestrian safety	<ul style="list-style-type: none"> ▶ week prior to commencement of works. ▶ The traffic control plans shall contain details of temporary diversion, details of arrangements for construction under traffic, details of traffic arrangement after work each day, signage's, safety measures for transport of hazardous materials and arrangement of flagmen. Special consideration will be given to the preparation of the traffic control plan for safety of pedestrians and workers at night. ▶ The mitigation measures should refer the traffic management measures as per SP 55 of IRC Codes Provision of MORTH 112 shall apply. 	
7	Storage of construction materials	<ul style="list-style-type: none"> ▶ The contractor shall identify the site for temporary use of land for construction sites /storage of construction materials including pipes etc. These sites shall not cause an inconveniences to local population / traffic movement. These locations shall be approved by the engineer in charge. 	Contractor and CSQC
8	Construction vehicles and machinery	<ul style="list-style-type: none"> ▶ All vehicles, equipment and machinery to be procured for construction will conform to the relevant Bureau of Indian Standard (BIS) norms. Noise limits for construction equipment to be procured such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws will not exceed 75 dB (A), measured at one metre from the edge of the equipment in free field, as specified in the Environment (Protection) Rules, 1986. 	Contractor and CSQC
9	Identification of Sites for Solid Waste and Debris disposal	<ul style="list-style-type: none"> ▶ Municipal landfill sites for disposal of debris refuse to be identified. These disposal sites shall be finalized such that they are not located within any designated forest or other eco-sensitive areas, does not impact natural drainage courses and no endangered / rare flora is impacted by such disposal. 	Contractor and CSQC
10	Construction material sourcing (sand, borrow material and stone material)	<ul style="list-style-type: none"> ▶ Procurement of construction material only from permitted sites and licensed / authorized quarries. Farm land and forest belts shall <u>not</u> be used for material sourcing or borrow sites. ▶ Arable land shall not be selected as borrow sites as much as possible. If excavation has to be done in arable land, top soil layer (30 cm) shall be 	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<p>saved and returned after construction work is completed, so as to minimize impacts.</p> <ul style="list-style-type: none"> ▶ The Contractor will identify materials from existing licensed quarries with the suitable materials for construction. the Project Engineer's representative will verify the legal status of the quarry operation. ▶ The quarry operations will be undertaken within the rules and regulations in force. ▶ The Contractor will be responsible for arranging adequate supply of water for the entire construction period. The contractor shall consult the local people before finalizing the locations. ▶ The contractor will preferentially source and pump all water requirements from surface water bodies. ▶ Boring of any tube wells will be prohibited. Any groundwater to be extracted requires permission from Competent Authority. ▶ The contractor will identify sand quarries with requisite approvals for the extraction of sand. 	
11	Protection of Religious Structures and Shrines	<p>All necessary and adequate care shall be taken to minimize impact on cultural properties (which includes cultural sites, places of worship including temples, mosques, churches and shrines, etc., graveyards, monuments and any other important structures as identified during design and all properties/sites/remains notified under the Ancient Sites and Remains Act). No work shall spill over to these properties, premises and precincts. Access to such properties from the road shall be maintained clear and clean.</p>	Contractor and CSQC
12	Labour Requirements	<p>The contractor will use unskilled labour drawn from local communities to avoid any additional stress on the existing facilities (medical services, power, water supply, etc.)</p> <p>Planning of labour camps, if required, needs to be done ensuring adequate water supply, sanitation and drainage etc., in conformity with the Indian Labour Laws and guidelines in Annex of ESMF.</p>	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
13	Involuntary Resettlement & Rehabilitation	<ul style="list-style-type: none"> ▶ Land Acquisition Plan (LAP) ▶ Resettlement Action Plan (RAP) 	JUIDCO
14	Impact on Scheduled Tribes	<ul style="list-style-type: none"> ▶ Scheduled Tribes Development Plan 	JUIDCO
Construction			
1.	Temporary Disruptions in water supply	<ul style="list-style-type: none"> ▶ Avoid or minimize the interruption of regular supply of drinking water to the residents, alternative arrangements to be planned when interruption of drinking watersupply to the nearby residents. ▶ Prior intimation (at least 5 working days) shall be given in case of planned disruption ofwater supply. In the event of accidental disruptions, the supply lines shall be restored within24 hours, and alternative water supply arrangement should be made. 	Contractor and CSQC
2.	Environment Quality Monitoring	<p>Environmental parameters identified in the baseline and EMP shall be monitored and recorded and ensured conformance till the completion of theproject.</p> <ul style="list-style-type: none"> ▶ The contractor shall undertake periodical monitoring of air, water, noise and soil quality through an approved monitoring agency. The parameter to be monitored, frequency andduration of monitoring plan shall be prepared. ▶ Adequate measures shall be taken and checked to control any pollution and report be sent to the Engineer. 	Contractor and CSQC
3.	Rehabilitation of existing drains and Disposal ofdesilted / Excavatedmaterial,	<ul style="list-style-type: none"> ▶ The excavated /desilted material shall be disposed off without any accumulation. The soil excavated from the canal and river shall be tested for quality, adequately treated with methods like bioremediation and proper reuse option explored. The rest may be safely disposed in existing landfill/ yards of the ULB ▶ The following shall be ensured during silt disposal <ul style="list-style-type: none"> (a) The dumping does not impact natural drainage courses (b) No endangered / rare flora is impacted by such dumping (c) Settlement area located at least 1.0 km away from the site. 	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<p>(d) Should be located in non-residential areas located in the downwind side</p> <p>(e) located at least 100m from the designated forest land.</p> <p>(f) avoid disposal on productive land.</p> <p>(g) should be located with the consensus of the local community, in consultation with the engineer</p> <p>► All vehicles delivering material to the site shall be covered to avoid material spillage</p>	
4.	Information and Signage	<p>► The contractor shall provide, erect and maintain informatory /safety signs, hoardings written in English and local language, wherever required.</p>	Contractor and CSQC
5.	Barricading site	<p>Areas under construction, especially where trenches are present should be barricaded at all time in a day with adequate marking, flags, reflectors etc. for safety of general traffic movement and pedestrians. Special provisions should be made near sensitive receptors, schools, hospitals, and cultural and religious areas of interest.</p>	Contractor and CSQC
6.	Flow in existing drains	<p>Proper drainage arrangements to be made, to avoid the overflowing of existing drains due to construction activity. Whilst existing drains are being rehabilitated, alternate arrangement like diversion of the drainage be ensured to allow the natural flow to continue so that there is no flooding or public health risk.</p>	Contractor and CSQC
7.	Sanitation and Sewage system at construction camps	<p>► The contractor will ensure that -</p> <ol style="list-style-type: none"> the sewage system for the camp are designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place separate toilets/bathrooms, wherever required, screened from those from men (marked in vernacular) are to be provided for women adequate water supply is to be provided in all toilets and urinals all toilets in workplaces are with dry-earth system (receptacles) which are to be cleaned and kept in a strict sanitary condition Night soil is to be disposed by putting layer of it at the bottom of a 	Contractor and CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<p>permanent tank prepared for the purpose and covered with 15 cm. layer of waste or refuse and then covered with a layer of earth for a fortnight.</p> <p>f) Adequate health care is to be provided for the work force during the entire phase.</p>	
8.	Interference of existing installations on the pipeline route	<ul style="list-style-type: none"> ▶ If asbestos is located on the project site, it shall be marked clearly as hazardous material (Asbestos cement pipes often are found in underground utility conduits and municipal water, sewer and drainage systems. Asbestos cement pipes buried below ground are considered non-friable if they are in good condition. It should be noted that active asbestos cement pipe that is exposed and is not intended to be replaced or removed and is not disturbed by repair or replacement activities may remain in place and be backfilled) ▶ Asbestos will be handled and disposed by skilled & experienced professionals ▶ If asbestos material is to be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site. ▶ When possible the asbestos will be appropriately contained and sealed to minimize exposure. The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust ▶ The removed asbestos will not be reused 	Contractor
9.	Waste Disposal at construction camps	<ul style="list-style-type: none"> ▶ The contractor will provide garbage bins in the camps and ensure that these are regularly emptied and disposed in a hygienic manner as per the waste management plan approved by the ULB. Unless otherwise arranged by local sanitary authority, arrangements for disposal of night soils (human excreta) suitably approved by the local medical health or municipal authorities or as directed by ULB will have to be provided by the contractor. 	Contractor, CSQC and ULB
10.	Disposal of construction debris	<ul style="list-style-type: none"> ▶ A suitable approved from regulatory site should be identified for safe disposal, in relatively low lying areas, away from the water bodies etc. 	Contractor, CSQC and ULB

S. No	Activities	Proposed mitigation measures	Responsible Agency
	and excavated materials.	<ul style="list-style-type: none"> ▶ Debris generated due to the dismantling of the existing structures shall be suitably reused in the proposed construction, subject to the suitability of the material and the approval of the Engineer. The contractor shall suitably dispose off unutilized debris material; either through filling up of borrows areas created for the project or at pre-designated dump locations, subject to the approval of the Engineer. Debris generated from pile driving or other construction activities shall be disposed such that it does not flow into the surface water bodies or form mud puddles in the area. Dumping sites shall be identified by the contractor as per regulations in force. The identified locations will be reported to the Engineer. 	
11.	Drainage flow	<ul style="list-style-type: none"> ▶ Alternate arrangement like diversion of the drainage be ensured to allow the natural flow. ▶ It shall be ensured that none of the construction activities affect the natural flow of the drainage. 	Contractor, CSQC
12.	Temporary flooding due to excavation.	<ul style="list-style-type: none"> ▶ Proper drainage arrangements to be made, to avoid the overflowing of existing drains due to excavation during the laying of sewer mains. 	Contractor, CSQC
13.	Crushers, Hot-mix plants & Batching Plants	<ul style="list-style-type: none"> ▶ Specifications of hot mix plants and batching plants (existing or new) will comply with the requirements of the relevant national, state and local pollution control requirements. Hot mix plants and batching plants will be sited sufficiently away from habitations, agricultural operations or industrial establishments. Such plants will be located at least 1000m away from the nearest habitation, preferably in the downwind direction. 	Contractor, CSQC
14.	Dust Pollution near settlements	<ul style="list-style-type: none"> ▶ All earth work will be protected in manner acceptable to the engineer to minimize generation of dust. Area under construction shall be covered & equipped with dust collector. ▶ Construction material shall be covered or stored in such a manner so as to avoid being affected by wind direction. ▶ Unpaved haul roads near / passing through residential and commercial areas to be watered thrice a day. 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
15.	Protection of Residential/ sensitive receptors.	<ul style="list-style-type: none"> ▶ Trucks carrying construction material to be adequately covered to avoid the dust pollution and to avoid the material spillage ▶ Preventive maintenance of construction equipment and vehicles to meet emission standards and to keep them with low noise. ▶ Provision of enclosing generators and concrete mixers at site. ▶ Sound barriers in inhabited areas shall be installed during the construction phase. ▶ Adequate barricading / other measures to protect dust pollution near sensitive receptors like schools and hospital etc. to be ensured. 	Contractor, CSQC
16.	Vehicular noise pollution at residential / Sensitive receptors.	<ul style="list-style-type: none"> ▶ Idling of temporary trucks or other equipment should not be permitted during periods of loading / unloading or when they are not in active use. The practice must be ensured especially near residential /commercial /sensitive areas. ▶ Stationary construction equipment will be kept at least 500m away from sensitive receptors. ▶ All possible and practical measures to control noise emissions during drilling shall be employed. The PIA may direct to take adequate controls measures depending on site conditions. 	Contractor, CSQC
17.	Noise from vehicles, plants and equipment	<ul style="list-style-type: none"> ▶ Servicing of all construction vehicles and machinery will be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced. ▶ Maintenance of vehicles, equipment and machinery shall be regular and up to the satisfaction of the Engineer to keep noise levels at the minimum. 	Contractor, CSQC
18.	Stockyards	<ul style="list-style-type: none"> ▶ Location for stockyards for construction materials will be identified at least 1000 m from water course and separated and sufficiently away from the labour camps. ▶ Separate enclosures shall be planned for storing construction materials containing fine particles such that sediment-laden water does not drain into nearby storm water drain & underground sewerage pipes. 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
19.	Disposal of oil and grease	<ul style="list-style-type: none"> ▶ A suitable site should be identified for safe disposal / without contaminating the source, in relatively low lying areas, away from the water bodies etc., as approved by the Engineer & as perspecific procedures. 	Contractor, CSQC
20.	Pollution from fuel and lubricants/contamination	<ul style="list-style-type: none"> ▶ Contractor will ensure that all vehicle/machinery and equipment operation, maintenance and refuelling will be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground. Oil interceptors will be provided for vehicle parking, wash down and refuelling areas as per the design provided. ▶ In all, fuel storage and refuelling areas, if located on agricultural land or areas supporting vegetation, the top soil will be stripped, stockpiled and returned after cessation of such storage. ▶ Contractor will arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites (list to be submitted to JUIDCO) and approved by the JUIDCO. All spills and collected petroleum products will be disposed in accordance with MoEFCC and JSPCB guidelines. ▶ Site engineer/JUIDCO will certify that all arrangements comply with the guidelines of PCB/MoEFCC or any other relevant laws. 	Contractor, CSQC
21.	Operation of construction equipment and vehicles	<ul style="list-style-type: none"> ▶ Notwithstanding any other condition of contract, noise level from any item of plants must comply with the relevant legislation for levels of noise emission. ▶ The contractor will ensure that the AAQ concentration at these construction sites are within the acceptable limits of industrial uses in case of hot mix plants and crushers and residential uses around construction camps. 	Contractor, CSQC
22.	Transportation of construction materials	<ul style="list-style-type: none"> ▶ All vehicles delivering materials to the site will be covered to avoid spillage of materials. All existing highway and roads used by vehicles of the contractor, or any of his sub – contractor or suppliers of materials and similarly roads which are part of the work will be kept clean and clear of dust/ mud or other extraneous materials dropped by such vehicles. ▶ The fall height shall be kept low so that least amount of dust is airborne, during unloading of materials. 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
23.	Pollution from construction wastes	<ul style="list-style-type: none"> ▶ The unloading of materials at construction sites close to settlement will be restricted today time. ▶ The Contractor shall take all precautionary measures to prevent the wastewater generated during construction from entering into streams, water bodies or the irrigation system. All waste arising from the project is to be disposed in the manner that is acceptable by the Engineer. 	Contractor, CSQC
24.	Restoring roads	<ul style="list-style-type: none"> ▶ Post construction of storm water drains, restore the roads to pedestrian safe use condition 	Contractor, CSQC
25.	Labour camp facilities	<ul style="list-style-type: none"> ▶ Setting up of labour camps needs to be done as per the procedures. Adequate potable water facilities, sanitation and drainage etc., in conformity with the Indian labour laws shall be ensured. (IFC, EBRD Workers' accommodation: processes and standards shall be followed)⁷ ▶ The contractor shall also guarantee the following: <ul style="list-style-type: none"> i) The location, layout and basic facility provision of each labour camp will be submitted to Engineer prior to their construction. ii) The construction will commence only upon the written approval of the Engineer. iii) The Contractor shall construct and maintain all labour accommodation in such a fashion that uncontaminated water is available for drinking, cooking and washing. ▶ iv) Supply of sufficient quantity of potable water (as per IS) in every workplace/labour camp site at suitable and easily accessible places and regular maintenance of such facilities. ▶ v) The sewage system for the camp shall be designed, built and operated in such a fashion that no health hazards occur and no pollution to the air, ground water or adjacent water course stake place. Ensure adequate water 	

⁷http://www.ifc.org/wps/wcm/connect/9839db00488557d1bdfcff6a6515bb18/workers_accommodation.pdf?MOD=AJPERES&CACHEID=9839db00488557d1bdfcff6a6515bb18

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<p>supply is to be provided in all toilets and urinals.</p> <ul style="list-style-type: none"> ▶ vi) The contractor shall provide garbage bins in the camps and ensure that these are regularly emptied and disposed off in a hygienic manner as per the Comprehensive Solid Waste Management Plan approved by the Engineer. ▶ vii) Unless otherwise arranged by local sanitary authority, arrangements for disposal of night soils (human excreta) suitably approved by the local medical health or municipal authorities or as directed by Engineer will have to be provided by the contractor 	
26.	Occupational Health and Safety of Workers	<ul style="list-style-type: none"> ▶ Implement measures recommended to prevent and mitigate impacts of air and noise pollution. ▶ Training of workers on safe construction practices. ▶ Maintain good housekeeping in the construction area. ▶ Barricade excavated areas. ▶ Implement work permit system for work at height. ▶ Provide training to construction workers on safe work practices. ▶ Record and investigate injuries to workers. ▶ Provide PPE to construction workers <ul style="list-style-type: none"> a) Safety shoes, hard hat/ helmet and hand gloves with grip facility to all workers b) Nose masks for those working in dusty area c) Earplugs for those working in high noise areas d) Nitrile rubber gloves to those engaged in painting activities e) Face shield for those engaged in welding 	Contractor, CSQC
27.	Road Furniture	<ul style="list-style-type: none"> ▶ Road furniture including footpaths, railings, storm water drains, crash barrier, traffic signs, speed zone signs, pavement markers and any other such items will be provided as per design. 	Contractor, CSQC
28.	Chance Find Archaeological	<ul style="list-style-type: none"> ▶ All fossils, coins, articles of value of antiquity, structures and other remains or things of geological or archaeological interest discovered on the site shall 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
	Property	<p>be the property of the Government and shall be dealt with as per provisions of the relevant legislation.</p> <ul style="list-style-type: none"> ▶ The contractor will take reasonable precautions to prevent his workmen or any other persons from removing and damaging any such article or thing. The Engineer will seek direction from the Archaeological Survey of India (ASI) before instructing the Contractor to recommence the work in the site. 	
29.	Site Restoration	<ul style="list-style-type: none"> ▶ Contractor to prepare site restoration plans, the plan is to be implemented by the contractor prior to demobilization which should be approved by JUIDCo PIU, and the CSQC ▶ On completion of the works, all temporary structures will be cleared away, all rubbish cleared, disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the contractor's expenses, to the entire satisfaction of the project engineer. 	Contractor, CSQC
Operation & Maintenance			
30.	Maintenance	<ul style="list-style-type: none"> ▶ It shall be ensured by the ULB that drains are not clogged. The following practices should be adopted in maintaining storm water drains: ▶ Drains shall be regularly inspected and cleaned especially prior to monsoons. ▶ All damaged or missing drain covers should be replaced immediately ▶ Rubbish and silt that has been removed from the drainage system should not be left alongside the drain and shall be immediately disposed in pre-identified site with necessary precautions ▶ It shall be ensured that the Environmental, Health and Safety guidelines of World Bank (Generic and Water & Sanitation) are adhered to relevant activities during operation. 	PIU and ULB
31.	Water Quality	<ul style="list-style-type: none"> ▶ Avoid mixing of wastewater from household, commercial, industrial and other establishments. ▶ Provision for connecting domestic liquid waste (greywater and Blackwater) to sewerage system is to be made during drain construction to avoid mixing 	PIU and ULB

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<p>of wastewater.</p> <ul style="list-style-type: none"> ▶ ULB may initiate action to ensure proper linking of such connections to other waste disposal systems and it shall be ensured that the drains carry only the rainwater. ▶ Periodical environmental quality monitoring shall be carried out and sources of wastes/ effluent etc. are to be identified by the ULB. ▶ In case of any industrial effluent identified, necessary action be taken in coordination with the Jharkhand PCB. 	
32.	Public Health management	<ul style="list-style-type: none"> ▶ Ensure timely cleaning of drains according to the maintenance plan ▶ Public awareness campaign and signage to educate and prevent communities from throwing garbage and other waste into the drains. ▶ Provide additional bins in critical locations where solid waste dumping is significant, and ensure this is cleared on regular basis ▶ If formation of stagnant mosquito breeding areas is noticed, the ULB should be notified immediately 	PIU and ULB
33.	Disposal of storm water	<ul style="list-style-type: none"> ▶ Mixing of wastewater from households, commercial, industrial and other establishments will be avoided through improved sewerage system in the project area through periodical monitoring of water quality. ▶ Possibility of reusing the storm water for secondary uses with minimum treatment shall be explored and implemented. 	PIU and ULB
34.	Flood management	<ul style="list-style-type: none"> ▶ Ensure timely de-silting and cleaning of drains before monsoon ▶ For areas prone to flooding and action be taken as necessary, like bailing/pumping out of water. 	PIU and ULB

Environmental Management Plan for Sewerage Projects

S. No	Activities	Proposed mitigation measures	Responsible Agency
Design Stage Environmental Considerations			
1.	Design Stage Elements	<ul style="list-style-type: none"> ▶ Designing sewers with adequate capacity and flow velocity ▶ Identify existing underground other utility structures, lines through available records and in consultation with concerned authorities and plan construction activities accordingly to minimize damage to such utilities. The underground utilities encountered in excavating trenches carefully shall be supported, maintained and protected from damage or interruption of service until backfill is complete. ▶ Ensure proper lining of treatment plants to avoid impact on surface & ground water quality ▶ All sewer lines including trunk, lateral and branch sewer lines have been designed considering the future population and waste generation rate, this is important, as the sewerage network may not carry the waste load in future, leading to failure and financial loss. The alignment of sewer lines and sewerage pumping station shall be properly planned; else it may lead to both technical and social problems along with environmental issues of back flow creating foul smell and unhygienic conditions. ▶ Refer to IS 2064:1993 for installation and maintenance of sanitary appliances ▶ Refer to IFC industry guidelines for Water and Sanitation for EHS guidelines relevant to collection of sewage in centralized systems (piped sewer collection networks) and treatment of collected sewage at centralized facilities.⁸ ▶ Refer to IFC industry guidelines for Waste management facilities related to municipal sewage⁹. ▶ Refer to IFC EHS guidelines for environmental wastewater and ambient water quality.¹⁰ 	JUIDCO, ESIA Consultants and DPR consultants
Pre-Construction			

⁸<http://www.ifc.org/wps/wcm/connect/e22c050048855ae0875cd76a6515bb18/Final%2B-%2BWater%2Band%2BSanitation.pdf?MOD=AJPERES>

⁹<http://www.ifc.org/wps/wcm/connect/1cd72a0048855cfbdf4ff6a6515bb18/Final+-+Waste+Management+Facilities.pdf?MOD=AJPERES>

¹⁰<http://www.ifc.org/wps/wcm/connect/026dcb004886583db4e6f66a6515bb18/1-3%2BWastewater%2Band%2BAmbient%2BWater%2BQuality.pdf?MOD=AJPERES>

S. No	Activities	Proposed mitigation measures	Responsible Agency
2.	Tree Cutting	<ul style="list-style-type: none"> ▶ Provide adequate protection to the trees to be retained with tree guards (e.g. Masonry tree guards, Low level RCC tree guards, Circular Iron Tree Guard with Bars) as required. ▶ Identify the number of trees that will be affected with girth size & species type along the mains, pumping / lifting station sites and water treatment plant site. The details to be indicated in a strip map plan. ▶ Trees shall be removed from the construction sites before commencement of construction with prior permission from the concerned department. ▶ Undertake afforestation in nearby areas. ▶ Compensatory plantation by way of Re-plantation of at least twice the number of trees cut for directed by regulatory authority should be carried out in the project area. 	ULB, Contractor, CSQC
3.	Utility Relocation	<ul style="list-style-type: none"> ▶ All utilities lost due to the project will be relocated with prior approval of the concerned agencies before construction starts, on any sub-section of the project road (Shifting of electrical poles, telephone poles and water mains / taps, etc. along the project road as mentioned in BOQ). ▶ Prior information to affected people ▶ Provisions such as foot over bridge with hand rails in the residential areas 	ULB, Contractor, CSQC
4.	Replacement of common amenities	<ul style="list-style-type: none"> ▶ All affected common amenities such as community sources of water, bus shelters, cultural properties, etc., will be relocated wherever necessary. The relocation site identification will be in accordance with the choice of the community and completed before construction starts. 	ULB, Contractor, CSQC
5.	Planning Temporary traffic diversion and Pedestrian safety	<ul style="list-style-type: none"> ▶ Detailed traffic control plans will be prepared and submitted to the engineers for approval, one week prior to commencement of works. ▶ The traffic control plans shall contain details of temporary diversion, details of arrangements for construction under traffic, details of traffic arrangement after work each day, signage's, safety measures for transport of hazardous materials and arrangement of flagmen. Special consideration will be given to the preparation of the traffic control plan for safety of pedestrians and workers at night. ▶ The mitigation measures should refer the traffic management measures as per SP 55 of IRC Codes Provision of MORTH 112 shall apply. 	ULB, Contractor, CSQC
6.	Involuntary Resettlement & Rehabilitation	<ul style="list-style-type: none"> ▶ Land Acquisition Plan (LAP) ▶ Resettlement Action Plan (RAP) 	JUIDCO

S. No	Activities	Proposed mitigation measures	Responsible Agency
7.	Impact on Scheduled Tribes	<ul style="list-style-type: none"> ▶ Scheduled Tribes Development Plan 	JUIDCO
Construction			
8.	Sanitation and Sewage System at construction camps	<p>The contractor will ensure that -</p> <ol style="list-style-type: none"> a) the sewage system for the camp are designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place b) separate toilets/bathrooms, wherever required, screened from those from men (marked in vernacular) are to be provided for women c) adequate water supply is to be provided in all toilets and urinals d) all toilets in workplaces are with dry-earth system (receptacles) which are to be cleaned and kept in a strict sanitary condition e) Night soil is to be disposed by putting layer of it at the bottom of a permanent tank prepared for the purpose and covered with 15 cm. layer of waste or refuse and then covered with a layer of earth for a fortnight. f) Adequate health care is to be provided for the work force during the entire phase. 	Contractor, CSQC
9.	Waste Disposal at construction camps	<ul style="list-style-type: none"> ▶ The contractor will provide garbage bins in the camps and ensure that these are regularly emptied and disposed in a hygienic manner as per the waste management plan approved by the ULB. Unless otherwise arranged by local sanitary authority, arrangements for disposal of night soils (human excreta) suitably approved by the local medical health or municipal authorities or as directed by ULB will have to be provided by the contractor. 	Contractor, CSQC
10.	Disposal of construction debris and excavated materials.	<ul style="list-style-type: none"> ▶ A suitable approved from regulatory site should be identified for safe disposal, in relatively low lying areas, away from the water bodies etc. 	Contractor, CSQC
11.	Drainage flow	<ul style="list-style-type: none"> ▶ Alternate arrangement like diversion of the drainage be ensured to allow the natural flow. ▶ It shall be ensured that none of the construction activities affect the natural flow of the drainage. 	Contractor, CSQC
12.	Temporary flooding due to	<ul style="list-style-type: none"> ▶ Proper drainage arrangements to be made, to avoid the overflowing of existing drains due to excavation during the laying of sewer mains. 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
13.	excavation. Dust Pollution near settlements	<ul style="list-style-type: none"> ▶ All earth work will be protected in manner acceptable to the engineer to minimize generation of dust. Area under construction shall be covered & equipped will dust collector. ▶ Construction material shall be covered or stored in such a manner so as to avoid being affected by wind direction. ▶ Unpaved haul roads near / passing through residential and commercial areas to be watered thrice a day. ▶ Trucks carrying construction material to be adequately covered to avoid the dust pollution and to avoid the material spillage 	Contractor, CSQC
14.	Protection of Residential/ sensitive receptors.	<ul style="list-style-type: none"> ▶ Preventive maintenance of construction equipment and vehicles to meet emission standards and to keep them with low noise. ▶ Provision of enclosing generators and concrete mixers at site. ▶ Sound barriers in inhabited areas shall be installed during the construction phase. ▶ Adequate barricading / other measures to protect dust pollution near sensitive receptors like schools and hospital etc. to be ensured. 	Contractor, CSQC
15.	Vehicular noise pollution at residential /Sensitive receptors.	<ul style="list-style-type: none"> ▶ Idling of temporary trucks or other equipment should not be permitted during periods of loading / unloading or when they are not in active use. The practice must be ensured especially near residential /commercial /sensitive areas. ▶ Stationary construction equipment will be kept at least 500m away from sensitive receptors. ▶ All possible and practical measures to control noise emissions during drilling shall be employed. The PIA may direct to take adequate controls measures depending on site conditions. 	Contractor, CSQC
16.	Noise from vehicles, plants and equipment	<ul style="list-style-type: none"> ▶ Servicing of all construction vehicles and machinery will be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced. ▶ Maintenance of vehicles, equipment and machinery shall be regular and up to the satisfaction of the site engineer to keep noise levels at the minimum. 	Contractor, CSQC
17.	Stockyards	<ul style="list-style-type: none"> ▶ Location for stockyards for construction materials will be identified at least 1000 m from water course and separated and sufficiently away from the labor camps. ▶ Separate enclosures shall be planned for storing construction materials containing fine particles such that sediment-laden water does not drain into nearby storm 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
18.	Pollution from Fuel and Lubricants/ Contamination	<p>water drain & underground sewerage pipes.</p> <ul style="list-style-type: none"> ▶ Contractor will ensure that all vehicle/machinery and equipment operation, maintenance and refueling will be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground. Oil interceptors will be provided for vehicle parking, wash down and refueling areas as per the design provided. ▶ In all, fuel storage and refueling areas, if located on agricultural land or areas supporting vegetation, the top soil will be stripped, stockpiled and returned after cessation of such storage. ▶ Contractor will arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites (list to be submitted to JUJICO and approved by JUJICO. All spills and collected petroleum products will be disposed in accordance with MoEF&CC and JSPCB guidelines. ▶ Site -Engineer will certify that all arrangements comply with the guidelines of PCB/MoEF&CC or any other relevant laws. 	Contractor, CSQC
19.	Operation of construction equipment and vehicles	<ul style="list-style-type: none"> ▶ Notwithstanding any other condition of contract, noise level from any item of plants must comply with the relevant legislation for levels of noise emission. ▶ The contractor will ensure that the AAQ concentration at these construction sites are within the acceptable limits of industrial uses in case of hot mix plants and crushers and residential uses around construction camps. 	Contractor, CSQC
20.	Transportation of construction materials	<ul style="list-style-type: none"> ▶ All vehicles delivering materials to the site will be covered to avoid spillage of materials. All existing highway and roads used by vehicles of the contractor, or any of his sub – contractor or suppliers of materials and similarly roads which are part of the work will be kept clean and clear of dust/ mud or other extraneous materials dropped by such vehicles. ▶ The fall height shall be kept low so that least amount of dust is airborne, during unloading of materials. ▶ The unloading of materials at construction sites close to settlement will be restricted today time. 	Contractor, CSQC
21.	Pollution from Construction Wastes	<ul style="list-style-type: none"> ▶ The Contractor shall take all precautionary measures to prevent the wastewater generated during construction from entering into streams, water bodies or the irrigation system. All waste arising from the project is to be disposed in the manner that is acceptable by the Engineer. 	Contractor, CSQC
22.	Restoring roads	<ul style="list-style-type: none"> ▶ Post construction of sewerage network, restore the roads to pedestrian safe use 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
23.	Occupational Health and Safety of Workers	<p>condition</p> <ul style="list-style-type: none"> ▶ Implement measures recommended to prevent and mitigate impacts of air and noise pollution. ▶ Training of workers on safe construction practices. ▶ Maintain good housekeeping in the construction area. ▶ Barricade excavated areas. ▶ Implement work permit system for work at height. ▶ Provide training to construction workers on safe work practices. ▶ Record and investigate injuries to workers. ▶ Provide PPE to construction workers <ul style="list-style-type: none"> a) Safety shoes, hard hat/ helmet and hand gloves with grip facility to all workers b) Nose masks for those working in dusty area c) Earplugs for those working in high noise areas d) Nitrile rubber gloves to those engaged in painting activities e) Face shield for those engaged in welding 	Contractor, CSQC
Operation & Maintenance Sewerage Network			
24.	Nuisance due to clogging of drains, formation of mosquito breeding; Maintenance	<p>It shall be ensured by the ULB that sewerage drains are not clogged. The following practices should be adopted in maintaining sewers:</p> <ul style="list-style-type: none"> a) Sewers shall be regularly inspected and cleaned. b) All damaged or missing drain covers should be replaced immediately c) Rubbish and silt that has been removed from the drainage system should not be left alongside the drain and shall be immediately disposed in pre-identified site with necessary precautions d) The condition of sanitary sewer structures should be inspected and identify areas that need repair or maintenance. Items to note may include cracked/deteriorating pipes; leaking joints or seals at manhole; frequent line blockages; lines that generally flow at or near capacity; and suspected infiltration or exfiltration 	Contractor
25.	Aquatic systems	<ul style="list-style-type: none"> ▶ The sewage should not be disposed to aquatic systems without treatment. 	ULB
26.	Leaks and overflows	<ul style="list-style-type: none"> ▶ Limit the sewer depth where possible (e.g., by avoiding routes under streets with heavy traffic) ▶ Use appropriate material for sewer construction ▶ Ensure sufficient hydraulic capacity to accommodate peak flows and adequate 	ULB/ Contractor

S. No	Activities	Proposed mitigation measures	Responsible Agency
27.	Occupational health and safety of workers	<ul style="list-style-type: none"> ▶ slope in gravity mains to prevent build up of solids and hydrogen sulfide generation ▶ Design manhole covers to withstand anticipated loads and ensure that the covers can be readily replace if broken to minimize entry of garbage and silt into the system; ▶ Equip pumping stations with a backup power supply, such as a diesel generator, to ensure uninterrupted operation during power outages, and conduct regular maintenance to minimize service interruptions ▶ When a spill, leak, and/or overflow occurs, keep sewage from entering the storm drain system by covering or blocking storm drain inlets or by containing and diverting the sewage away from open channels and other storm drain facilities (using sandbags, inflatable dams, etc.). Remove the sewage using vacuum equipment or use other measures to divert it back to the sanitary sewer system. 	Contractor
Operation & Maintenance Sewage Treatment Plant			
28.	Maintenance of system	<ul style="list-style-type: none"> ▶ Operate, and maintain wastewater treatment facilities and achieve effluent water quality consistent with applicable national and sponsor's requirements and consistent with effluent water quality goals based on the assimilative capacity and the most sensitive end use of the receiving water ▶ Periodic cleaning of filtration system 	Operator, PIU

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<ul style="list-style-type: none"> ▶ Maintain aeration basins, clarifiers, sludge thickeners, tanks, and channels), and vent emissions to control systems (e.g., compost beds, bio-filters, chemical scrubbers, etc.) as needed to reduce odors ▶ Tree plantation of at least two rows around the periphery of STP and SPS site and landscaping to prevent spread of bad odour with large canopy/ broad leavestrees like Sesum, Neem, Bargad, Teak, Sal,etc. ▶ Ensure minimum noise generation at pump station in SPS by use of less noise generating equipment meeting prescribe noise standards as applicable and enclosed generators. ▶ Provision for Regular inspection and maintenance of the sewers, monitoring of sewer line and manholes for visible leakages/ overflows. ▶ Immediate repair shall be carried out to plug the leakages. Restore the sewer and other utility services if damaged due to leakages 	
29.	Sewage Cleaning	<ul style="list-style-type: none"> ▶ Ensure that extracted sewage sludge collected during sewers cleaning are disposed to disposal site as approved by the operators engineer. ▶ Sewage solids shall not be disposed on road sides or non-designated areas. ▶ Equipment cleaning waste shall be disposed to public sewer or STP inlet for treatment ▶ During cleaning/ maintenance operation, the sewer line will be adequately vented to ensure that no toxic or hazardous gases are present in the line. ▶ Ensure availability of PPE for maintenance workers. ▶ Follow safety and Emergency Preparedness plan prepared at design stage ▶ Monthly reporting of all accidents and immediate reporting to DBO engineer ▶ Regular monitoring of drain for visible leakages/overflows. ▶ Immediate repair operation for the damaged portion. ▶ De-siltation of blocked drains with machines and disposal at appropriate refusal area. 	Operator, PIU
30.	Repair, breakage maintenance	<ul style="list-style-type: none"> ▶ Regular monitoring of drain for visible leakages/overflows. ▶ Immediate repair operation for the damaged portion. ▶ De-siltation of blocked drains with machines and disposal at appropriate refusal area. 	Operator, PIU
31.	Sludge disposal	<ul style="list-style-type: none"> ▶ Accumulated sludge and solid waste to be cleared at short intervals and spraying of suitable herbicides on accumulated sludge/solid waste to reduce odour. ▶ Provision for regular maintenance and switching off equipment when not in use ▶ Sludge should be disposed in compliance with local regulatory requirements ▶ Adopt suitable sludge treatment technology, and sludge drying beds are proposed in the DPR. Sludge generated from MBBR technology 	Operator, PIU

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<ul style="list-style-type: none"> ▶ Screenings / grit removed from SPS/MPS sites are to be disposed-off at a proper landfill site 	
32.	Reuse of treated sewage/ residuals	<ul style="list-style-type: none"> ▶ Re-use of wastewater treatment plant residuals should be consistent with applicable national requirements or, in their absence, internationally accepted guidance and standards 	Operator, PIU
33.	Storage of chemicals	<ul style="list-style-type: none"> ▶ Acids and bases used for treatment should be stored as per safety instructions provided in the Material Safety Data Sheet 	Operator, PIU
34.	Occupational Health and Safety of workers	<ul style="list-style-type: none"> ▶ Install railing around all process tanks and pits. ▶ Implement a confined spaces entry program ▶ Use fall protection equipment when working at heights ▶ Maintain work areas to minimize slipping and tripping ▶ Organize training program for operators who work with chlorine and ammonia regarding safe handling practices and emergency response procedures ▶ Provide appropriate personal protective equipment ▶ Prepare escape plans from areas where there might be a chlorine or ammonia emission ▶ Install safety showers and eye wash stations near the chlorine and ammonia equipment and other areas where hazardous chemicals are stored or used ▶ Ventilate enclosed processing areas and ventilate equipment, such as pump stations, prior to maintenance. ▶ Use personal gas detection equipment while working in a wastewater facility ▶ Provide areas for workers to shower and change clothes before leaving work and provide laundry service for work clothes ▶ Provide worker immunization (e.g. for Hepatitis B and tetanus) and health monitoring, including regular physical examinations ▶ Maintain good housekeeping in sewage processing and storage areas ▶ Monthly reporting of all accidents and immediate reporting to DBO engineer/operator and owner 	Operator, PIU

Environment and Social Management Plan for Building Projects

S. No	Activities	Proposed mitigation measures	Responsible Agency
Pre-Construction			
1.	Tree Cutting	<ul style="list-style-type: none"> ▶ Provide adequate protection to the trees to be retained with tree guards (e.g. Masonry tree guards, Low level RCC tree guards, Circular Iron Tree Guard with Bars) as required. ▶ Identify the number of trees that will be affected with girth size & species type along the mains, pumping / lifting station sites and water treatment plant site. The details to be indicated in a strip map plan. ▶ Trees shall be removed from the construction sites before commencement of construction with prior permission from the concerned department. ▶ Undertake afforestation in nearby areas. ▶ Compensatory plantation by way of Re-plantation of at least twice the number of trees cut /or directed by regulatory authority should be carried out in the project area. 	JUIDCO/ Contractor ULB
2.	Joint Verification of Field ESMP measures	<ul style="list-style-type: none"> ▶ The Project Engineer, Contractors Team will carry out joint field verification of the EMP. The efficacy of the mitigation measures suggested in the EMP will be checked. If required, the Engineer will modify the EMP and BoQs associated with the mitigation measures. 	Contractor, Social Environmental Specialists, JUIDCO CSQC, and ULB
3.	Orientation of contractors and ULB	<ul style="list-style-type: none"> ▶ JUIDCO shall organize orientation sessions for all contractor staff of and field level implementation staff of Contractor and all consultants. 	JUIDCO
4.	Utility Relocation	<ul style="list-style-type: none"> ▶ All utilities and common property resources impacted (permanently) due to the project will be relocated with prior approval of the concerned state and ULB agencies before construction starts. (Shifting of electrical poles, telephone poles, optical fibre cables and water mains / taps, etc. along the site as mentioned in BOQ). ▶ Prior information to affected people, relocation shall be conducted with inputs from the community ▶ Provisions such as foot over bridge with hand rails in the residential areas incase accessibility to properties/movement has been impacted due to utility relocation. 	JUIDCO / Concerned agency/Contractor ULB/
5.	Replacement of	<ul style="list-style-type: none"> ▶ All affected common amenities such as community sources of water, bus 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
	common amenities	shelters, cultural properties, etc., will be relocated wherever necessary. The relocation site identification will be in accordance with the choice of the community and completed before construction starts. A stakeholder meeting with the community will be held to discuss the relocation aspects, the structures, and accessibility to the structures.	and ULB
Construction			
6.	Sanitation and Sewage System at construction camps	<p>The contractor will ensure that -</p> <ol style="list-style-type: none"> the sewage system for the camp are designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place separate toilets/bathrooms, wherever required, screened from those from men (marked in vernacular) are to be provided for women adequate water supply is to be provided in all toilets and urinals all toilets in workplaces are with dry-earth system (receptacles) which are to be cleaned and kept in a strict sanitary condition Night soil is to be disposed by putting layer of it at the bottom of a permanent tank prepared for the purpose and covered with 15 cm. layer of waste or refuse and then covered with a layer of earth for a fortnight. Adequate health care is to be provided for the work force during the entire phase. 	Contractor, CSQC
7.	Waste Disposal at construction camps	<p>▶ The contractor will provide garbage bins in the camps and ensure that these are regularly emptied and disposed in a hygienic manner as per the waste management plan approved by the ULB. Unless otherwise arranged by local sanitary authority, arrangements for disposal of night soils (human excreta) suitably approved by the local medical health or municipal authorities or as directed by ULB will have to be provided by the contractor.</p>	Contractor, CSQC
8.	Disposal of construction debris and excavated materials.	<p>▶ A suitable site should be identified for safe disposal, in relatively low lying areas, away from the water bodies etc., and got approved by the Engineer.</p>	Contractor, CSQC
9.	Dust Pollution near settlements	<p>▶ All earth work will be protected in manner acceptable to the engineer to minimize generation of dust. Area under construction shall be covered & equipped with dust collector.</p>	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
		<ul style="list-style-type: none"> ▶ Construction material shall be covered or stored in such a manner so as to avoid being affected by wind direction. ▶ Unpaved haul roads near / passing through residential and commercial areas to be watered thrice a day. ▶ Trucks carrying construction material to be adequately covered to avoid the dust pollution and to avoid the material spillage 	
10.	Protection of Residential/ sensitive receptors.	<ul style="list-style-type: none"> ▶ Preventive maintenance of construction equipment and vehicles to meet emission standards and to keep them with low noise. ▶ Provision of enclosing generators and concrete mixers at site. ▶ Sound barriers in inhabited areas shall be installed during the construction phase. ▶ Adequate barricading / other measures to protect dust pollution near sensitive receptors like schools and hospital etc. to be ensured. 	Contractor, CSQC
11.	Noise from vehicles, plants and equipment	<ul style="list-style-type: none"> ▶ Servicing of all construction vehicles and machinery will be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced. ▶ Maintenance of vehicles, equipment and machinery shall be regular and up to the satisfaction of the Engineer to keep noise levels at the minimum. 	Contractor, CSQC
12.	Pollution from Fuel and Lubricants/ Contamination	<ul style="list-style-type: none"> ▶ Contractor will ensure that all vehicle/machinery and equipment operation, maintenance and refuelling will be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground. Oil interceptors will be provided for vehicle parking, wash down and refuelling areas as per the design provided. ▶ In all, fuel storage and refuelling areas, if located on agricultural land or areas supporting vegetation, the top soil will be stripped, stockpiled and returned after cessation of such storage. ▶ Contractor will arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites (list to be submitted to Engineer) and approved by the Engineer. All spills and collected petroleum products will be disposed in accordance with MoEFCC and state PCB guidelines. ▶ Engineer will certify that all arrangements comply with the guidelines of PCB/MoEFCC or any other relevant laws. 	Contractor, CSQC
13.	Operation of construction	<ul style="list-style-type: none"> ▶ Notwithstanding any other condition of contract, noise level from any item of plants must comply with the relevant legislation for levels of noise emission. 	Contractor, CSQC

S. No	Activities	Proposed mitigation measures	Responsible Agency
14.	equipment\ and vehicles Transportation of construction materials	<ul style="list-style-type: none"> ▶ The contractor will ensure that the AAQ concentration at these construction sites are within the acceptable limits of industrial uses in case of hot mix plants and crushers and residential uses around construction camps. ▶ All vehicles delivering materials to the site will be covered to avoid spillage of materials. All existing highway and roads used by vehicles of the contractor, or any of his sub – contractor or suppliers of materials and similarly roads which are part of the work will be kept clean and clear of dust/ mud or other extraneous materials dropped by such vehicles. ▶ The fall height shall be kept low so that least amount of dust is airborne, during unloading of materials. ▶ The unloading of materials at construction sites close to settlement will be restricted today time. 	Contractor, CSQC
15.	Pollution from Construction Wastes	<ul style="list-style-type: none"> ▶ The Contractor shall take all precautionary measures to prevent the wastewater generated during construction from entering into streams, water bodies or the irrigation system. All waste arising from the project is to be disposed in the manner that is acceptable by the Engineer. 	Contractor, CSQC
16.	Occupational Health and Safety of Workers	<ul style="list-style-type: none"> ▶ Implement measures recommended to prevent and mitigate impacts of air and noise pollution. ▶ Training of workers on safe construction practices. ▶ Maintain good housekeeping in the construction area. ▶ Barricade excavated areas. ▶ Implement work permit system for work at height. ▶ Provide training to construction workers on safe work practices. ▶ Record and investigate injuries to workers. ▶ Provide PPE to construction workers ▶ Safety shoes, hard hat/ helmet and hand gloves with grip facility to all workers ▶ Nose masks for those working in dusty area ▶ Earplugs for those working in high noise areas ▶ Nitrile rubber gloves to those engaged in painting activities ▶ Face shield for those engaged in welding 	Contractor, CSQC
Operation & Maintenance			
17.	Water Conservation	<ul style="list-style-type: none"> ▶ Use water efficient sanitary fixtures ▶ Fix all leaking pipes and fixtures timely. ▶ Place posters to instruct users to close taps. 	Building Occupier

S. No	Activities	Proposed mitigation measures	Responsible Agency
18.	Energy Conservation	<ul style="list-style-type: none"> ▶ Use energy efficient electrical fixtures. ▶ Lighting fixture with occupier sensors could be used, such that these turn off when persons are not occupying the spaces. 	Building Occupier
19.	Solid waste management	<ul style="list-style-type: none"> ▶ Solid waste should be disposed as per local authority requirements. ▶ The solid waste should not be disposed in surrounding areas. ▶ Dry and wet waste should be segregated to the extent possible. ▶ Wet waste could be treated locally using vermin composting or similar technologies. The compost could further be used for landscaping purposes. 	Building Occupier
20.	Sanitation	<ul style="list-style-type: none"> ▶ The building soil and greywater lines should be connected to sewerage system. Where building is not connected to city sewerage system, septic tanks of adequate capacity should be provided. The septic tanks should be cleaned periodically (every 6 months) and the sludge should be disposed as per local authority requirements. 	Building Occupier
21.	Fire safety	<ul style="list-style-type: none"> ▶ Conduct periodic maintenance of electrical systems, at-least once a year to avoid short circuits ▶ Provide firefighting systems in the building as per local authority requirements ▶ Maintain the firefighting equipment in operational conditions at all time. ▶ Conduct periodic monitoring (once in two months) to check their condition. ▶ Train staff to use firefighting equipment. 	Building Occupier

ANNEXURE IX: TERMS OF REFERENCE FOR ENVIRONMENTAL & SOCIAL AUDIT

The following is the ToR for conducting Environmental and Social audit on an annual basis:

- ▶ To undertake a desk review of selected sub-project documentation to determine how effectively social and environmental issues have been integrated. As part of the desk review, to have discussions with JUIDCO, ULBs and associated consultants.
- ▶ To carry out field visits to selected sub-projects to assess how safeguard issues have been addressed on the ground. As part of the field visits, to have discussions with the ULBs, supervision consultants and contractors.
- ▶ To assess the completeness and appropriateness of the SMPs/RAPs and EMPs based on the field visit observations.
- ▶ To determine compliance of sub-projects to national, state and local legal requirements based on the field visit observations.
- ▶ To review the monitoring reports prepared by the supervision consultants and verify how these reflect the ground realities of the sub-project implementation.
- ▶ To conduct interviews with management and line staff of the Company, contractors' personnel dealing with the implementation of safeguard measures suggested and the relevant personnel of the PMC to corroborate factual information and probe areas of concern.
- ▶ To review implementation status of recommendations/mitigation measures against safety, adequate location, arrangements for proper ventilation, lighting, provision of basic facilities for the use of workers/ staff etc.
- ▶ To assess the major environmental non-compliances and propose corrective actions.
- ▶ To prepare an audit report that clearly specifies (i) the deviations in implementing social and environmental measures, if any, (ii) positive measures taken at the sub-project level, if any, and (iii) suggestions for further improvement of social and environmental management practices at the sub-project level.
- ▶ To assess the efficacy of monitoring of implementation of safeguard measures and identify shortcomings, if any and areas for improvement.
- ▶ To identify constraints if any in ensuring compliance to the measures outlined in the EMP.
- ▶ To review the action taken by JUIDCO a month after the submission of the audit report, and to submit an audit compliance report.

ANNEXURE X: CONTENT OF A RESETTLEMENT ACTION PLAN

The table of contents for RAP shall have the following chapters for each of the sub projects

- ***Introduction***
 - Background
 - Area of Study
 - Location of the sub project
 - Need for a Social Impact Assessment
 - Project Impacts
 - Positive
 - Negative
- ***Approach and Methodology***
 - Secondary Document Review
 - Site Survey
 - Socio Economic Profile-
 - Census Survey
- ***Regulatory Framework***
 - Introduction
 - Applicable Legal Acts, Legislations and World Bank Policies
- ***Impacts and Mitigation Plan***
 - Impacts category wise and proposed mitigation
 - Institutional arrangement for implementation
 - Training , Skill upgradation and Income restoration
- ***Public Consultation and Disclosure***
 - Objectives
 - Forms and Tools of Public Consultation
 - Details of Public Consultations
- ***Monitoring and Evaluation***

- ***Grievance Redress Mechanism***
- ***Implementation Schedule and Budget***
 - Implementation Schedule
 - Budget
- ***Conclusion***

The table of contents of ARAP shall have the following chapters

- ***Introduction***
 - Location of the sub project
 - Need for a Social Impact Assessment
 - Project Impacts
 - Positive
 - Negative
- ***Baseline Socio Economic Profile***
 - Census Survey
- ***Impacts and Mitigation Plan***
 - Impacts category wise and proposed mitigation
 - Training , Skill upgradation and Income restoration
- ***Public Consultation and Disclosure***
 - Details of Public Consultations
- ***Monitoring and Evaluation***
- ***Grievance Redress Mechanism***
- ***Implementation Schedule and Budget***
 - Implementation Schedule
 - Budget
- ***Conclusion***

ANNEXURE XI: CONTENT OF SCHEDULED TRIBE PARTICIPATION PLAN

Overview of Scheduled Tribes

- ▶ Scheduled Tribes in the Jharkhand context
- ▶ Scheduled Tribe in context to sub- project

1. Applicable Acts and Policies for Scheduled Tribes

- i) **Acts applicable to sub-project area**
- ii) **World Bank Operational Policies**

2. Basic Social Parameters of the Scheduled Tribes

- i) **Demography and literacy**
- ii) **Occupation and Income**

3. Stakeholder's Consultation

4. Need for Scheduled Tribes Development Plan (STDP) in the Project

5. Procedure for the preparation of STDP:

- i) Addressing Issues concerning vulnerability of STs in the project
- ii) Addressing Issues concerning STs and land acquisition in the project
- iii) Ascertaining Land Categories
- iv) Provision for participation of STs through project cycle
- v) Addressing issues of displacement of STs
- vi) Creating support provisions for STs through the project
 - a) Compensation to loss of assets due to project
 - b) Assistancess for resettlement
 - c) Livelihood restoration plan for affected STs
 - d) Assistancess for economic rehabilitation
 - e) Provisions of increased accessibility to basic infrastructure facilities / services
 - f) 24x7 uninterrupted water supply

- g) Health and hygiene
- h) Education
- i) Roads and transport network
- j) Electricity

vii) Institutional Arrangements

- a) Structural arrangement
- b) Implementation strategy
- c) Grievance redressing mechanism

viii) Monitoring and Evaluation Mechanism

- a) Structural arrangement
- b) Indicators for monitoring of STDP implementation
- c) Monitoring of physical and financial Progress
- d) Impact indicators for evaluation
- e) Mid-term and end-term project evaluation

ix) Cost Estimates of STDP

- a) Estimation of STDP Budget based on costs of various components
- b) Fund flow mechanism for implementing STP

x) Implementation Schedule for STDP

- a) Implementation guidelines
- b) Detailed implementation schedule with major milestones

ANNEXURE XII: GUIDELINES FOR MANAGEMENT OF LABOUR AND CONSTRUCTION CAMPS

INTRODUCTION

The scope of this guideline pertains to the siting, development, management and restoration of construction and labour camps to avoid or mitigate impacts on the environment. In addition to that, this guideline has been prepared to provide JUIDCO with systematic information and guidance in setting up of labour camp, ensuring the health and safety of workers and minimising any impacts of establishing such camps near vulnerable communities and in other high-risk situations. This guideline has been prepared in reference to the Workers accommodation: processes and standards (IFC and EBRD)¹¹ to promote safe and healthy working conditions, and to protect health of workers. The ESIA's being prepared for all sub projects under JMDP will follow the guideline to develop specific labour management plans, which include accommodation for workers who are migrant. The camps need to be maintained to the standards listed in this guideline to avoid other impacts on public infrastructure such as local social and health services, utilities such as water and electricity, housing and social dynamics and thus impact on local communities. The labour camp conditions will be monitored and supervised by JUIDCO as per the Annex XIII.

The responsibilities for managing any adverse impacts associated with labour camps, such as (i) increased risk of spread of communicable diseases, and increased rates of illicit behaviour and crime (ii) illegal waste disposal sites, poor hygiene standards in camps, wastewater discharges, (iii) camp related construction noise and (iv) illegal access roads and land use issues. This should be clearly reflected as a contractual obligation of the civil works contractor and supervision consultant, with appropriate mechanisms, and penalties for addressing non-compliance

Whilst undertaking sub project specific EIAs and EMPs, a dedicated Occupational Health and Safety Management Plan would need to be prepared, this guidance has been discussed separately in Annex XVII

Pre-Construction Stage

¹¹http://www.ifc.org/wps/wcm/connect/9839db00488557d1bdfcff6a6515bb18/workers_accomodation.pdf?MOD=AJPERES&CACHEID=9839db00488557d1bdfcff6a6515bb18

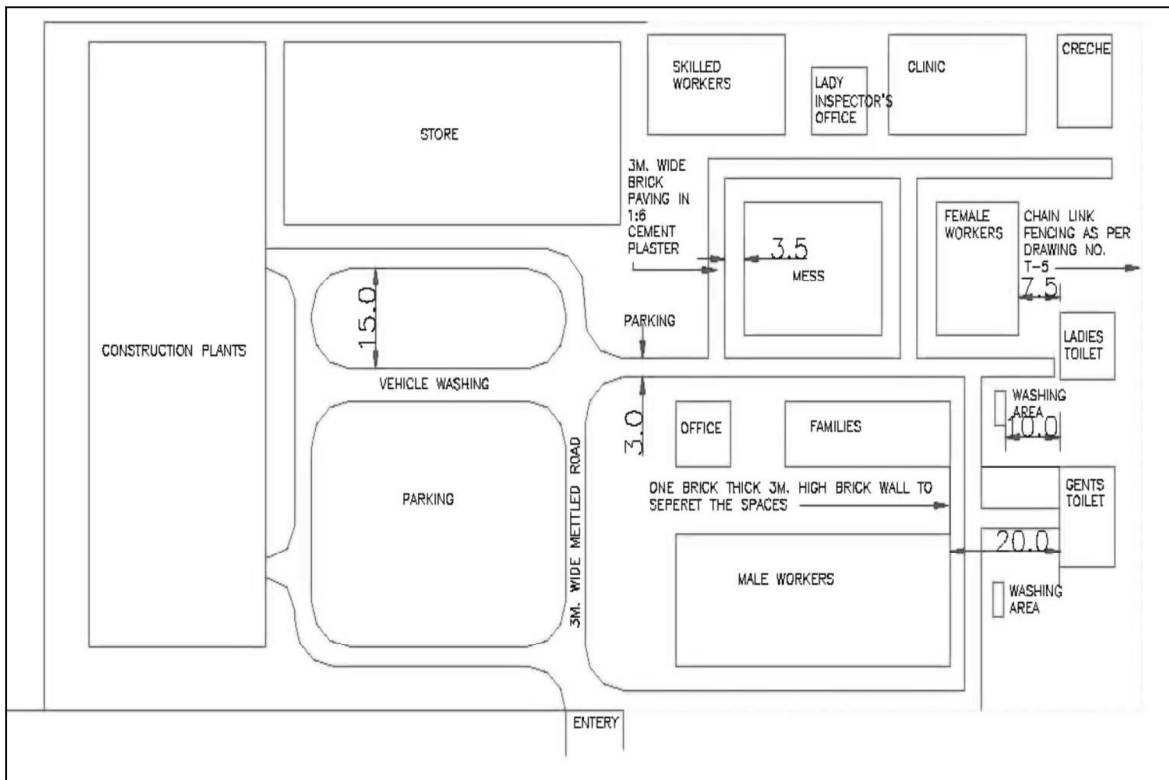
1. Siting: Labour camps, plant sites and debris disposal site shall not be located close to habitations, schools, hospitals, religious places and other community places. A minimum distance of 500 m shall be maintained from the habitations, sensitive locations like temple, school & hospitals, forest areas and other eco-sensitive zones for setting up such facilities. For construction camps, a minimum of 200 m of any major surface water course or body should be maintained, and sufficiently wide access roads for heavy vehicle movements should be provided.

The Contractor shall identify the site for construction camp in consultation with the individual owners in case of private lands and the concerned department in case of Government lands. The suitable sites shall be selected and finalized in consultation with the PIU. Figure below provides the criteria of land to be considered for setting up construction/labour camp.

The contractor will work out arrangements for setting up his facilities during the duration of construction with the land owner/concerned department. These arrangements shall be in the form of written agreement between the contractor and the land owner (private/government) that would specify:

- a. Photograph of the proposed camp site in original condition;
- b. List the activities to be carried out in the site
- c. Environmental mitigation measures to be undertaken to prevent land, air, water and noise pollution
- d. Detailed layout plan for development of the construction and labour camp that shall indicate the various structures to be constructed in the camp including temporary, drainage and other facilities (as shown in figure below) gives a generic layout plan for a construction camp); and Restoration plan of camp site to previous camp conditions
- e. The arrangements will be verified by the JUIDCOPIU to enable redressal of grievances at a later stage of the project.

Figure: Suggestive Layout Plan for Construction Camp



Land to be avoided for setting up camps

- ▶ Lands close to habitations to be avoided.
- ▶ Irrigated agricultural lands to be avoided.
- ▶ Lands belonging to small farmers to be avoided.
- ▶ Lands under village forests to be avoided.
- ▶ Lands within 100m of community water bodies and water sources as rivers
- ▶ Lands within 100m of watercourses.
- ▶ Low lying lands.
- ▶ Lands supporting dense vegetation.
- ▶ Grazing lands and lands with tenure rights.
- ▶ Lands where there is no willingness of the landowner to permit its use.

Land to be preferred for construction camp

- ▶ Waste Land
- ▶ Waste Lands belonging to owners who look upon the temporary use as a source of income.
- ▶ Community lands or government land not used for beneficial purposes.
- ▶ Private non-irrigated lands where the owner is willing.
- ▶ Lands with an existing access road.

1. Setting up of labour and construction camps

During the construction stage of the project, the construction contractor will construct and maintain necessary (temporary) living accommodation, rest area and ancillary facilities for labour. Contractor shall follow all relevant provisions of the Factories Act, 1948 and the Building and the other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 for construction and maintenance of labour camp.

Supervisor of the camp should take the attendance of the employee at each camp twice in a day (morning and evening) and should maintain the record. Further work hours of the workers should be maintained in accordance to the labour law and as mentioned in the labour licence. All workers should be provided with ID card and entry to the site should be through ID card only and should be ensured by security guard.

Living accommodation and ancillary facilities should be provided to all the migrant workers employed for the complete duration of construction/maintenance period. A minimum area of 6 sq.m. per person shall be provided. The rooms of labour shall be well lighted and ventilated. Transportation to the labour from the camp to the working site should also be provided, along with the facilities and provisions to be provided for the labour are described below:

- a) Site barricading
- b) Clean Water Facility
- c) Clean kitchen area with provision of clean fuel like LPG
- d) Clean Living Facilities for Workers
- e) Sanitation Facilities
- f) Waste Management Facilities
- g) Rest and emergency area for workers at construction site
- h) Safe access road is required at camps
- i) Health Care Facilities
- j) Crèche Facility & Play School
- k) Fire-fighting Facility

a) Site Barricading

Site should be completely barricaded from all the sides to prevent entry of outsiders and animals into the site with adequate marking, flags, reflectors etc. for safety of general traffic movement and pedestrians. Entry gate should be provided at the site and labour and

construction camp which should be guarded by security guard. All workers should be issued ID cards and entry of outsiders shall be maintained in the register at the gate. Board should be displayed at the site and the labour camp, the name of project, capacity of project, authority carrying our projects, restriction of entry without authorization, no smoking zone and associated risks. Plant and machinery operation shall be restricted to 6:00 Am to 10:00 PM

b) Clean Water/ Drinking Water

Towards the provision and storage of drinking water at the construction camp, the contractor shall ensure the following provisions

- i. Potable water shall be provided for construction labour for drinking & cooking purpose. Clean water shall be provided for bathing, cleaning and washing purpose. Water quality testing for drinking water provided for workers shall be carried out on monthly basis. Water dispensers should be cleaned on monthly basis. Adequate water per person should be provided at site for drinking, cooking, bathing, cleaning and other use purpose
- ii. Every water supply or storage shall be at a distance of not less than 15m from any wastewater / sewage drain or other source of pollution. Water sources within 15m proximity of toilet, drain or any source of pollution will not be used as a source of drinking water in the project.
- iii. If bore well used as drinking water source, it shall be covered, the door shall be kept locked and opened only for cleaning or inspection, which shall be done at least once a month. There shall be a motor installed for extraction of water from well.
- iv. In every site, adequate and suitable facilities for washing clothes and utensils shall be provided and maintained for the use of contract labour employed therein. Separate and adequate bathing shall be provided for the use of male and female workers. Such facilities shall be conveniently accessible and shall be kept in clean and hygienic conditions.

c) Kitchen Area

Provision of clean kitchen area for cooking and storage of eatables shall be provided. Clean fuels like LPG shall be provided for cooking purpose. Burning of firewood, garbage, paper and any other material for cooking or any other purpose shall strictly be prohibited at the site. Separate utensil washing area should be provided with proper drainage system. Kitchen waste should be daily cleaned and disposed off. Water storage facility at kitchen should be

covered and cleaned on monthly basis. Kitchen area should be away from washing, toilets and bathing area. Wall surfaces adjacent to cooking areas are made of fire-resistant materials. Food preparation tables are also equipped with a smooth durable washable surface.

d) Living Facility for the Workers

Workers should be provided with proper bedding facility. Single bed should be provided to each worker and each bed should be atleast 1 m apart from another. Double deck bedding should be avoided, in case provided, adequate fire-fighting facility should be provided.

Bed linen should be washed regularly and should be applied with repellent and disinfectants so as to manage the diseases caused due to pests. Use of Long Lasting Impregnated Nets or use of Pyrethroids (in WHO class III – especially formulated for public health) for mosquito and vector control.

Facilities for storage of personal belongings for workers should be provided in form of locker, shelf or cupboard. A separate storage area for the tools, boots, PPE should be provided. Proper ventilation through mechanical systems and lighting system should be ensured in construction camps.

e) Sanitation and Toilet Facilities

Sanitary arrangements, latrines and urinals shall be provided in every work place separately for male and female workers. The arrangements shall include:

- i. A latrine for every 15 females or part thereof (where female workers are employed). A latrine for every 10 males.
- ii. Every latrine shall be under cover and so partitioned as to secure privacy, and shall have a proper door and fastenings.
- iii. The latrines and urinals shall be adequately lighted and shall be maintained in a clean sanitary condition at all times and should have a proper drainage system;
- iv. Water shall be provided in or near the latrines and urinals by storage in suitable containers.
- v. Hygiene in the camps should be maintained by providing good sanitation and cleaning facilities. Soak Pits can be provided only if labour camp is located away from river.
- vi. Wastewater generated from these facilities should be disposed off through septic tanks and soak pit

f) Waste Management in Labour Camp

- i. Disposal of sanitary wastes and excreta shall be into septic tanks.
- ii. Kitchen waste water shall be disposed into soak pits/kitchen sump located preferably at least 15 meters from any water body. Sump capacity should be at least 1.3 times the maximum volume of wastewater discharged per day. The bottom of the pit should be filled with coarse gravel and the sides shored up with board, etc. to prevent erosion and collapse of the pit. New soak pits shall be made ready as soon as the earlier one is filled.
- iii. Solid wastes generated in the kitchen shall be reused if recyclable or disposed in land fill sites.
- iv. Wastewater from construction site should not be allowed to accumulate at site as standing water may lead to breeding of mosquitoes. Septic tanks/soak pits should be provided for its disposal
- v. Temporary storm water drainage system should also be provided at camp site and construction site so as to drain the storm water and prevent accumulation of storm water at site and thus breeding of mosquitoes/flies

g) Provision of Rest and Emergency Assembly areas

The work place shall provide four suitable sheds, two for meals and two for rest (separately for men and women). The height of the shelter shall not be less than 3.0m from the floor level to the lowest part of the roof. These shall be kept clean. Emergency Assembly Area shall be demarcated as emergency collection area near the gate where all can assemble in case of fire, earthquake or calamity at the site.

h) Safe Access Road

Temporary paved surface shall be constructed to approach the labour camp from the site. If camps are located close to residential and commercial areas, the roads should be watered sufficiently. Trucks carrying construction material to be adequately covered to avoid the dust pollution and to avoid the material spillage. Movement shall not be hampered during monsoon season due to water logging.

i) Medical and First Aid Facilities

- i. Medical facilities shall be provided to the labour at the construction camp. Visits of doctor shall be arranged twice a month wherein routine check-ups would be conducted for women and children. A separate room for medical check-ups and keeping of first aid facilities should be built. The site medical room should display awareness posters on safety facilitation hygiene and HIV/AIDS awareness.
- ii. Ambulance/ 4 wheeler motorized vehicle shall be available at the site for carrying injured to the nearby hospital. Tie-ups should be made with nearby hospital to handle emergency, if any. Nos. of ambulance, doctors and nearby hospital shall be displayed in first-aid room, site office & labour camps. List of contact nos. of emergency personnel, hospitals, fire brigade and other emergency contact should be displayed at camp site, guard's room and first aid room.
- iii. First Aid Box will be provided at every construction campsite and under the charge of a responsible person who shall always be readily available during working hours. He/she shall be adequately trained in administering first aid-treatment. Formal arrangement shall be prescribed to carry injured person or person suddenly taken ill to the nearest hospital. The first aid box shall contain the following.
 - a. 6 small sterilized dressings
 - b. 3 medium size sterilized dressings
 - c. 3 large size sterilized dressings
 - d. 3 large sterilized burns dressings
 - e. 1 (30 ml) bottle containing 2 % alcoholic solution of iodine
 - f. 1 (30 ml) bottle containing salvolatile
 - g. 1 snakebite lancet
 - h. 1 (30 gms) bottle of potassium permanganate crystals
 - i. 1 pair scissors
 - j. Ointment for burns
 - k. A bottle of suitable surgical antiseptic solution

In case, the number of labour exceeds 50, the items in the first aid box shall be doubled

j) Crèches

In case 20 or more women workers are employed, there shall be a room of reasonable size for use of children under the age of six years. The room should have adequate light and realisation.

A caretaker is to be appointed to look after the children. The use of the room shall be restricted to children, their mothers and the caretaker.

k) Storage of Construction Material in Construction Camps

For storage of Petrol/Oil/Lubricants, brick on edge flooring or sand flooring will be provided at the storage places of Petrol/Oil/Lubricants to avoid soil and water contamination due to spillage. These should be kept away from labour residential areas. The storage of cement shall be at Damp-proof flooring, as per IS codes. All materials shall be stored in a barricaded area. In case of electrical equipment, danger signs shall be posted. The batch mix plant is to be located away from the residential area and not in the wind direction. Separate parking areas for vehicles and also workshop areas need to be provided.

l) Firefighting arrangement

The following precautions need to be taken:

- i. Demarcation of area susceptible to fires with cautionary signage;
- ii. Portable fire extinguishers and/or sand baskets shall be provided at easily accessible locations in the event of fire;
- iii. Contractor shall educate the workers on usage of this equipment.

Operational Stage

Construction camps shall be maintained free from litter and in hygienic condition. It should be kept free from spillage of oil, grease or bitumen. Any spillage should be cleaned immediately to avoid pollution of soil, water stored or adjacent water bodies. The following precautions need to be taken in construction camps.

- ▶ Measures to ensure that no leaching of oil and grease into water bodies or underground water takes place.
- ▶ Wastewater should not be disposed into water bodies.
- ▶ Regular collection of solid wastes should be undertaken and should be disposed safely.
- ▶ All consumables as the first aid equipment, cleaning equipment for maintaining hygiene and sanitation should be recouped immediately.
- ▶ The debris/scrap generated during construction should be kept in a designated and barricaded area.

- ▶ The PIU will monitor the cleanliness of construction campsites and ensure that the sites are properly maintained throughout the period of the contract.

Grievance Redressal System

A complaint register and a complaint box should be provided at the site so any person from local community can register their complaint, if any due of the camp, workers and other facilities. The system shall be communicated to local communities through consultations. Open house meetings should be conducted with workers on monthly basis to identify their problems and issues if any related to health, hygiene, safety, comfort and other issues. Activities prohibited at site

Activities which should be strictly prohibited at site shall include

- i. Open burning of wood, garbage and any other material at sit for cooking or any other purpose which has adverse impacts on air quality.
- ii. Adoption of any unfair means or getting indulgence in any criminal activity
- iii. Non-compliance of the safety guidelines as communicated be safety officials and during the trainings
- iv. Adoption and proper usage of PPEs all the time as required
- v. Operation of the plant and machinery between 10 pm to 6 am unless approved by team leader
- vi. No animal (wild or domestic or bird) shall be harmed by any construction worker in any condition at site and nearby areas
- vii. Cutting of tree without permission of team leader/authorized person
- viii. No indigenous population shall be hurt or teased

Post Construction/Decommissioning Stage

After the completion of construction, all construction camp facilities, labour camps shall be dismantled and removed from the site. The site shall be restored to a condition in no way inferior to the condition prior to commencement of the works.

Various activities to be carried out for site rehabilitation include:

- ▶ All temporary structures should be cleared
- ▶ Debris (rejected material), building debris, garbage, night soils and POL waste should be disposed suitably per the construction debris and waste management plan.

- ▶ All disposal pits or trenches should be filled in, disinfected and effectively sealed off.
- ▶ All the areas within the camp site should be levelled and spread over with stored top soil. Residual topsoil, if any will be distributed or spread evenly in plantation sites, on adjoining/near-by barren land or affected agricultural land adjacent to the RoW that has been impacted on account of any accidental spillage.
- ▶ Oil and fuel contaminated soil shall be removed and transported and buried in waste disposal areas.
- ▶ Underground water tank in a barren/non-agricultural land can be covered. However, in an agricultural land, the tank shall be removed.
- ▶ If the construction camp site is on an agricultural land, top soil can be spread so as to aid faster rejuvenation.
- ▶ Entire camp area should be left clean and tidy, in a manner keeping the adjacent lands neat and clear, to the entire satisfaction of landowner and JUIDCO.
- ▶ Proper documentation of rehabilitation site is necessary. This shall include the following:
 - a) Photograph of rehabilitated site;
 - b) Land owner consent letter for satisfaction in measures taken for rehabilitation of site;
 - c) Undertaking from contractor; and
 - d) Certification from Engineer in-charge of the PIU.

In cases, where the construction camp site is located on a private land holding, the contractor would still have to restore the campsite as per this guideline. Also, he would have to obtain a certificate for satisfaction from the landowner.

ANNEXURE XIII: LABOUR CAMP MANAGEMENT MONITORING CHECKLIST

Parameters	Yes	No	Not Applicable	Comments
General regulatory framework				
Have the international/national/local regulatory frameworks been reviewed?				
Are mandatory provisions on workers' accommodation identified?				
Assessing the need for workers' accommodation				
Availability of the workforce				
Has there been an assessment of workers' availability in the neighbouring communities?				
Has there been an assessment of the skills and competencies of the local workforce and how do those skills and competencies fit the project's need?				
Has there been an assessment of the possibility of training a local workforce in order to fulfil the project's needs?				
Types of workers' accommodation				
Has consideration been given to provision of family accommodation?				
Are individual accommodations comprising bedrooms, sanitary and cooking facilities provided as part of the family accommodation?				
Is special attention paid to providing adequate safety for children?				
Labour Camp Land				
Is the Lands for labour/construction camp close to				

Parameters	Yes	No	Not Applicable	Comments
habitations/ Irrigated agricultural lands / belonging to small farmers / under village forest/within 100m of community water bodies and water sources as rivers/ within 100m of watercourses./ in Low lying lands/supporting dense vegetation./grazing lands and lands with tenure rights/where there is no willingness of the landowner to permit its use.				
National/local standards				
Have the relevant national/local regulations been identified and implemented?				
General living facilities				
Is the location of the facilities designed to avoid flooding or other natural hazards?				
Are the living facilities located within a reasonable distance from the worksite?				
Is transport provided to worksite safe and free?				
Are the living facilities built using adequate materials, kept in good repair and kept clean and free from rubbish and other refuse?				
Drainage				
Is the site adequately drained?				
Water				
Do workers have easy access to a supply of clean/ potable water in adequate quantities?				
Does the quality of the water comply with national/local requirements or WHO standards?				
Are tanks used for the storage of drinking water constructed and covered to prevent water stored therein from becoming polluted or contaminated?				

Parameters	Yes	No	Not Applicable	Comments
Is the quality of the drinking water regularly monitored?				
Wastewater and solid waste				
Are wastewater, sewage, food and any other waste materials adequately discharged in compliance with local or World Bank standards and without causing any significant impacts on camp residents, the environment or surrounding communities?				
Are specific containers for rubbish collection provided and emptied on a regular basis?				
Are pest extermination, vector control and disinfection undertaken throughout the living facilities?				
Rooms/dormitories facilities				
Are the rooms/dormitories kept in good condition?				
Are the rooms/dormitories aired and cleaned at regular intervals?				
Are the rooms/dormitories built with easily cleanable flooring material?				
Are the rooms/dormitories and sanitary facilities located in the same buildings?				
Are residents provided with enough space?				
Is the ceiling height high enough?				
Is the number of workers sharing the same room/dormitory minimised?				
Are the doors and windows lockable and provided with mosquito screens when necessary?				
Are mobile partitions or curtains provided?				
Are separate sleeping areas provided for men and women?				
Bed arrangements and storage facilities				

Parameters	Yes	No	Not Applicable	Comments
Is there a separate bed provided for every worker?				
Is there a minimum space of 1 metre between beds?				
Is the use of double deck bunks minimised?				
When double deck bunks are in use, is there enough clear space between the lower and upper bunk of the bed?				
Are triple deck bunks prohibited?				
Are workers provided with comfortable mattresses, pillows and clean bed linens?				
Are the bed linen washed frequently and applied with adequate repellents and disinfectants (where conditions warrant)?				
Are adequate facilities for the storage of personal belongings provided?				
Are there separate storages for work clothes and PPE and depending on condition, drying/airing areas?				
Sanitary and toilet facilities				
Are sanitary and toilet facilities constructed from materials that are easily cleanable?				
Are sanitary and toilet facilities cleaned frequently and kept in working condition?				
Are toilets, showers/bathrooms and other sanitary facilities designed to provide workers with adequate privacy including ceiling to floor partitions and lockable doors?				
Are separate sanitary and toilet facilities provided for men and women?				
Toilet facilities				
Is there an adequate number of toilets and urinals?				

Parameters	Yes	No	Not Applicable	Comments
Are toilet facilities conveniently located and easily accessible?				
Showers/bathrooms and other sanitary facilities				
Is there an adequate number of hand wash basins and showers/bathrooms facilities provided?				
Are the sanitary facilities conveniently located?				
Are shower facilities provided with an adequate supply of cold and hot running water?				
Canteen, cooking and laundry facilities				
Are canteen, cooking and laundry facilities built with adequate and easy to clean materials?				
Are the canteen, cooking and laundry facilities kept in clean and sanitary condition?				
If workers cook their own meals, is kitchen space provided separately from the sleeping areas?				
Laundry facilities				
Are adequate facilities for washing and drying clothes provided?				
Canteen and cooking facilities				
Are workers provided with enough space in the canteen?				
Are canteens adequately furnished?				
Are kitchens provided with the facilities to maintain adequate personal hygiene?				
Are places for food preparation adequately ventilated and equipped?				
Are kitchen floor, ceiling and wall surfaces adjacent to or above food preparation and cooking areas built in non-absorbent, durable, non-toxic, easily cleanable materials?				
Are wall surfaces adjacent to cooking areas made of fire-				

Parameters	Yes	No	Not Applicable	Comments
resistant materials and food preparation tables equipped with a smooth, durable, non-corrosive, non-toxic, washable surface?				
Are adequate facilities for cleaning, disinfecting and storage of cooking utensils and equipment provided?				
Are there adequate sealable containers to deposit food waste and other refuse?				
Is refuse frequently removed from the kitchen to avoid accumulation?				
Standards for nutrition and food safety				
Does the food provided contain appropriate nutritional value?				
Does the food provided take into account workers' religious/cultural backgrounds?				
Medical facilities				
Are first aid kits provided in adequate numbers?				
Are first-aid kits adequately stocked?				
Is there an adequate number of staff/workers trained to provide first aid?				
Are there any other medical facilities/services provided on site? If not, why?				
Social Facilities				
Are basic social collective spaces and adequate recreational areas provided to workers?				
Are workers provided with dedicated places for religious observance?				
Management and staff				
Are there carefully designed worker camp management plans and policies especially in the field of health and				

Parameters	Yes	No	Not Applicable	Comments
safety (including emergency responses), security, workers' rights and relationships with the communities?				
Where contractors are used, have they clear contractual management responsibilities and duty to report?				
Does the person appointed to manage the accommodation have the required background, competency and experience to conduct his mission and is he/ she provided with the adequate responsibility and authority to do so?				
Is there enough staff to ensure the adequate implementation of housing standards (cleaning, cooking and security in particular)?				
Are staff members recruited from surrounding communities?				
Have the staff received basic health and safety training?				
Charging fees for accommodation and services				
Are the renting arrangements fair and transparent?				
Are workers provided with adequate information about payment made?				
Where appropriate, are renting arrangements and regulations clearly included in workers' employment contracts?				
Are food and other services provided for free or reasonably priced, that is, not above the local market price?				
Is the payment in kind for accommodation and services prohibited?				
Health and safety on site				
Have health and safety management plans including				

Parameters	Yes	No	Not Applicable	Comments
electrical, mechanical, structural and food safety been designed and implemented?				
Has the accommodation manager a duty to report to the health authority specific diseases, food poisoning or casualties?				
Is there an adequate number of staff/workers trained in providing first aid?				
Has a specific and adequate fire safety management plan been designed and implemented?				
Is guidance on alcohol, drug and HIV/AIDS and other health risk-related activities provided to workers?				
Are contraception measures (condoms in particular) and mosquito nets (where relevant) provided to workers?				
Do workers have an easy access to medical facilities and medical staff, including female doctors/nurses where appropriate?				
Have emergency plans on health and fire safety been prepared?				
Depending on circumstances, have specific emergency plans (earthquakes, floods, tornadoes) been prepared?				
Security on workers' accommodation				
Has a security plan including clear measures to protect workers against theft and attack been designed and implemented?				
Has a security plan including clear measures to protect workers against theft and attack been designed and implemented?				

Parameters	Yes	No	Not Applicable	Comments
Have the backgrounds of security staff been checked for previous crimes or abuses?				
Has the recruitment of security staff from both genders been considered?				
Have security staff received clear instruction about their duty and responsibility?				
Have security staff been adequately trained in dealing with domestic violence and the use of force?				
Are body searches only performed in exceptional circumstances by specifically trained security staff of both genders?				
Do security staff have a good understanding about the importance of respecting workers' rights and the rights of the surrounding communities and adopt appropriate conduct?				
Do workers and communities have specific means to raise concerns about security arrangements and staff?				
Workers' rights, rules and regulations on workers' accommodation				
Are limitations on workers' freedom of movement limited and justified?				
Is an adequate transport system to the surrounding communities provided?				
Is the practice of withholding workers' ID papers prohibited?				
Is freedom of association expressly respected?				
Are workers' religious, cultural and social backgrounds respected?				

Parameters	Yes	No	Not Applicable	Comments
Are workers made aware of their rights and obligations and provided with a copy of the accommodations' internal rules, procedures and sanction mechanisms in a language or through a media they understand?				
Are house regulations non-discriminatory, fair and reasonable?				
Are regulations on alcohol, tobacco and third parties' access to the camp clear and communicated to workers?				
Is a fair and non-discriminatory procedure to implement disciplinary procedures, including the right for workers to defend themselves, set up?				
Consultation and grievance mechanisms				
Have mechanisms for workers' consultation been designed and implemented?				
Are workers provided with processes and mechanisms to articulate their grievances				
Have workers subjected to disciplinary proceedings arising from conduct in the accommodation had access to a fair and transparent hearing with the possibility to appeal the decision?				
Are there fair conflict resolution mechanisms in place?				
In cases where serious offences occur, are there mechanisms to ensure full cooperation with police authorities?				
Management of community relations				
Have community relation management plans addressing issues around community development, community needs, community health and safety and community social and cultural cohesion been designed and				

Parameters	Yes	No	Not Applicable	Comments
implemented?				
Is there a senior manager in charge of liaising with the surrounding communities?				
Are the impacts generated by workers' accommodation periodically reviewed, mitigated or enhanced?				
Are community representatives provided with easy means to voice their opinions and lodge complaints?				
Is there a transparent and efficient process for dealing with community grievances,				
Decommissioning stage				
All temporary structures cleared				
Debris (rejected material), building debris, garbage, night soils and POL waste disposed suitably according to the construction debris and waste management plan				
Is all disposal pits or trenches filled in, disinfected and effectively sealed off.				
All the areas within the camp site levelled and spread over with stored top soil.				
Residual topsoil, if any is distributed or spread evenly in plantation sites, on adjoining/hear-by barren land or affected agricultural land adjacent to the RoW that has been impacted on account of any accidental spillage				
Oil and fuel contaminated soil are removed and transported and buried in waste disposal areas.				
Has the entire camp area left clean and tidy, in a manner keeping the adjacent lands neat and clear, to the entire satisfaction of landowner and JUIDCO				

ANNEXURE XIV: ARCHAEOLOGICAL CHANCE FIND PROCEDURE

All utilities and common property resources likely to be affected due to the project should be relocated with prior approval of the concerned agencies before start of construction. Similarly, cultural properties within the Corridor of Impact (CoI) whose structure is likely to get affected, will be relocated at suitable locations, if desired by the community before construction starts. Local communities need to be contacted to discuss relocation aspects, siting as well as their maintenance.

All necessary and adequate care shall be taken to minimize impact on cultural properties (which includes cultural sites and remains, places of worship including temples, mosques, churches and shrines, etc., graveyards, monuments and any other important structures as identified during design; and all properties/sites/remains notified under the Ancient Sites and Remains Act). No work shall spill over to these properties, premises and precincts.

As Jharkhand contains a variety of protected and unprotected sites of historical, religious and cultural significance, there is a likelihood of chance find of archaeological and cultural properties during excavation works especially in cities that involve extensive construction works. Chance find of any heritage structure, statue, relic or remnants during construction shall be immediately reported to the authorities and shall comply with **Ancient Monuments and Archaeological Sites and Remains Act 1958**.

In case of chance find procedure being applied, it is necessary to suspend work at the site and intimate the State Archaeological Department at the earliest for necessary action. Alternative locations for undertaking the project works should be identified unless the State Archaeological Department gives clearance for resuming project works at the site.

A clause for “Chancefinds” would be added to the EMP and subsequently the bidding documents for the works contract which explains the steps to follow whenever new archaeological remains, antiquity or any other object of cultural or archaeological importance are encountered during construction phase.

Protection of Archaeological and Historical ‘Chance Finds’

Excavation in sites of known archaeological interest should be avoided. Where this is unavoidable, prior discussions must be held with the relevant Authority (ASI) in order to undertake pre-construction excavation or assign an archaeologist to log discoveries as construction proceeds. Where historical remains, antiquity or any other object of cultural or archaeological importance are unexpectedly discovered during construction in an area not previously known for its archaeological interest, the following procedures should be applied:

- a) Stop construction activities.
- b) Delineate the discovered site area.
- c) Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remains, a guard should be present until the responsible authority takes over.
- d) Notify the responsible archaeologist. Who in turn should notify the responsible authorities, the ASI and local authorities (within less than 24 hours). Responsible authorities would oversee protecting and preserving the site before deciding on the proper procedures to be carried out.

The significance and importance of the findings will be assessed per various criteria relevant to cultural heritage including aesthetic, historic, scientific or research, social and economic values.

- a) Decision on how to handle the finding will be reached based on the above assessment and could include changes in the project layout (in case of finding an irrevocable remain of cultural or archaeological importance), conservation, preservation, restoration or salvage.
- b) Implementation of the authority decision concerning the management of the finding.
- c) Construction work could resume only when permission is given by ASI after the decision concerning the safeguard of the heritage is fully executed.

In case of delay incurred in direct relation to Archaeological findings not stipulated in the contract (and affecting the overall schedule of works), the contractor may apply for an extension of time. However, the contractor will not be entitled for any kind of compensation or claim other than what is directly related to the execution of the archaeological findings works and protections

These procedures must be referred to as standard provisions in construction contracts, when applicable. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered are observed.

The relevant findings will be recorded in the EMP monthly progress report, and quarterly safeguards report to the World Bank to assess the overall effectiveness of the project's cultural property mitigation, management, and activities, as appropriate.

ANNEXURE XV: E & S COMPLIANCE MONITORING

Introduction

1. Confirm that all sub-projects are compliant with applicable national and local environmental, occupational health and safety laws and regulations, and summarize any areas of non-compliance together with relevant corrective action plans / measures.
2. Describe any instance of inspection or review of environmental and safety compliance provisions for the sub-Projects/activities and occasions of non-compliance in which significant fines or penalties have been imposed, operations closed down, or other actions related to sub-Projects performance

Environmental Progress

3. Provide a summary of the progress of implementation of the sub-Project(s)/activity (ies), including description, status, and completion timetable for environment-related items. Describe the status of permits and approvals. Summary information should include:
 - a) Overview of the sub-Project(s)/activity(ies), including progress against schedule;
 - b) Design changes to the sub-Project(s)/activity(ies) adopted during the reporting period and reasons for those changes;
 - c) Environmental issues and complaints arising during the reporting period;
 - d) Information on any unanticipated environmental impacts, and remedial actions that have been taken;
 - e) Any unresolved environmental issues or grievances; and
 - f) Status of compliance with environmental requirements (national, local, WB or instances of non-compliance.
 - g) Findings on the implementation of EMP

Social Progress

4. Provide a summary of the progress of implementation of the sub-Project(s)/activity (ies), including description, status, and completion timetable for social-related items. Summary information should include:
 - a) Overview of the sub-Project(s)/activity(ies) including progress against schedule;
 - b) Alternative designs considered to avoid or minimize Involuntary Resettlement impacts and impacts to Indigenous Peoples/ethnic minorities;
 - c) Social issues and complaints arising during the reporting period;
 - d) Information on any unanticipated impacts, and remedial actions that have been taken;
 - e) Any unresolved social issues or grievances; and

- f) Status of compliance with social requirements (national, local, WB or instances of non-compliance).

Summary of safety performance and any corrective actions

- 5. Worker health and occupational safety: describe status of worker health and safety programs and training, any work-related accidents at the sub-Project(s)/activity (ies) sites, actions taken to reduce accidents, etc.
- (i) Accidents, fires, and other emergencies: provide a summary of any significant accidents, fires, or explosions, or major accidental releases to the environment. Include response measures taken and any improvements made to equipment or procedures as a result.]

Development initiatives and community relations

- 6. Any initiatives undertaken to improve environmental performance in its activities or at the corporate level.
- 7. Describe any outreach or cooperative programs with the community, NGOs, etc. in the sub-Project(s)/activity (ies) areas.

ANNEXURE XVI: APPLICABLE ENVIRONMENTAL STANDARDS

Applicable Standards – CPCB

A. Drinking Water Standard

Drinking water guideline as per IS 10500, 2012 has been presented in table below;

S.No	Characteristic	Acceptable Limit	Permissible Limit
General Parameters			
1	Colour, Hazen units, <i>Max</i>	5	15
2	Odour	Agreeable	Agreeable
3	pH value	6.5-8.5	No Relaxation
4	Turbidity, NTU, <i>Max</i>	1	5
5	Total dissolved solids, mg/l	500	2000
6	Aluminium (as Al), mg/l, <i>Max</i>	0.03	0.2
7	Ammonia (as total ammonia-N)mg/l, <i>Max</i>	0.5	No relaxation
8	Anionic detergents (as MBAS) mg/l, <i>Max</i>	0.2	1.0
9	Barium (as Ba), mg/l, <i>Max</i>	0.7	No relaxation
10	Boron (as B), mg/l, <i>Max</i>	0.5	1
11	Calcium (as Ca), mg/l, <i>Max</i>	75	200
12	Chloramines (as Cl ₂), mg/l, <i>Max</i>	4	No relaxation
13	Chloride (as Cl), mg/l, <i>Max</i>	250	1000
14	Copper (as Cu), mg/l, <i>Max</i>	0.5	1.5
15	Fluoride (as F) mg/l, <i>Max</i>	1.0	1.5
16	Free residual chlorine, mg/l, <i>Min</i>	0.2	1
17	Iron (as Fe), mg/l, <i>Max</i>	0.3	No relaxation
18	Magnesium (as Mg), mg/l, <i>Max</i>	30	100
19	Manganese (as Mn), mg/l, <i>Max</i>	0.1	0.3
20	Mineral oil, mg/l, <i>Max</i>	0.5	No relaxation
21	Nitrate (as NO ₃), mg/l, <i>Max</i>	45	No relaxation
22	Phenolic compounds (as C ₆ H ₅ OH), mg/l, <i>Max</i>	0.001	0.002
23	Selenium (as Se), mg/l, <i>Max</i>	0.01	No relaxation
24	Silver (as Ag), mg/l, <i>Max</i>	0.1	No relaxation
25	Sulphate (as SO ₄) mg/l, <i>Max</i>	200	400
26	Sulphide (as H ₂ S), mg/l, <i>Max</i>	0.05	No relaxation
27	Total alkalinity as calcium carbonate, mg/l, <i>Max</i>	200	600
28	Total hardness (as CaCO ₃), mg/l, <i>Max</i>	200	600
29	Zinc (as Zn), mg/l, <i>Max</i>	5	15
Concerning Toxic Substances			
30	Cadmium (as Cd), mg/l, <i>Max</i>	0.003	No relaxation
31	Cyanide (as CN), mg/l, <i>Max</i>	0.05	No relaxation
32	Lead (as Pb), mg/l, <i>Max</i>	0.01	No relaxation
33	Mercury (as Hg), mg/l, <i>Max</i>	0.001	No relaxation
34	Molybdenum (as Mo), mg/l, <i>Max</i>	0.07	
35	Nickel (as Ni), mg/l, <i>Max</i>	0.02	
36	Polychlorinated biphenyls, mg/l, *	0.0005	No relaxation

S.No	Characteristic	Acceptable Limit	Permissible Limit
	— Max		
37	Polynuclear aromatic hydro carbons (as PAH), mg/l, Max	- 0.000 1	No relaxation
38	Total arsenic (as As), mg/l, Max	0.01	0.05
39	Total chromium (as Cr), mg/l, Max	0.05	No relaxation
40	Bromoform, mg/l, Max	0.1	No relaxation
41	Dibromochloromethane, — mg/l, Max	0.1	No relaxation
42	Bromodichloromethane, — mg/l, Max	0.06	No relaxation
43	Chloroform, mg/l, Max	0.2	No relaxation
Concerning Radioactive Substances			
44	Alpha emitters Bq/l, Max	0.1	No relaxation
45	Beta emitters Bq/l, Max	1.0	No relaxation
Bacteriological Quality of Drinking Water1)			
46	All water intended for drinking: a) <i>E. coli</i> or thermotolerant coliform bacteria2),	Shall not be detectable in any 100 ml sample	
47	Treated water entering the distribution system: a) <i>E. coli</i> or thermotolerant coliform bacteria2) Shall not be detectable in any 100 ml sample b) Total coliform bacteria		
48	Treated water in the distribution system: a) <i>E. coli</i> or thermotolerant coliform bacteria Shall not be detectable in any 100 ml sample b) Total coliform bacteria		

B. Surface Water

Surface Water Quality criteria as per CPCB guidelines has been presented in table below

Designated-Best-Use	Class	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	<ul style="list-style-type: none"> ▶ Total Coliforms Organism MPN/100ml shall be 50 or less ▶ pH between 6.5 and 8.5 ▶ Dissolved Oxygen 6mg/l or more ▶ Biochemical Oxygen Demand 5 days 20°C 2mg/l or less
Outdoor bathing (Organized)	B	<ul style="list-style-type: none"> ▶ 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

Designated-Best-Use	Class	Criteria
Drinking water source after conventional treatment and disinfection	C	<ul style="list-style-type: none"> ▶ Total Coliforms Organism MPN/100ml shall be 5000 or less ▶ pH between 6 to 9 ▶ Dissolved Oxygen 4mg/l or more ▶ Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Propagation of Wildlife and Fisheries	D	<ul style="list-style-type: none"> ▶ pH between 6.5 to 8.5 ▶ Dissolved Oxygen 4mg/l or more ▶ Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial cooling, Controlled waste disposal	E	<ul style="list-style-type: none"> ▶ pH between 6.0 to 8.5 ▶ Electrical Conductivity at 25°C micro mhos/cm Max.2250 ▶ Sodium absorption Ratio Max. 26 ▶ Boron Max. 2mg/l
	Below-E	Not Meeting A, B, C, D & E Criteria

Source: Central Pollution Control Board

C. DG Set Emission Standards

Emission limits for new diesel engine up to 800 kW for generator set (Gen-set) application has been presented in table below:

Power Category	Emission Limits (g/kW-hr)			Smoke Limit (light absorption coefficient, m-1)
	NOx +HC	CO	PM	
Upto 19 KW	≤ 7.5	≤ 3.5	≤ 0.3	≤ 0.7
More than 19 KW upto 75 KW	≤ 4.7	≤ 3.5	≤ 0.3	≤ 0.7
More than 75 KW upto 800 KW	≤ 4.0	≤ 3.5	≤ 0.2	≤ 0.7

D. Noise Levels

The ambient noise quality standard as prescribed by CPCB in the Noise Rules 2000 has been provided in table below:

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

Environmental Quality Standards – IFC EHS Guidelines

E. Air Quality

The ambient air quality guideline as provided in World Bank Group’s General EHS Guidelines 2007 has been presented in table below:

Parameter	Averaging Period	Guideline value in $\mu\text{g}/\text{m}^3$
Sulfur dioxide (SO ₂)	24-hour	125 (Interim target-1) 50 (Interim target-2) 20 (guideline)
	10 minute	500 (guideline)
Nitrogen dioxide (NO ₂)	1-year	40 (guideline)
	1-hour	200 (guideline)
Particulate Matter PM ₁₀	1-year	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline)
	24-hour	150 (Interim target-1) 100 (Interim target-2) 75 (Interim target-3) 50 (guideline)
Particulate Matter PM _{2.5}	1-year	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline)
	24-hour	75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)
Ozone	8-hour daily maximum	160 (Interim target-1) 100 (guideline)

F. Wastewater

Sanitary wastewater from facilities may include effluents from domestic sewage, food service, and laundry facilities serving site employees. Miscellaneous wastewater from laboratories, medical infirmaries, water softening etc. may also be discharged to the sanitary wastewater treatment system. World Bank Group’s General EHS Guidelines 2007 for sanitary wastewater quality has been presented in table below:

Pollutants	Pollutants	Guideline Value
pH	pH	6-9
BOD	mg/l	30
COD	mg/l	125
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Oil and grease	mg/l	10
Total suspended solids	Mg/l	50
Total coliform bacteria	MPN / 100 ml	400

G. Noise Level Guideline

As per World Bank Group's General EHS Guidelines 2007, noise impacts should not exceed the levels presented in table or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.

Receptor	One Hour LAeq (dBA)	
	Daytime 07:00 - 22:00	Night time 22:00 - 07:00
Residential; institutional; educational	55	45
Industrial; commercial	70	70

ANNEXURE XVII: GUIDELINE FOR OCCUPATIONAL HEALTH&SAFETY MANAGEMENT

The Contractor shall carry out a Health Risk Assessment (HRA) of all construction activities for all chemical, physical, biological, ergonomic and psychological health hazards associated with work at the construction site having risks assessed as Medium or High on the Risk Assessment Matrix based on which control measures should be selected, implemented and documented. The selection of controls should take account of the control hierarchy, i.e. Elimination, Substitution, Engineering, Procedural and lastly Personal Protective Equipment. Construction staff shall be trained in the nature of the health hazards and specified controls.

Chemical Hazards

The Contractor shall identify, assess and control all hazardous chemicals involved in the construction, including building materials, proprietary chemical products, fumes, dusts and gases emitted as a result of cutting and welding and sanding/grinding.

Physical Hazards

The Contractor shall assess the risks associated with physical hazards and eliminate them or control them to as low as reasonably practicable, applying the principles outlined below:

Noise

For operations under noisy conditions, the Contractor shall establish procedures in compliance with the Noise Guide. The Contractor shall reduce noise from construction equipment by measures such as:

- ▶ Selecting machinery that has inherent noise reduction features;
- ▶ Periodic monitoring of sound levels and regular maintenance of equipment;
- ▶ Contractor shall conduct periodic monitoring of sound pressure at least once each quarter.

Vibration

Where exposure to vibration may affect part or all of the body, for example in the use of pneumatic drills, the Contractor shall ensure that exposures are assessed and eliminated or controlled.

Climatic Stress

For operations under extreme climatic conditions, the Contractor shall establish procedures in compliance with the relevant standards.

Biological Hazards

Where insects, mites and animals, moulds, yeasts, fungi, bacteria and viruses are present in the working environment, exposures to pathogenic biological agents shall be controlled such that diseases and ill health effects are prevented.

Malaria

When construction takes place in areas where malaria occurs, a comprehensive risk based malaria control program shall be in place encompassing all aspects of malaria prevention programs. Use of malaria prophylaxis is a must, comparable with wearing safety shoes and hard hats. The four components of malaria prophylaxis are:

- ▶ Awareness
 - Be aware of the risk of malaria in the work locations or sites visited;
 - Be aware of the signs and symptoms and know how long it takes to develop the illness after being bitten.
- ▶ Bite Prevention - Avoid being bitten by mosquitoes by:
 - Wearing long sleeved shirts and trousers when outdoors;
 - Using insect repellent (preferably containing the active ingredient DEET) and;
 - Using air conditioning whenever available or mosquito nets at bedtime in the absence of air-conditioning.
- ▶ Chemoprophylaxis - comply when advised by a competent health professional:
 - Take anti-malarial drugs (chemoprophylaxis) when appropriate, to prevent infection from developing into clinical disease. Although highly effective, note that anti-malarial drugs do not guarantee 100% protection;
 - Medications are safe to use if taken according to medical advice.
- ▶ Diagnosis and Treatment
 - Early diagnosis and treatment can prevent fatalities. Seek immediate diagnosis and treatment if a fever and/or flu-like symptoms develop one week or more after entering and up to 3 months after departure from a risk area;
 - Inform your doctor of recent travel to a malaria risk area;
 - Owner should closely monitor performance of these Malaria control programs.

Legionella bacteria

Water systems may support the growth of legionella bacteria. These bacteria can enter the human body when contaminated water is inhaled as a spray, and may cause infection in the form of

Pontiac Fever or Legionnaires 'disease. Known sources of legionella-contaminated water on construction sites, which may lead to infection, include:

- ▶ Domestic water storage tanks;
- ▶ Pipe work including dead legs and intermittently used water services;
- ▶ Personal and safety showers, pipe work and heads;
- ▶ Fire water and other water storage tanks;
- ▶ Water supplies used for suppressing road dust etc.;
- ▶ Water cooling systems for air conditioners;
- ▶ Water jetting equipment

The Contractor shall appoint a competent person to assess the risk of legionella and to implement the control measures.

Pest and Insect Control

Typical pests are flies, mosquitoes, rats and snakes. Effective cleaning and good housekeeping of worksite and workers camps is the basis of any pest control programme. The Contractor shall employ a specialist Subcontractor to provide a pest control service for the worksite and workers camp, to the Contractor's specification.

Ergonomic Hazards

The use of good manual handling and lifting techniques for construction materials minimises back and other related injuries. The Contractor shall therefore instruct workers in correct posture and lifting techniques.

Psychological Hazards

Work Plan and Organisation

The Contractor needs to be assured that all relevant and appropriate good working practices are being followed. To plan the work so as to maximise efficiency and so as to optimise human efforts the following shall be considered:

- ▶ Work cycles/shift work, taking account of local legislation
- ▶ Circadian (daily) rhythms of the working population

Working Hours and Working Cycles

Regular long working hours and shift work can promote fatigue. Fatigue can lead to reduced mental function and vigilance. As a result, there will be an increased likelihood of accidents and ill health. Most construction activities carry a safety risk and this shall not be aggravated by serious

fatigue because of excessive overtime. As a minimum, the Contractor shall follow local legislation and ILO/UN recommendations on maximum working hours. The Contractor shall assess all the risks associated with the extended working hours and shift cycles and shall agree with the Owner the working hours and working cycles to be applied on the specific project. The Contractor shall set up a system to monitor that Subcontractors are also following the agreed working cycles.

Recommendations for night time work

- ▶ Site personnel responsibility: It should be determined and stated clearly in the OHS management plan the responsibility of each individual at construction site for night time works. Project Manager, Engineers, Designers, Safety Officer and Site Supervisors as well as workers each have their specific responsibility to make sure the highest level of priority are given towards safety and health issues.
- ▶ Permission to work at night should be obtained from the relevant authority before construction works at night is carried out.
- ▶ Safety equipment: Before night works are carried out, the contractor (verified by CSQC) should check the inventory of safety equipment to make sure they are sufficiently available, appropriate, and in good working condition. Equipment's such as retro-reflective signage, barriers, retro reflective tapes and lighting equipment are some example of safety equipment that should be provided for night time construction works.
- ▶ Emergency Preparedness and Response (EPR): One of the most important elements to consider before work at night is carried out is the EPR specifically for night time environment to prepare for response should a disaster occur.
- ▶ Working hours & manpower arrangement: Contractors should identify at which construction phase the need for night time work is required and allow for shift rotation and inform workers of the "special" hazards and risks at night to allow effective adaptation with the work environment.

The following measures should be considered in cases where night time work is involved.

- ▶ All the signages and barricades will be maintained properly and kept clean, barricades should contain reflector.
- ▶ Proper lighting arrangements for illuminating these signs will be made during the night hours. Night time construction lighting arrangements have an impact on project safety, quality, cost, and productivity and influences human performance and alertness.
- ▶ It is also recommended to send workers for health screening to make sure the workers are fit to work at night. Allowing an unfit worker to work at night will endanger the worker and other worker in the same work area.
- ▶ All traffic control devices will be clearly visible by day and night, at these speeds and under the usually prevailing climatic conditions. Traffic cones and cylinders will be reflectorized for use at night and will never be placed in the roadway without advance warning signs.

- ▶ When overhead crane is operating near the public, clear off the area and make sure adequate supervision is in place.
- ▶ Road danger lamps will be placed at the ends of the barriers at night.
- ▶ At night, lanterns with red light will be placed at the drums for delineation.
- ▶ Prismatic Retro reflective Sheeting can be used to enhance the visibility of traffic control signs and objects under all driving conditions, day and night.
- ▶ Noise barriers (absorptive type noise barriers, either alone or in combination with reflective type), will be created near sensitive noise receptors and construction site.
- ▶ Arrange noisy equipment or machinery at farthest point from the public or adopt an engineering control to reduce the noise.
- ▶ Communication informing the night time construction to nearby residential area before start of construction.

Monitoring of Health Performance and Incident Reporting & Investigation

The Contractor shall have health monitoring systems in place. A medical file shall be kept for each employee. This file should include details of the pre-employment fitness to work assessment, details of any subsequent first aid treatments or clinic visits, and details of any medical surveillance that may be undertaken. The Contractor shall monitor:

- ▶ Injury
- ▶ Accident – causes
- ▶ Death
- ▶ Occupational illness cases and frequency;
- ▶ First aid treatment cases;
- ▶ Number of individuals' undergoing medical surveillance;
- ▶ Number of health audits;
- ▶ Number of health-related training courses;
- ▶ There may be a requirement to monitor and report specific illnesses, if required by the specific health management plan.

Contractors shall investigate health incidents and non-accidental deaths, involving their staff in the same way as they are expected to investigate and report safety incidents. This parameter will be submitted as part of environmental monitoring plan.

Fitness to Work

The Contractor shall identify all worker groups whose specific work or working conditions require a minimum fitness for duty standard.

Local Health Facilities and Medical Emergency Response

- ▶ The Contractor shall provide access to suitably equipped and staffed hospitals.
- ▶ The Contractor shall provide medical centre and first aid arrangements that comply with the Medical Emergency Guidelines. Particular attention shall be paid to ensuring that the required first aid response times are achieved and should be verified by drills.
- ▶ The Contractor shall develop a site-specific plan based on the health risk assessment, which describes the response to various medical emergency scenarios and medical evacuation procedures. The Contractor shall arrange for regular drills to practice and learn from the various emergency scenarios.

ANNEXURE XVIII: GUIDANCE ON PREPARING WASTE MANAGEMENT PLAN

Debris and wastegenerated through demolition and construction projects pose significant challenges health, safety and liveability in urban areas. Lack of comprehensive waste management can have negative impacts on affected populations such as (i) hindering access (ii) encouraging uncontrolled dumping (iii) public health risks; and (iv) hazardous waste risks to peoples' health and the environment. If construction waste and debris are disposed of improperly, they may also cause future hardships for the towns and cities where JMDP sub projects will be implemented. There is also scope to reuse debris which can contribute to a reduction in natural resource extraction. For this purpose, a guidance has been prepared for JUIDCo to utilize in all future JMDP sub projects. The contractors team should prepare a Comprehensive Waste Management Plan to be submitted to JUIDCO and it should comprise the following details:

- ▶ Categorization of waste into degradable, biodegradable and hazardous categories and list of different types of waste that falls in each of these categories.
- ▶ Estimates about the quantity of waste generated in each category and type of storage units required.
- ▶ Detail the provisions for storage and handling of waste until disposed.
- ▶ A plan of the respective camps / areas like construction camp, labour camp etc. to be submitted indicating in it the space allocated for storage and handling of wastes.
- ▶ Detail the precautions to be taken while storing, handling and disposing each type of waste, trainings to be imparted to workers to create awareness about waste management.
- ▶ Details of each debris disposal site: Copy of approved site identification report along with location plan showing the debris disposal sites, site, its survey no., access road, project stretch, distance from the project stretch, surrounding features and land use like residences, agricultural land, water bodies etc., photograph of the site showing the topography and other existing features.

Precautions to be adopted during disposal of debris/waste material

The contractor shall take the following precautions during transportation and disposal of debris/waste material:

- ▶ A register should be kept for recording the details of the waste generated and their disposal.
- ▶ The contractor will take full care to ensure that public or private properties are not damaged/ affected during the site clearance for disposal of debris and the traffic is not interrupted.

- ▶ All arrangements for transportation during dismantling and clearing debris, considered incidental to the work, will be implemented by contractor in a planned manner as approved and directed by JUIDCO.
- ▶ In the event of any accidental spill or spread of wastes onto adjacent parcels of land, the contractor will immediately remove all such waste material/s and restore the affected area to its original state to the satisfaction of JUIDCO.
- ▶ Contractor should ensure that any spoils/materials unsuitable shall not be disposed off near any water course; water body; agricultural land; natural habitats like grass lands, wet lands, flood plains, forests etc. pasture; eroded slopes; and in ditches, which may pollute the surrounding including water sources.
- ▶ Contractor should ensure effective water sprinkling during the handling and transportation of materials where dust is likely to be created.
- ▶ Contractor Materials having the potential to produce dust will not be loaded beyond the side and tail board level and will be covered with a tarpaulin in good condition. •
- ▶ Any diversion required for traffic during disposal of debris shall be provided with traffic control signals and barriers after discussion with the local body and as approved by JUIDCO.
- ▶ During the debris disposal, Contractor will take care of surrounding features and avoid any damage to trees and properties
- ▶ No hazardous and contagious waste material shall be disposed at such locations.

Waste Disposal from Labour Camp

- ▶ Concrete flooring and oil interceptors should be provided for hot mix plant area, workshops, vehicle washing and fuel handling area.
- ▶ Petroleum, oil and lubricants waste shall be stored safely in separate containers and should be disposed off by transfer only to recycler/ re-refiners possessing valid authorization from the Jharkhand State Pollution Control Board.
- ▶ Used lead batteries, if any, should be disposed as per the Batteries (Management and Handling) Rules 2001.
- ▶ Water separated and collected from oil interceptor should be reused for dust suppression.
- ▶ There should be a register to record the details of the oil wastes generated at the workshops and oil storage areas.
- ▶ The municipal waste from the labour camp will only be routed through proper collection and handover to local municipal body for further disposal.
- ▶ No incineration or burning of wastes shall be carried out.
- ▶ Discarded plastic bags, paper and paper products, bottles, packaging material, gunny bags, hessian, metal containers, strips and scraps of metal, PVC pipes, rubber and poly urethane

foam, auto mobile spares, tubes, tires, belts, filters, waste oil, drums and other such materials shall be either reused or will be sold /given out for recycling.

- ▶ Septic tank must be provided for toilets and the sludge should be cleared by municipal exhausters.

Disposal of bituminous waste

- ▶ The bituminous waste should be used for development of roads inside the construction camps, haul roads or for filling pot holes in rural roads.
- ▶ At locations identified for disposal of residual bituminous wastes, the disposal will be carried out over a 60 mm thick layer of rammed clay so as to eliminate the possibility of leaching of wastes into the ground water.
- ▶ The Contractor will suitably dispose off unutilized non-toxic debris either through filling up of borrows areas located in wasteland or at pre-designated disposal sites, subject to the approval of JUIDCO.
- ▶ Debris generated from pile driving or other construction activities along the rivers and streams drainage channels shall be carefully disposed in such a manner that it does not flow into the surface water bodies or form puddles in the area.

Disposal of non-bituminous waste

- ▶ Non-bituminous wastes other than fly ash may be dumped in borrow pits (preferably located in barren lands) where such borrow pits are not suitable to be re-developed as an economic source like pisci-culture or a source of irrigation.
- ▶ Such borrow pits can be filled up with non-bitumen wastes and then covered with a minimum 30cm layer of the soil, where plantation of trees and shrubs will be taken-up by the Concessionaire as a part of site rehabilitation.
- ▶ Local tree species suitable for such re-habitation work shall be selected in consultation with local community.

Reuse of debris generated from dismantling structures and road surface

- ▶ Debris generated due to the dismantling of existing road will be suitably reused in the proposed construction as follows
- ▶ Eighty percent (80%) of the sub-grade excavated from the existing road surface, excluding the scarified layer of bitumen, shall be reused in the civil works after improving the soil below the subgrade through addition of sand and suitable cementing material for qualitative upgradation.

- ▶ The dismantled scraps of bitumen will be utilized for the paving of cross roads, access roads and paving works in construction sites and campus, temporary traffic diversions, haulage routes, parking areas along the corridor or in any other manner approved by the JUIDCO.

Criteria for land selection for disposal of construction debris

For the purpose of disposal of debris, dumping sites need to be selected. The criteria for selection of dumping sites include:

- ▶ No residential areas are located downwind side of these locations
- ▶ Dumping sites are located at least 1000 m away from sensitive locations;
- ▶ Dumping sites do not contaminate any water sources, rivers etc.; and
- ▶ Dumping sites have adequate capacity equal to the amount of debris generated;
- ▶ Permission from the Village Panchayat and other regulatory authority are to be obtained for the dumping site selected.
- ▶ Sites should be chosen so that it can be suitably rehabilitated
- ▶ Productive lands are to be avoided; and
- ▶ Available waste lands shall be given preference
- ▶ Dumping site should not be forest land
- ▶ EHS requires disposal of inert construction debris only at approved land fill sites for construction sites and not in depressions

ANNEXURE XIX: GUIDELINES FOR MANAGEMENT FOR BORROW AREA

Introduction

Borrow areas cause significant adverse environmental impacts if appropriate mitigation measures are not taken. The scope of this guideline includes measures that are required during JMDP sub-project planning and design stage, pre-construction, construction stage and post construction stage. Management of borrow areas are mainly related only to road construction activities. JUIDCo PMU Environment Specialist will ensure that the entity carrying out the ESIA study will follow the guidelines when preparing a **Borrow Area Management Plan** when required, and the contractors team will follow the provision in these guidelines in management of the borrow areas.

Project Planning and Design Stage

Design measures for reduction in the quantity of the earthwork will have to be undertaken to reduce the quantity of material extracted and consequently decrease the borrow area requirement. Borrow area siting should be in compliance with IRC: 10-1961. The DPR prepared by JUIDCO should be strengthened with (i) Guidelines for locating site of borrow areas (ii) The arrangements to be worked out with the land owner/community for the site and (iii) Sample designs for redevelopment of borrow areas.

Preconstruction Stage

The contractor shall identify the borrow area locations in consultation with the individual owners in case of private lands and the concerned department in case of government lands, after assessing suitability of material. The suitable sites shall be selected and finalized in consultation with the JUIDCO. Borrowing to be avoided on the following areas:

- ▶ Lands close to toe line.
- ▶ Irrigated agricultural lands (In case of necessity for borrowing from such lands, the topsoil shall be preserved in stockpiles.
- ▶ Grazing land.
- ▶ Lands within 0.8km of settlements.
- ▶ Environmentally sensitive areas such as Reserve Forests, Protected Forests, Sanctuary, wetlands. Also, a distance of 500 m should be maintained from such areas.
- ▶ Designated protected areas / forests.
- ▶ Unstable side-hills.
- ▶ Water-bodies.

- ▶ Streams and seepage areas.
- ▶ Areas supporting rare plant/ animal species;
- ▶ Ensure unsuitable soft rock is not prominent within the proposed depth of excavation which will render rehabilitation difficult.

Arrangement of Borrow Areas

The Contractor will work out arrangements for borrowing with the land owner/concerned department. The arrangements will include the redevelopment after completion of borrowing. The arrangements will be verified by JUIDCO to enable redressal of grievances at a later stage of the project. The Engineer of JUIDCO shall approve the borrow area after inspection of the site to verify the reclamation plan and its suitability with the contractor and landowner. The contractor shall commence borrowing soil only after the approval by JUIDCO. The contractor shall submit to JUIDCO the following before beginning work on the borrow areas:

- ▶ Written No-objection certificate of the owner/cultivator;
- ▶ Estimate extent of earth requires
- ▶ Extent of land required and duration of the agreement;
- ▶ Photograph of the site in original condition; and
- ▶ Site redevelopment plan after completion.
- ▶ The depth of excavation should be decided based on natural ground level of the land and the surroundings, and rehabilitation plan. In case higher depth of excavation is agreed with backfilling by unsuitable excavated soil (from roadway), then filling should be adequately compacted except topsoil, which is to be spread on the top most layer. The guidelines for location, depth, size and shape of the borrow areas are available in the following:
 - ▶ MoRTH specification for roads and bridge works of IRC
 - ▶ Guidelines for environmental impact assessment of highway projects, Indian Roads Congress (IRC: 104-1988)
 - ▶ IRC: 10-1961-Recommended practice for borrow pits for road embankments constructed by manual operations
 - ▶ EIA manual of MoEFCC 2010

Documentation of Borrow Pit

The contractor must ensure that following data base must be documented for each identified borrow areas that provide the basis of the redevelopment plan.

- ▶ Chainage along with offset distance;
- ▶ Area (Sq.m);
- ▶ Photograph of the pit from all sides;
- ▶ Type of access/width/kutch/pucca etc from the carriageway;

- ▶ Soil type;
- ▶ Slope/drainage characteristics;
- ▶ Water table of the area or identify from the nearest well, etc;
- ▶ Existing land use, for example barren/agricultural/grazing land;
- ▶ Location/name/population of the nearest settlement from borrow area;
- ▶ Present usage of borrow area; and
- ▶ Community facility in the vicinity of borrow pit

Redevelopment of Borrow Pit

The following checklist provides guidelines in order to ensure that redevelopment of borrow areas must comply with MoRTH, clause 305.2.2.2 and EMP requirement. Borrow areas can be developed as:

- ▶ Ponds (various types) (eg: Drinking Water only; Washing and for other Domestic Chores; Only for Cattle; Mixed Uses etc.) (a large pond can be divided into two parts - each having a defined use)
- ▶ Farmland
- ▶ Water Recharging Zones
- ▶ Pastureland
- ▶ Fish Ponds (pisi-ciculture)
- ▶ Waste disposal Sites (depending upon the location, distance from settlements, pollution risks, safety, associated environmental risks and hazards, regulations/ permissions of
 - ▶ appropriate authority and other such factors)
- ▶ Plantation Zones
- ▶ Recreational Zones (depending upon location, size, potential of the site, willingness of the local bodies to develop it)
- ▶ Wildlife Refuge and Drinking Area (applicable only in case of sensitive environs with appropriate planning and understanding including regulation of depth for safety of animals etc.)

The rehabilitation measures for the borrow areas shall be dependent on the following factors:

- ▶ Land use objectives and agreed post-borrowing activities;
- ▶ Physical aspects (landform stability, erosion, re-establishment of drainage);
- ▶ Biological aspects (species richness, plant density,) for areas of native re vegetation;
- ▶ Water quality and soil standards; and
- ▶ Public safety issues.

Rehabilitation should be simple and maintenance free. Depending on the choice of the individual land owner/community, the contractor shall prepare redevelopment plans for the borrow areas. The options can be: (i) Restoring the productive use of the land (ii) Development of detention ponds in barren areas.

Option I: Suitable in locations with high rainfall and productive areas

Topsoil must be placed, seeded, and mulched within 30 days of final grading if it is within a current growing season or within 30 days of the start of the next growing season. Vegetative material used in reclamation must consist of grasses, legumes, herbaceous, or woody plants or a combination thereof, useful to the community for the fuel and fodder needs. Plants must be planted during the first growing season following the reclamation phase. Selection and use of vegetative cover must take into account soil and site characteristics such as drainage, pH, nutrient availability, and climate to ensure permanent growth. The vegetative cover is acceptable if within one growing season of seeding, the planting of trees and shrubs results in a permanent stand, or regeneration and succession rate, sufficient to assure a 75% survival rate.

Option II: In barren land, the borrow areas can be redeveloped into detention ponds.

These will be doubled up as water bodies and also for removal of sediment from runoff flowing through the ponds. Design of the detention basin depends upon the particle size, settling characteristics, residence time and land area. A minimum of 0.02 mm size particle with a settling velocity of 0.02 cm/sec (assuming specific gravity of solids 2.65) can be settled in the detention basin.

Following parameters are to be observed while setting up a detention pond:

- ▶ Pond should be located at the lowest point in the catchment area. Care should be taken that the horizontal velocity should be less than settling velocity to prevent suspension or erosion of deposited materials.
- ▶ Minimum Effective Flow Path: 5 times the effective width
- ▶ Minimum Free Board: 0.15 m
- ▶ Minimum Free Settling Depth: 0.5 m
- ▶ Minimum Sediments Storage Depth: 0.5 m
- ▶ Maximum interior slope: 2H : 1V
- ▶ Maximum exterior slope: 3H : 1V
- ▶ The inlet structure should be such that incoming flow should distribute across the width of the pond. A pre-treatment sump with a screen should provide to remove coarse sediments. Settled sediment should be removed after each storm event or when the sediment capacity has exceeded 33% of design sediment storage volume. Accumulated sediment must be disposed of in a manner, which will prevent its re-entry into the site drainage system, or into any watercourse.

Construction Area

No borrow area shall be operated without permission of the Engineer. The procurement of borrow material should be in conformity to the guidelines laid down in IRC: 10-1961. In addition, the contractor should adopt precautionary measures to minimise any adverse impacts on the environment. Checklists for monitoring borrow areas operation and management has been prepared

Table 2: Checklists for monitoring borrow areas operation and management

Attributes	Requirements
Access Road	Access road shall be used for hauling only after approved
Top soil preservation	Top soil, if any, shall be stripped and stored at corners of the area before the start of excavation for material collection; Top soil should be reused / re-laid as per agreed plan; In case of riverside, borrow pit should be located not less than 15m from the toe of the bank, distance depending on the magnitude and duration of flood to be withstood.
Depth of excavation	For agricultural land, the total depth of excavation should be limited to 150cm including top 30 cm for top soil preservation; For river side borrow area, the depth of excavation shall be regulated so that the inner edge of any borrow pit, should not be less than 15m from the toe of the bank and bottom of the pit should not cut the imaginary line of 1:4 projected from the edge .The borrow areas will not be dug continuously, and the size and shape of borrow pits will be decided by the Engineer of JUIDCO.
Damage to surrounding land	Movement of man and machinery should be regulated to avoid damage to surrounding land. To prevent damages to adjacent properties, the Contractor shall ensure that an undisturbed buffer zone exists between the distributed borrow areas and adjacent land. Buffer zone shall be 3 m wide or equal to the depth of excavation whichever is greater.
Drainage Control	The Contractor shall maintain erosion and drainage control in the vicinity of all borrow pits and make sure that surface drains do not affect the adjacent land or future reclamation. This needs to be rechecked by the engineer of JUIDCO.
Dust Suppression	Water should be sprayed on haul road twice a day or as may be required to avoid dust generation during transportation of material; Depending on moisture content,

Attributes	Requirements
	0.5 to 1.5% water may be added to excavated soil before loading during dry weather to avoid fugitive dust emission.
Covering material for transport material	Material transport shall be provided with tarpaulin cover
Personal Protective Equipment	Workers should be provided with helmet, gumboots and air mask and their use should be strictly enforced
Redevelopment	The area should be redeveloped within agreed timeframe on completion of material collection as per agreed rehabilitation plan.

Post Construction Stage

All reclamation shall begin within one month of abandonment of borrow area, in accordance with the redevelopment plan. The site shall be inspected by the JUIDCO after implementation of the reclamation plan. Certificate of Completion of Reclamation is to be obtained by the Contractor from the landowner that “the land is restored to his satisfaction”. The final payment shall be made after the verification by JUIDCO.

Checklist for Inspection of Rehabilitation Area

Inspection needs to be carried out by the JUIDCO for overseeing the redevelopment of borrow areas as per the plan. The checklist for the inspection by the JUIDCO is given below:

- ▶ Compliance of post-borrowing activities and land use with the restoration plan
- ▶ Drainage measures taken for inflow and outflow in case borrow pit is developed as a detention pond
- ▶ Levelling of the bottom of the borrow areas
- ▶ In case the borrow area is on private property, the contractor shall procure written letter from landowner for satisfaction on rehabilitation. In case of no rehabilitation is desired by the landowner, the letter should include statement “no responsibility on contractor in the event of accident due to non- rehabilitation”
- ▶ Condition of the reclaimed area in comparison with the pre-borrowing conditions

ANNEXURE XX:SCOPE OF WORKENVIRONMENT SOCIAL HEALTH AND SAFETY SUPERVISION OF CONSTRUCTION WORKS

1. The CSQC team will include a suitably qualified Environment Social Health and safety Specialist (ESHS) to undertake the day-to-day supervision of contractors in all matters concerning compliance with the ESMP, and the occupational health, safety (OHS), Waste Management, Labour Camp Management and care of the works and workers and the community.
2. The Consultant's team may also include a Construction Safety engineer who shall visit the construction site on a regular basis to conduct safety audits to validate the OHS supervision and independently confirm compliance with the Contractor's OHS plan.
3. The PIU's safeguards officers will provide independent oversight and inputs to the CSQC Consultant with regard to all aspects of environmental and social compliance, for the CSQC Consultant to have addressed on the project through their role.
4. The JMDP PMU will undertake at least quarterly inspections of the construction sites, accompanied by the CSQC safeguard specialists. The Environment and Social Specialist shall prepare a joint quarterly report to be agreed by all parties clearly identifying actions to be taken to improve safeguards compliance.
5. Prior to any contractor commencing civil works the CSQC ESHS specialist shall in consultation with the Client and PMU:
 - ▶ Review and Clear the Contractor's ESMP to ensure that it meets that it meets the requirements of: (i) the respective ESMPs; (ii) fully complies with relevant national laws, including any conditions of consent; (iii) meets the World Bank's Environmental, Health and Safety (EHS), and applicable IFC industry Sector Guidelines and environmental and social safeguards policies of WBG
 - ▶ Review and Clear the Contractor's OHS Plan. This shall be consistent with the projects ESMP OHS requirements, as well as the World Bank's EHS guidelines, and applicable IFC industry Sector Guidelines.
6. The ESHS specialist shall report to the PMU safeguards specialists if any changes to project design or construction methods which would trigger an update to the Project ESMP. Changes to works or methods should be assessed against the existing Project Area of Influence (PAI) and whether there is a likely public interest aspect to the changes. If either the PAI (geographically, socially or environmentally) has changed or if

there is a public interest element to the changes then the safeguard instruments shall be updated.

7. Regularly update JUIDCO PIU and PMU on progress with the contractor's applications for permits or consents as relevant under local laws or regulations.
8. Supervising the Contractors labour in all matters concerning occupational health, safety and care of the works and workers, including HIV/AIDS prevention, gender based violence (GBV).
9. Ensure that the contractor is adhering to the day-to-day requirements of the ESMP, the environmental and social safeguard requirements under GoI laws (including conditions of consent), and the World Bank's occupational health, environmental and social safeguards policies.
10. Ensure that any workers camps are established and managed in accordance with the recommendations of the ESMP and the guidance contained in the IFC Guidance Note on Worker's Accommodation.
11. Issue instructions to the Contractor to address any ESMP non-compliance issues.
12. Prepare quarterly safeguard progress reports in an agreed format covering all aspects of the project supervision, including project progress, testing results, occupational health and safety, ESMP compliance, incidents, near misses, summary of grievances / complaints and actions taken, upcoming or potential issues to be any consultation undertaken, relevant training, and compliance with permits and consents.
13. Provide support to contractor, PIU to consult with the communities and stakeholders in accordance with the consultation plan in the ESMP.
14. The Safety Officer is responsible for monitoring and assessing hazardous and unsafe situations and developing measures to assure site safety. The officer will correct unsafe acts or conditions or stop unsafe acts when immediate action is required, and can terminate all imminently dangerous operations immediately. Prepare reports on dangerous occurrences and serious incidents/accidents.
15. The safety officer is in charge of inspecting active work sites to determine if hazards are present and to establish procedures and policies to overcome those hazardous situations. The safety officer looks for broken equipment, defective tools, and other potential hazards, focusing on worker safety. The safety officer determines what type of personal protective equipment (PPE) is needed and makes sure that workers know how to operate and use tools and equipment.

16. The safety officer's main responsibility is to diminish or eliminate work-related accidents which may occur through (a) Usage of faulty equipment and electrical cord extensions (b) fatality and accidents during trenching and excavating (c) working at height, elevated surfaces, and night time. However, if an accident occurs, the safety officer will conduct a safety investigation to determine root causes, what procedures may have gone wrong, and to gather the evidence necessary to identify the cause of the accident. Based on investigation results, the safety officer will document findings and recommendations that should be followed to prevent the accident from happening again.
- 17.

ANNEXURE XXI: CENSUS SURVEY & SOCIO-ECONOMIC SURVEY FORM

The census survey and socio-economic survey form to be used for impact assessment for JMDP project has been presented below:

01 Temporary 02 Semi-permanent 03 Permanent

2.3 Material of the Affected structure

: Floor _____

Wall _____

Roof _____

2.4 Area of structure

: Floor Sqft

: Length along the road ft

: Width perpendicular to the road ft

2.5 Market Value of the Structure

: _____

2.6 Use of the Structure

:

A. Residential Structure

: 01 House 02 Hut

B. Commercial Structure

: 03 Shops 04 Hotel
 05 Small Eatery 06 Kiosk
 07 Farm House 08 Petrol Pump
 09 Clinic 10 STD Booth
 11 Workshop 12 Vendors
 13 Commercial Complex 14 Industry
 15 Restaurant 99 Any Other

C. Mixed Structure

: 16 Residential-cum-Commercial

D. Other Structure

: 29 Boundary Wall 30 Foundation
 31 Gate 32 Well/ Tube

2.7 Any of the following people associated with the Structure?

A. Any Employee

: 01 Yes 02 No

(i) If yes, then how many

:

2.8 Trees within the affected area

: Fruit Non-Fruit Total

2.9 Physical Relocation Required

Yes/ No Temporary Permanent

If Yes: Does PAP have alternate site

Yes/ No

2.10 Number of persons in the family losing livelihood

Remarks,

JHARKHAND URBAN INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED

Socio-Economic Survey

Water Supply Scheme

Date of Survey :

		/			/	2	0	1	7
D	d		M	m		y	y	y	y

Name of the Investigator _____

1.0 GENERAL IDENTIFICATION

1.1 No of the Ward : _____

1.2 Name of District : _____

1.3 Name of the HOH : _____

1.4 Father's/ Spouse's Name : _____

1.5 Name of the Respondent : _____

1.6 Your Community :

01 SC	02 ST
03 OBC	04 General

1.7 If ST or SC, specify _____

1.8 Your Religion :

<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">01</td><td>Hindu</td></tr><tr><td style="width: 20px; height: 20px; text-align: center;">03</td><td>Christian</td></tr><tr><td style="width: 20px; height: 20px; text-align: center;">05</td><td>Jain</td></tr></table>	01	Hindu	03	Christian	05	Jain	<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">02</td><td>Muslim</td></tr><tr><td style="width: 20px; height: 20px; text-align: center;">04</td><td>Buddhist</td></tr><tr><td style="width: 20px; height: 20px; text-align: center;">99</td><td>Others (specify)</td></tr></table>	02	Muslim	04	Buddhist	99	Others (specify)
01	Hindu												
03	Christian												
05	Jain												
02	Muslim												
04	Buddhist												
99	Others (specify)												

1.9 Vulnerability :

<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">01</td><td>BPL</td></tr><tr><td style="width: 20px; height: 20px; text-align: center;">03</td><td>Lonely Oldage</td></tr></table>	01	BPL	03	Lonely Oldage	<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">02</td><td>WHH</td></tr><tr><td style="width: 20px; height: 20px; text-align: center;">04</td><td>PCH</td></tr></table>	02	WHH	04	PCH
01	BPL								
03	Lonely Oldage								
02	WHH								
04	PCH								

1.10 Family Type :

<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">01</td><td>Nuclear</td></tr><tr><td style="width: 20px; height: 20px; text-align: center;">03</td><td>Extended</td></tr></table>	01	Nuclear	03	Extended	<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">02</td><td>Joint</td></tr></table>	02	Joint
01	Nuclear						
03	Extended						
02	Joint						

1.11 Family Size :

<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td>Male</td></tr></table>		Male	<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px;"></td><td>Female</td></tr></table>		Female
	Male				
	Female				

1.12 Utility paid for :

<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">01</td><td>Electricity</td></tr><tr><td style="width: 20px; height: 20px; text-align: center;">03</td><td>Sewerage</td></tr></table>	01	Electricity	03	Sewerage	<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">02</td><td>Water</td></tr><tr><td style="width: 20px; height: 20px; text-align: center;">99</td><td>Others</td></tr></table>	02	Water	99	Others
01	Electricity								
03	Sewerage								
02	Water								
99	Others								

1.13 Type of House :

<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">01</td><td>Permanent</td></tr><tr><td style="width: 20px; height: 20px; text-align: center;">03</td><td>Temporary</td></tr></table>	01	Permanent	03	Temporary	<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">02</td><td>Semi-Permanent</td></tr></table>	02	Semi-Permanent
01	Permanent						
03	Temporary						
02	Semi-Permanent						

1.14 Ownership of House :

<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">01</td><td>Own</td></tr></table>	01	Own	<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">02</td><td>Rented</td></tr></table>	02	Rented
01	Own				
02	Rented				

1.15 Electricity :

<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">01</td><td>Yes</td></tr></table>	01	Yes	<table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="width: 20px; height: 20px; text-align: center;">02</td><td>No</td></tr></table>	02	No
01	Yes				
02	No				

CODE LIST FOR DEMOGRAPHY

Column 3	Relation with the Head of the Household	01 Self	02 Spouse	03 Parents
	04 Brother/ Sister	05 Son/ Daughter	06 Son/ Daughter-in-law	
	07 Nephew/ Niece	08 Grand Son/ Grand Daughter	09 Uncle/ Aunt	
	10 Grand Father/ Grand Mother	11 Father/ Mother-in-law	12 Brother/ Sister-in-law	
	13 Grandson/ Grand Daughter in law		99 Others, specify	
Column 4	Sex	01 Male	02 Female	
Column 6	Marital status	01 Married	02 Unmarried	03 Widow/ Widower/ Separated
Column 7	Education	01 Illiterate	02 Informally Literate (without attending school)	03 Primary Educated (upto Class 5)
	04 Middle Educated (upto Class 8)	05 Secondary Educated (upto Class 10)	06 Higher Secondary Educated (upto Class 12)	
	07 Graduate	08 Post Graduate	09 Professional Diploma/ Trade Certificate	
	10 Professional Degree (Doctor, Engineer etc.)	11 Child (< 6 yrs.)	99 Others, specify	
Column 8	Differently Able	01 Physically	02 Mentally	
Column 9	Occupation	01 Cultivation	02 Agricultural Labour	03 Allied agricultural activities (forestry/ fishing/ grazing)
	04 Unskilled Labour (daily waged)	05 Government/ Panchayet/ Municipal Service	06 Private Service	
	07 Skilled Labour	08 Self Employed/ Professional (mention)	09 Traditional HH Industries	
	10 Trade & Business	11 Employee in Mining Sector	12 Employee of other shop/business	
	13 Masonry	14 Computer Hardware/ Software	15 Rickshaw Puller/Auto Rickshaw driver	
	16 Household Maid/Assistants	17 Private Tuition	18 Money Lender	
	19 Pension/ Earnings from remittances	20 Unemployed (>18 Yrs.)	21 Student	
	22 Housewife			

2.0 Demography

1	2	3	4	5	6	7	8	9		10		Skill	Voter ID	Adhaar no	Bank A/C	
Sl.	Name of the members of the Family (IN BLOCK CAPITAL)	Relation with HOH	Sex	Age	Marital status	Education	Differently able	Occupational Status	Main	Subsidiary	Annual Income	Main	Subsidiary	Rs.	Rs.	
No	Name	Code	Code	Yrs.	Code	Code	Code	Code	Code	Code	Rs.	Code	Code	Rs.		
		01														

Please see Clarifications & the Codes for different Columns in the previous page

3.0 POSSESSION OF MATERIAL/ ASSETS (PLEASE RECORD NUMBERS)

TV	Tape Recorder	Fan	Refrigerator	Phone	Vehicles				AC	LPG	Land	W/machine
					Cycles	Two Wheeler	Three Wheeler	Four Wheeler				

4.0 Expenditure of HH/month:

Items	Amount
1. Food	
2. Education	
3. Travel/ transportation	
4. Health	
5. Clothes	
6. Religious practices	
7. Water Charges, if any:	
8. Electricity Bill:	
9. Payment of loan / borrowing	
10. Any other (specify)	

5.0 DECISION MAKING AND PARTICIPATION AT HOUSEHOLD LEVEL (PLEASE TICK)

Sl.	Subject	Male	Female	Both
1	Financial Matter			
2	Education of Child			
3	Healthcare of Child			
4	Purchase of assets			
5	Day to day household activities			
6	On social function and marriages			
7	Women to Earn for Family			
8	Land and property			

6.0 WOMEN PARTICIPATION AT COMMUNITY LEVEL

- 6.1 Do women participate in Community decisions :
01 Yes 02 No
- 6.2 Any member of any active Self Help Group (SHG) :
01 Male 02 Female
03 Both 04 None
- 6.3 Are you of the opinion that men and women enjoy the same status in your community? :
01 Yes 02 No
- 6.3 What are some of the differences that strike you in particular? :
01 Yes 02 No

1. Women are not consulted for major decisions		8. Low priority is given to women's education	
2. All economic decisions are made by men		9. Mainly men are responsible for earning	
3. Women not considered important in decision making		10. Women are allowed to attend public meetings and gatherings	
4. Women are under male dominance		11. Men lack the attitude to help women in domestic chores	
5. Women have to take permission from men to go out of house		12. Men do not like to give liberty to women	
6. Domestic violence exists in many families		Others (specify)	
7. Girls are not consulted before marriage			

6.4 If men and women were asked to rank their needs in order of priority, how would they do it?

	Household latrine	Food	Good health care	Drinking water	Education	Bathing enclosure	Employment
Women							
Men							

7 LOAN AND INDEBTEDNESS (FOR LAST ONE YEAR)

- 7.1 Have you taken any loan in last year :
01 Yes 02 No
- 7.2 If yes, who has taken the loan : Use Code from Code List of Column 3 of Demography
- 7.3 If yes, the source of the loan :
01 Bank 02 Cooperative
03 NGO 04 SHG
05 Pvt. Money Lender 06 Relative/ Friend
- 7.4 The purpose of the Loan :
01 Productive Investment 02 Purchasing durables
03 Emergency 04 Social Events
05 Paying off other loans 99 Others

7.5 What percentage of loan repaid :

7.6 Benefits perceived from the sub projects _____

7.7 Likely type(s) of distress perceived by PAP _____

8.1 Visual assessment of HH by interviewer

: Very poor Poor
 Middle Upper middle
 Rich

8.2 Livestock possessed (Name and no.):

Cow Goat
 Buffalo Poultry
Any other _____

8.3 Sanitation

Open In-house pit latrine
 In-house septic tank Common public latrine
 Any other

8.4 Water supply

Piped Common overhead tank
 Stand post Open well
 Common well Bore well
 Hand pump

8.5 Do your HH members fall ill often? If yes

Type of illness	Generally during which months	Do you think it is a water related disease (yes/no)	Does it result in work loss?

9.0 In your opinion does the amount of availability of water affect men and women differently? Specify

9.1 What water sources are usually used for the following purposes? [√ on relevant answers]

	Piped water	Tube well	Pond	River/canal	Other(Specify)
1. Bathing					
2. Drinking					
2. Water for cooking					
3. Bathing cattle					
4. Watering plants					
5. Washing utensils					
6. Washing clothes					

7. Others specify					
-------------------	--	--	--	--	--

9.2 For HHs without piped water supply at home, please enquire

i. Who takes care of water in the family :	
ii. From where is water fetched and what is the distance of the source	
iii. How much time is spent on fetching water:	
iv. How much per month is spent on water:	

9.3 Perceived benefits of household water supply project:

9.4 Likely type(s) of distress perceived due to project:

STORM WATER DRAINAGE Socio-Economic Survey

Unique Identification No. (UIN) : _____

Date of Survey :

		/			/	2	0	1	7
d	d		M	m		y	y	y	y

Name of the Investigator _____

1.0 GENERAL IDENTIFICATION

1.1 No of the Ward : _____

1.2 Name of District : _____

1.3 Name of the HOH : _____

1.4 Father's/ Spouse's Name : _____

1.5 Name of the Respondent : _____

1.6 Your Community :

01 SC	02 ST
03 OBC	04 General

1.7 Your Religion :

<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">01</td></tr></table> Hindu	01	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">02</td></tr></table> Muslim	02
01			
02			
<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">03</td></tr></table> Christian	03	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">04</td></tr></table> Buddhist	04
03			
04			
<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">05</td></tr></table> Jain	05	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">99</td></tr></table> Others (specify)	99
05			
99			

1.8 Vulnerability :

<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">01</td></tr></table> BPL	01	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">02</td></tr></table> WHH	02
01			
02			
<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">03</td></tr></table> Lonely Oldage	03	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">04</td></tr></table> PCH	04
03			
04			

1.9 Family Type :

<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">01</td></tr></table> Nuclear	01	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">02</td></tr></table> Joint	02
01			
02			
<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">03</td></tr></table> Extended	03		
03			

1.10 Family Size :

<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;"></td></tr></table> Male		<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;"></td></tr></table> Female	

1.11 Utility paid for :

<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">01</td></tr></table> Electricity	01	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">02</td></tr></table> Water	02
01			
02			
<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">03</td></tr></table> Sewerage	03	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">99</td></tr></table> Others	99
03			
99			

1.12 Type of House :

<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">01</td></tr></table> Permanent	01	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">02</td></tr></table> Semi-Permanent	02
01			
02			
<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">03</td></tr></table> Temporary	03		
03			

1.13 Ownership of House :

<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">01</td></tr></table> Own	01	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">02</td></tr></table> Rented	02
01			
02			

1.14 Electricity :

<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">01</td></tr></table> Yes	01	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"><tr><td style="width: 20px; height: 20px;">02</td></tr></table> No	02
01			
02			

CODE LIST FOR DEMOGRAPHY

Column	Code	Description	Code	Description	Code	Description
Column 3	01	Self	02	Spouse	03	Parents
	04	Brother/ Sister	05	Son/ Daughter	06	Son/ Daughter-in-law
	07	Nephew/ Niece	08	Grand Son/ Grand Daughter	09	Uncle/ Aunt
	10	Grand Father/ Grand Mother	11	Father/ Mother-in-law	12	Brother/ Sister-in-law
	13	Grandson/ Grand Daughter in law			99	Others, specify
Column 4	Sex					
Column 6	01	Male	02	Female		
	01	Married	02	Unmarried	03	Widow/ Widower/ Separated
Column 7	01	Illiterate	02	Informally Literate (without attending school)	03	Primary Educated (upto Class 5)
	04	Middle Educated (upto Class 8)	05	Secondary Educated (upto Class 10)	06	Higher Secondary Educated (upto Class 12)
	07	Graduate	08	Post Graduate	09	Professional Diploma/ Trade Certificate
	10	Professional Degree (Doctor, Engineer etc.)	11	Child (< 6 yrs.)	99	Others, specify
Column 8	Differently Able					
Column 9	01	Physically	02	Mentally		
	01	Cultivation	02	Agricultural Labour	03	Allied agricultural activities (forestry/ fishing/ grazing)
	04	Unskilled Labour (daily waged)	05	Government/ Panchayet/ Municipal Service	06	Private Service
	07	Skilled Labour	08	Self Employed/ Professional (mention)	09	Traditional HH Industries
	10	Trade & Business	11	Employee in Mining Sector	12	Employee of other shop/business
	13	Masonry	14	Computer Hardware/ Software	15	Rickshaw Puller/Auto Rickshaw driver
	16	Household Maid/Assistants	17	Private Tuition	18	Money Lender
	19	Pension/ Earnings from remittances	20	Unemployed (>18 Yrs.)	21	Student
	22	Housewife				

2.0 Demography

Sl. No	2 Name of the members of the Family (IN BLOCK CAPITAL)	3 Relation with HOH	4 Sex	5 Age	6 Marital status	7 Education	8 Differently able	9		10		Skill	Voter ID	Adhaar no	Bank A/C	
								Occupational Status	Occupational Code	Main	Subsidiary					Main

Please see Clarifications & the Codes for different Columns in the previous page

3.0 POSSESSION OF MATERIAL/ ASSETS (PLEASE RECORD NUMBERS)

TV	Tape Recorder	Fan	Refrigerator	Phone	Vehicles				AC	LPG	Land	W/machine
					Cycles	Two Wheeler	Three Wheeler	Four Wheeler				

4.0 Expenditure of HH/month:

Items	Amount
1. Food	
2. Education	
3. Travel/ transportation	
4. Health	
5. Clothes	
6. Religious practices	
7. Water Charges, if any:	
8. Electricity Bill:	
9. Payment of loan / borrowing	
10. Any other (specify)	

5.0 DECISION MAKING AND PARTICIPATION AT HOUSEHOLD LEVEL (PLEASE TICK)

Sl.	Subject	Male	Female	Both
1	Financial Matter			
2	Education of Child			
3	Healthcare of Child			
4	Purchase of assets			
5	Day to day household activities			
6	On social function and marriages			
7	Women to Earn for Family			
8	Land and property			

6.0 WOMEN PARTICIPATION AT COMMUNITY LEVEL

- 6.1 Do women participate in Community decisions :
01 Yes 02 No
- 6.2 Any member of any active Self Help Group (SHG) :
01 Male 02 Female
03 Both 04 None
- 6.3 Are you of the opinion that men and women enjoy the same status in your community? :
01 Yes 02 No
- 6.4 What are some of the differences that strike you in particular? :
01 Yes 02 No

1. Women are not consulted for major decisions		8. Low priority is given to women's education	
2. All economic decisions are made by men		9. Mainly men are responsible for earning	
3. Women not considered important in decision making		10. Women are allowed to attend public meetings and gatherings	
4. Women are under male dominance		11. Men lack the attitude to help women in domestic chores	

5. Women have to take permission from men to go out of house		12. Men do not like to give liberty to women	
6. Domestic violence exists in many families		Others (specify)	
7. Girls are not consulted before marriage			

6.5 If men and women were asked to rank their needs in order of priority, how would they do it?

	Household latrine	Food	Good health care	Drinking water	Education	Bathing enclosure	Employment
Women							
Men							

7 LOAN AND INDEBTEDNESS (FOR LAST ONE YEAR)

7.1 Have you taken any loan in last year :

01 Yes 02 No

7.2 If yes, who has taken the loan :

Use Code from Code List of Column 3 of Demography

7.3 If yes, the source of the loan :

01 Bank 02 Cooperative
03 NGO 04 SHG
05 Pvt. Money Lender 06 Relative/ Friend

7.4 The purpose of the Loan :

01 Productive Investment 02 Purchasing durables
03 Emergency 04 Social Events
05 Paying off other loans 99 Others

7.5 What percentage of loan repaid :

7.6 Benefits perceived from the sub projects

7.7 Likely type(s) of distress perceived by PAP

8.1 Visual assessment of HH by interviewer :

Very poor Poor
 Middle Upper middle
 Rich

8.2 Livestock possessed (Name and no.):

Cow Goat
 Buffalo Poultry

Any other

8.3 Sanitation

Open In-house pit latrine
 In-house septic tank Common public latrine
 Any other

8.4 Water supply

Piped Common overhead tank
 Stand post Open well
 Common well Bore well
 Hand pump

- 9.1 The type of drainage facility in the village : _____
- 9.2 Does overflowing of current drain occur.
Maximum in which season : _____
- 9.3 Problem faced due to the drainage : _____
- 9.4 Is there health risk posed due to the current drainage :

--	--

 01 Yes 02 No
- 9.5 In last 10 years, how many times has your property flooded to some extent? _____
Does the drain flood nearby houses or only street
- 9.6 street _____
- 9.7 During the worst event, how long did it take for the water to drain away? _____
- 9.8 Are there existing drainage easements on your property? :

--	--

 01 Yes 02 No
- 9.9 How did the water enter the structure ? _____
- 9.10 Did you notice any sanitary sewer odours from the flood water :

--	--

 01 Yes 02 No
- 9.11 The drainage system in my area is full of sediment from: _____
- 9.12 Storm water causes flooding my area because the existing drainage system is: _____
- 9.13 Having toilets at home : _____
- 9.14 Sewerage option : _____
- 9.15 Availability of potable Drinking Water : _____
- 9.16 Do you know about the swach bharat mission/subsidized toilet/availability of potable Drinking Water: _____

9.18 Perceived benefits of household water supply project:

9.19 Likely type(s) of distress perceived due to project:

URBAN ROAD PROJECTS JUIDCO

Socio-Economic Survey

Unique Identification No. (UIN) : _____

Date of Survey :

		/			/	2	0	1	7
D	d		M	m		y	y	y	y

Name of the Investigator _____

1.0 GENERAL IDENTIFICATION

1.1 No of the Ward : _____

1.2 Name of District : _____

1.3 Name of the HOH : _____

1.4 Father's/ Spouse's Name : _____

1.5 Name of the Respondent : _____

1.6 Your Community :

<input type="checkbox"/> 01 SC	<input type="checkbox"/> 02 ST
<input type="checkbox"/> 03 OBC	<input type="checkbox"/> 04 General

1.7 Your Religion :

<input type="checkbox"/> 01 Hindu	<input type="checkbox"/> 02 Muslim
<input type="checkbox"/> 03 Christian	<input type="checkbox"/> 04 Buddhist
<input type="checkbox"/> 05 Jain	<input type="checkbox"/> 99 Others (specify)

1.8 Vulnerability :

<input type="checkbox"/> 01 BPL	<input type="checkbox"/> 02 WHH
<input type="checkbox"/> 03 Lonely Oldage	<input type="checkbox"/> 04 PCH

1.9 Family Type :

<input type="checkbox"/> 01 Nuclear	<input type="checkbox"/> 02 Joint
<input type="checkbox"/> 03 Extended	

1.10 Family Size :

<input type="checkbox"/> Male	<input type="checkbox"/> Female
-------------------------------	---------------------------------

1.11 Utility paid for :

<input type="checkbox"/> 01 Electricity	<input type="checkbox"/> 02 Water
<input type="checkbox"/> 03 Sewerage	<input type="checkbox"/> 99 Others

1.12 Type of House :

<input type="checkbox"/> 01 Permanent	<input type="checkbox"/> 02 Semi-Permanent
<input type="checkbox"/> 03 Temporary	

1.13 Ownership of House :

<input type="checkbox"/> 01 Own	<input type="checkbox"/> 02 Rented
---------------------------------	------------------------------------

1.14 Electricity :

<input type="checkbox"/> 01 Yes	<input type="checkbox"/> 02 No
---------------------------------	--------------------------------

Code List For Demography

Column 3	Relation with the Head of the Household				
	01 Self	02	02	03	Parents
	04 Brother/ Sister	05	05	06	Son/ Daughter-in-law
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	01 Male	02	02		
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	01 Physically	02	02		
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	01 Cultivation	02	02	03	Allied agricultural activities (forestry/ fishing/ grazing)
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	07 Skilled Labour	08	08	09	Traditional HH Industries
	10 Trade & Business	11	11	12	Employee of other shop/business
	13 Masonry	14	14	15	Rickshaw Puller/Auto Rickshaw driver
	16 Household Maid/Assistants	17	17	18	Money Lender
	19 Pension/ Earnings from remittances	20	20	21	Student
	22 Housewife				

2.0 DEMOGRAPHY

1	2 Name of the members of the Family (IN BLOCK CAPITAL)	3 Relation with HOH	4 Sex	5 Age	6 Marital status	7 Education	8 Differently able	9		10		Skill	Voter ID	Adhaar no	Bank A/C		
								Occupational Status	Annual Income								
Sl.	No	Code	Code	Yrs.	Code	Code	Code	Main	Subsidiary	Main	Subsidiary	Rs.	Rs.				

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3.0 POSSESSION OF MATERIAL/ ASSETS (PLEASE RECORD NUMBERS)

TV	Tape Recorder	Fan	Refrigerator	Phone	Vehicles				AC	LPG	Land	W/machine
					Cycles	Two Wheeler	Three Wheeler	Four Wheeler				

4.0 Expenditure of HH/month:

Items	Amount
1. Food	
2. Education	
3. Travel/ transportation	
4. Health	
5. Clothes	
6. Religious practices	
7. Water Charges, if any:	
8. Electricity Bill:	
9. Payment of loan / borrowing	
10. Any other (specify)	

5.0 DECISION MAKING AND PARTICIPATION AT HOUSEHOLD LEVEL (PLEASE TICK)

Sl.	Subject	Male	Female	Both
1	Financial Matter			
2	Education of Child			
3	Healthcare of Child			
4	Purchase of assets			
5	Day to day household activities			
6	On social function and marriages			
7	Women to Earn for Family			
8	Land and property			

6.0 WOMEN PARTICIPATION AT COMMUNITY LEVEL

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men		earning	
3. Women not considered important in decision making		10. Women are allowed to attend public meetings and gatherings	
4. Women are under male dominance		11. Men lack the attitude to help women in domestic chores	
5. Women have to take permission from men to go out of house		12. Men do not like to give liberty to women	
6. Domestic violence exists in many families		Others (specify)	
7. Girls are not consulted before marriage			

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Men							

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8.1 Visual assessment of HH by interviewer : Very poor Poor
 Middle Upper middle
 Rich

8.2 Livestock possessed (Name and no.):

Cow
Buffalo

Goat
Poultry

Any other _____

8.3 Sanitation

Open

In-house septic tank

Any other

In-house pit latrine

Common public latrine

8.4 Water supply

Piped

Stand post

Common well

Hand pump

Common overhead tank

Open well

Bore well

9.1 The type of Road facility in the Cluster :

9.2 Does flooding of current road occur. Maximum in which season :

9.3 Problem faced due to the road :

9.4 Is there safety risk possessed due to the current road :

01 Yes

02 No

9.5 In last 10 years, how many times you have accident and to what extent?

9.6 Does the drain flood nearby houses or only street

9.7 During the worst event, how long did it take for the water to drain away?

9.8 Are there existing road easements on your property? :

01 Yes

02 No

9.9 How did the water enter the structure ?

9.1 Did you notice any sanitary sewer odours from the flood water :

01 Yes

02 No

9.1 The road system in the area is full of parking from time: :

9.1 Storm water causes flooding my area because the existing drainage system is: :

9.1 Having toilets at home 3 :

9.1 Sewerage option 4 :

9.1
5 Availability of potable Drinking Water :

9.1 Do you know about the swach bharat
6 mission/subsidized toilet/availability of
potable Drinking Water:

9.18 Perceived benefits of household road project:

9.19 Likely type(s) of distress perceived due to project:

JUIDCO SEWERAGE PROJECT

JHARKHAND

Socio-Economic Survey

Unique Identification No. (UIN) :

Date of Survey :

		/			/	2	0	1	7
d	d		M	m		y	y	y	y

Name of the Investigator _____

1.0 GENERAL IDENTIFICATION

1.1 No of the Ward : _____

1.2 Name of District : _____

1.3 Name of the HOH : _____

1.4 Father's/ Spouse's Name : _____

1.5 Name of the Respondent : _____

1.6 Your Community :

01	SC		02	ST
03	OBC		04	General

1.7 Your Religion :

01	Hindu		02	Muslim
03	Christian		04	Buddhist
05	Jain		99	Others (specify)

1.8 Vulnerability :

01	BPL		02	WHH
03	Lonely Oldage		04	PCH

1.9 Family Type :

01	Nuclear		02	Joint
03	Extended			

1.10 Family Size :

<input type="checkbox"/>	Male		<input type="checkbox"/>	Female
--------------------------	------	--	--------------------------	--------

1.11 Utility paid for :

01	Electricity		02	Water
03	Sewerage		99	Others

1.12 Type of House :

01	Permanent		02	Semi-Permanent
03	Temporary			

1.13 Ownership of House :

01	Own		02	Rented
----	-----	--	----	--------

1.14 Electricity :

01	Yes		02	No
----	-----	--	----	----

Code List For Demography

Column 3	Relation with the Head of the Household	02 Spouse 05 Son/ Daughter 08 Grand Son/ Grand Daughter 11 Father/ Mother-in-law	03 Parents 06 Son/ Daughter-in-law 09 Uncle/ Aunt 12 Brother/ Sister-in-law 99 Others, specify
Column 4	Sex	02 Female	
Column 6	Marital status	02 Unmarried	03 Widow/ Widower/ Separated
Column 7	Education	02 Illiterate 04 Middle Educated (upto Class 8) 07 Graduate 10 Professional Degree (Doctor, Engineer etc.)	03 Primary Educated (upto Class 5) 06 Higher Secondary Educated (upto Class 12) 09 Professional Diploma/ Trade Certificate 99 Others, specify
Column 8	Differently Able	02 Mentally	
Column 9	Occupation	02 Agricultural Labour 05 Government/ Panchayet/ Municipal Service 08 Self Employed/ Professional (mention) 11 Employee in Mining Sector 14 Computer Hardware/ Software 17 Private Tuition 20 Unemployed (>18 Yrs.)	03 Allied agricultural activities (forestry/ fishing/ grazing) 06 Private Service 09 Traditional HH Industries 12 Employee of other shop/business 15 Rickshaw Puller/Auto Rickshaw driver 18 Money Lender 21 Student

2.0 DEMOGRAPHY

1	2	3	4	5	6	7	8	9		10		Skill	Voter ID	Adhaar no	Bank A/C	
								Occupational Status	Subsidiary	Annual Income	Subsidiary					
Sl.	Name of the members of the Family (IN BLOCK CAPITAL)	Relation with HOH	Sex	Age	Marital status	Education	Differently able	Main	Code	Main	Rs.	Subsidiary	Rs.			
No	Name	Code	Code	Yrs.	Code	Code	Code	Code	Code	Code	Rs.	Rs.				
		01														

Please see Clarifications & the Codes for different Columns in the previous page

3.0 POSSESSION OF MATERIAL/ ASSETS (PLEASE RECORD NUMBERS)

TV	Tape Recorder	Fan	Refrigerator	Phone	Vehicles				AC	LPG	Land	W/machine
					Cycles	Two Wheeler	Three Wheeler	Four Wheeler				

4.0 Expenditure of HH/month:

Items	Amount
1. Food	
2. Education	
3. Travel/ transportation	
4. Health	
5. Clothes	
6. Religious practices	
7. Water Charges, if any:	
8. Electricity Bill:	
9. Payment of loan / borrowing	
10. Any other (specify)	

5.0 DECISION MAKING AND PARTICIPATION AT HOUSEHOLD LEVEL (PLEASE TICK)

Sl.	Subject	Male	Female	Both
1	Financial Matter			
2	Education of Child			
3	Healthcare of Child			
4	Purchase of assets			
5	Day to day household activities			
6	On social function and marriages			
7	Women to Earn for Family			
8	Land and property			

6.0 WOMEN PARTICIPATION AT COMMUNITY LEVEL

6.1 Do women participate in Community decisions

:

01 Yes

02 No

6.2 Any member of any active Self Help Group (SHG)

:

01 Male

02 Female

- 03 Both 04 None
- 6.3 Are you of the opinion that men and women enjoy the same status in your community? :
- 01 Yes 02 No
- 6.4 What are some of the differences that strike you in particular? :
- 01 Yes 02 No

1. Women are not consulted for major decisions		8. Low priority is given to women's education	
2. All economic decisions are made by men		9. Mainly men are responsible for earning	
3. Women not considered important in decision making		10. Women are allowed to attend public meetings and gatherings	
4. Women are under male dominance		11. Men lack the attitude to help women in domestic chores	
5. Women have to take permission from men to go out of house		12. Men do not like to give liberty to women	
6. Domestic violence exists in many families		Others (specify)	
7. Girls are not consulted before marriage			

6.5 If men and women were asked to rank their needs in order of priority, how would they do it?

	Household latrine	Food	Good health care	Drinking water	Education	Bathing enclosure	Employment
Women							
Men							

7 LOAN AND INDEBTEDNESS (FOR LAST ONE YEAR)

- 7.1 Have you taken any loan in last year :
- 01 Yes 02 No
- 7.2 If yes, who has taken the loan : Use Code from Code List of Column 3 of Demography
- 7.3 If yes, the source of the loan :
- 01 Bank 02 Cooperative
- 03 NGO 04 SHG
- 05 Pvt. Money Lender 06 Relative/ Friend
- 7.4 The purpose of the Loan :
- 01 Productive Investment 02 Purchasing durables
- 03 Emergency 04 Social Events

7.5 What percentage of loan repaid :

7.6 Benefits perceived from the sub projects _____

7.7 Likely type(s) of distress perceived by PAP

8.1 Visual assessment of HH by interviewer : Very poor Poor
 Middle Upper middle
 Rich

8.2 Livestock possessed (Name and no.): Cow Goat
 Buffalo Poultry
 Any other _____

8.3 Sanitation Open In-house pit latrine
 In-house septic tank Common public latrine
 Any other

8.4 Water supply Piped Common overhead tank
 Stand post Open well
 Common well Bore well
 Hand pump

9.1 The type of drainage facility in the cluster : _____

9.2 Does overflowing of current drain occur. Maximum in which season : _____

9.3 Problem faced due to the drainage : _____

9.4 Is there health risk posed due to the :

current drainage

--	--

01 Yes

02 No

9.5 In last 10 years, how many times has your property flooded to some extent?

9.6 Does the drain flood nearby houses or only street

9.7 During the worst event, how long did it take for the water to drain away?

9.8 Are there existing drainage easements on your property?

:

--	--

01 Yes

02 No

9.9 How did the water enter the structure ?

9.10 Did you notice any sanitary sewer odours from the flood water

:

--	--

01 Yes

02 No

9.11 The drainage system in my area is full of sediment from:

:

9.12 Storm water causes flooding my area because the existing drainage system is:

:

9.13 Having toilets at home

:

9.14 Sewerage option

:

9.15 Availability of potable Drinking Water

:

9.16 Do you know about the swachh bharat mission/subsidized toilet/availability of potable Drinking Water:

:

9.18 Perceived benefits of household water supply project:

--

9.19 Likely type(s) of distress perceived due to project:

ANNEXURE XXII: MINUTES OF STAKEHOLDER CONSULTATION MEETINGS

State Level Consultations

State level Stakeholder Consultation 14th January 2017

Name :	Smt. Himani Pandey, IAS
Position:	Secretary, Welfare Department
Meeting team	1. Nitin Kapoor 2. Samudra D Gupta 3. Prashant Toppo
Key Discussion Points: <ul style="list-style-type: none">▶ Meeting team appraised Secretary on Jharkhand Municipal Development Project (JMDP) and proposed sub-projects in water supply, storm water drainage and road sectors and sought her suggestions on environmental and social issues to be addressed in Environmental and Social Management Framework.▶ She suggested to reconfirm and validate the ROW and vendor compensation should be carried out as per the national laws and guidelines.	

State level Stakeholder Consultation 18 January 2017

Name :	Sanjay Kumar Suman, IFS
Position:	Member Secretary, Jharkhand State Pollution Control Board
Meeting team	4. Chandrasekhara Sarma, 5. Ramashis Rajak, 6. Prashant Toppo
Key Discussion Points: <ul style="list-style-type: none">▶ The meeting team appraised Member Secretary on Jharkhand Municipal Development Project (JMDP) and proposed sub-projects in water supply, storm water drainage and road sectors and sought his suggestions on environmental issues to be addressed in Environmental and Social Management Framework.▶ He was further requested▶ Member Secretary has suggested to share a brief description of the project along with a questionnaire. He further added that he would provide his suggestions in the questionnaire.▶ The meeting team has agreed to share the same.▶ The meeting ended with vote of thanks to Member Secretary Member secretary comments appended below:	



JHARKHAND STATE POLLUTION CONTROL BOARD

T.A. DIVISION BUILDING (GROUND FLOOR), H.E.C., DHURWA, RANCHI -834004
Phone.:2403852, 2403851, Fax:0651- 2403850,

Ref. No- B-514

Ranchi, dated- 07/3/17

From,

Sanjay Kumar Suman,
Member Secretary.

To,

Dr. D. K. Singh,
Project Director (Technical),
Jharkhand Urban Infrastructure
Development Company Ltd;
Ranchi.

Sub:- Reply regarding Stake holder consultation in respect of Environment and Social Management Framework (ESMF) Preparation.

Ref No. :- Your letter No. 206 dated 19.01.2017.

Sir,

It is to inform you that water supply, drainage and widening, butification of road do not come under the perview of the Water (Prevention & Control of Pollution) Act, 1974 & the Air (Prevention & Control of Pollution) Act, 1981.

Hence, Consent-to-Establish (CTE) and Consent-to-Operate (CTO) from Pollution Control Board is not required.

This is for your information.

Yours faithfully,

(Sanjay Kumar Suman)
Member Secretary

Xcss/ Eng/656

State level Stakeholder Consultation 18 January 2017

Name :	Ajay Rastogi, IAS
Position:	Special Secretary, Department of Environment and Forests
Meeting team	1. Chandrasekhara Sarma, 2. Ramashis Rajak, 3. Prashant Toppo,
Key Discussion Points:	
<ul style="list-style-type: none"> ▶ The meeting team discussed on the Jharkhand Municipal Development Project (JM DP) and proposed sub-projects in water supply, storm water drainage and road sectors and sought his suggestions on environmental issues to be addressed in Environmental and Social Management Framework. ▶ Special Secretary has shared the following inputs on the project: <ul style="list-style-type: none"> a) Special Secretary suggested to propose alignment of projects in such a way that tree cutting is minimized, especially for water supply projects, sub surface pipeline may be considered. b) Order No: 3503/2014 passed by Jharkhand High Court is to be referred for guidelines on tree cutting. Application may also need to be submitted to High Power Committee headed by Chief Conservator of Forests, Ranchi in this regard. c) List of environmental parameters in municipal areas is to be collected from JSPCB d) Necessary measures are to be adopted to minimize SPM emissions from construction sites/transport of construction of material e) Necessary measures may be adopted for efficient management of solid and liquid waste management from the proposed projects. Priority may be given to recycling and reuse of waste water ▶ The meeting ended with vote of thanks to Mr. Rastogi 	

State level Stakeholder Consultation 23 January 2017

Name :	Praveen Kumar Toppo
Position:	Labor Commissioner
Meeting team	1. Chandrasekhara Sarma, 2. Ramashis Rajak.
Key Discussion Points:	
<ul style="list-style-type: none"> ▶ The meeting team appraised Labor Commissioner and Joint Labor Commissioner on Jharkhand Municipal Development Project (JM DP) and proposed sub-projects in water supply, storm water drainage and road sectors and sought their suggestions on environmental issues to be addressed in Environmental and Social Management Framework. ▶ Joint Labor Commissioner has received the questionnaire and suggested to collect filled in questionnaire on 25 January 2017 ▶ The meeting ended with vote of thanks to Labor Commissioner and Joint Labor Commissioner 	

State level Stakeholder Consultation 23 January 2017

Name :	Prabhat Kumar
Position:	Joint Labor Commissioner
Meeting team	3. Chandrasekhara Sarma 4. Ramashis Rajak.

Key Discussion Points:

- ▶ The meeting team appraised Labor Commissioner and Joint Labor Commissioner on Jharkhand Municipal Development Project (JMDP) and proposed sub-projects in water supply, storm water drainage and road sectors and sought their suggestions on environmental issues to be addressed in Environmental and Social Management Framework.
- ▶ Joint Labor Commissioner has received the questionnaire and suggested to collect filled in questionnaire on 25 January 2017
- ▶ The meeting ended with vote of thanks to Labor Commissioner and Joint Labor Commissioner

State level Stakeholder Consultation 23rd January 2017

Name :	Amarinder Pratap Singh, IAS
Position:	Principal Secretary, Ministry of Drinking Water and Sanitation
Meeting team	1. Chandrasekhara Sarma, 2. Ramashis Rajak
Key Discussion Points:	
<ul style="list-style-type: none"> ▶ The meeting team appraised Principal Secretary on Jharkhand Municipal Development Project (JMDP) and proposed sub-projects in water supply, storm water drainage and road sectors and sought their suggestions on environmental issues to be addressed in Environmental and Social Management Framework. ▶ Principal Secretary has informed that his department would extend full cooperation to JUIDCO on the implementation of proposed sub-projects. He further gave following suggestions on addressing environmental issues in sub-projects: <ol style="list-style-type: none"> a) New source may be identified Ranchi Water Supply project to improve source sustainability b) Air Pollution threat at construction sites to be handled adequately c) Rain water harvesting to be encouraged in all the projects to improve source sustainability in water supply projects d) Mines Department may also be consulted for availability of sand during construction of the projects 	

State level Stakeholder Consultation 25 January 2017

Name :	Ashok Kumar / Yogender Sharma
Position:	Chief Engineer / Member, Monitoring Cell - Water Resources Department
Meeting team	1. Chandrasekhara Sarma, 2. Ramashis Rajak, 3. Prashant Toppo
Key Discussion Points:	
<ul style="list-style-type: none"> ▶ The meeting team appraised Chief Engineer and his team on Jharkhand Municipal Development Project (JMDP) and proposed sub-projects in water supply, storm water drainage and road sectors and sought their suggestions on environmental issues to be addressed in Environmental and Social Management Framework. ▶ Chief Engineer has suggested that source sustainability has to be given importance for water supply projects. ▶ He then directed Mr. Yogender Sharma to provide feedback in the questionnaire provide by the team. ▶ Mr. Yogender Sharma has informed representatives who met him that he would discuss the questionnaire with concerned expert and suggested them to meet him on 	

31 January 2017.

- ▶ The meeting ended with vote of thanks to Chief Engineer and his team

City Level Consultations (Group)

Basukinath City Level Consultations (Group) – 28th January, 2017

Location	Nagar Nigam Conference Hall
Date:	28.01.2017
Attendees from Consultant:	Sanjukta Sarkar Samudra Dutta Gupta
Attendees from Nagar Parishad	The Chairman, Executive Engineer, Temple department and various ward councillors of Basukinatha nagar nigam official
Key Discussion Point:	<p>35 people were invited of which 17 attended the meeting. The media were also invited.</p> <ul style="list-style-type: none">▶ Discussion on purpose of the consultation▶ Detailing out what the ESMF entails and what kind of information would be required specific to Basukinath▶ Detailing out the subproject details as per the DPR▶ Presently on ward no 3 completely and parts of ward no. 7&8 have piped water supply▶ The Chairman then further added to the discussion by detailing out the salient features of the project and how it is expected to benefit the people.▶ While the water supply project is expected to supply water to all the HHs he said an added advantage would be that the existing water supply system wouldn't be decommissioned but would act as a supplementary system when required.▶ All the land required for this project is government land and NOC's are in place▶ The various representatives wanted to know if studies had been carried out to assess if the river can supply water to all the HHs for the projected period of 25yrs. They were concerned since the existing system has water issues during summer▶ The existing water charges for each connection (residential/commercial) is Rs.400/month and the onetime charges for getting a connection is Rs.4000. BPL families get free water.▶ Presently O&M is the responsibility of the PHED and providing connections and collecting water charges the responsibility of the nagar panchayat.▶ People as such don't face shortage of water like in other areas since they have enough wells to source water.▶ Water wastage is an issue since people don't close the taps properly as is seen in the public water vats found around the city. So they felt user charges and campaign on efficient and safe usage of water would help▶ Construction activities would have to be carried out prior or after the Shraavan festival when more than a lakh people visit Basukinath everyday▶ Everyone was of the opinion that the project would help the people. The temporary impacts that may occur

	during construction wouldn't be a major problem as activities like excavation can be done in small lengths in a phased manner so as to not cause major disruption to people's daily lives
--	---

Dhanbad City Level Consultations (Group)- 30th January , 2017

Location	RRDA building
Date:	30.01.2017
Attendees from Consultant :	Soumi Dasgupta Swati Sur Payel Mondal
Attendees from Nagar Parishad	Various department of Dhanbad municipality Councillors, Ward Councillors
Key Discussion Point:	<ul style="list-style-type: none"> ▶ Provisions of toilets/ urinals should be kept while building the road ▶ Trees should be planted as per national and international rule & guidelines. The exact details would be known only after the survey. ▶ Parking facilities should be provided where roads are widened, there should be parking points. ▶ Social Impacts will be known only after the survey has taken place ▶ 15 years old diesel cars should be replaced with new ones ▶ For dust reduction sprinkler system should be installed ▶ The roads are being made 4 lanes if there is space the project should try making the road 6 lanes. ▶ Since some of the roads are extremely congested, we feel that flyovers will help in reducing congestion. ▶ Foot-over bridges should be constructed at specific positions for pedestrian to cross ▶ Flyovers should be constructed at important junctions after the main congested zones are mapped. ▶ The small roads connecting the main roads should have flyovers ▶ Instead of constructing speed breakers on the main roads, more emphasis should be given in constructing the speed breakers in lanes and bye-lanes ▶ Discussions are to be done regarding the rehabilitation of markets lying along the road. Schemes of underground markets are to be proposed. ▶ Similarly, cars that are parked on the road creates lot of congestion, underground parking scheme should be proposed. ▶ At multiple crossing (2 lane, 3, 4 or 5 lane crossing) points a specific type of traffic movement occurs and one should analyze it to understand the congestion ▶ Drains should be designed in such a manner that they are not deep. This will reduce accumulation of water. ▶ Whatever the amount of trees that will be felled one should plant at least double the amount.

Deoghar City Level Consultations (Group) – 30th January 2017

Location	District Commissioner's Office
Date	30.01.2017
Attendees from Consultant	Rita Dey Samudra Dutta Gupta
Attendees From Deoghar Municipality	Municipal Commissioner, Various departments of Deoghar Municipality and ward councilors
Key Discussion Points	<ul style="list-style-type: none"> ▶ Discussion on ESMF ▶ Key activities and methodologies that will be carried out while conducting the ESIA studies. ▶ Relevance of soil, water and air testing for the water supply project ▶ All the ward members will act as a facilitator to realize the ESIA activities ▶ Discussion on whether the water entering the ponds will be purified. Respective provisions of pure waters entering the ponds should be there ▶ The flowers and all accessories used for worship are dumped in the drain – hence the water requires thorough cleaning before entering into the reservoirs ▶ Discussion on the existing drainage system of the city.

Hussainabad City Level Consultations (Group) – 2ndFebruary, 2017

Location	Vivaha Mandal
Date	02.02.2017
Attendees from Consultant	Rita Dey Samudra Dutta Gupta
Attendees From Hussainabad Municipality	The chairman, Ward councilors , SDO, BDO,
Key Discussion Points	<ul style="list-style-type: none"> ▶ Discussion on ESMF ▶ Key activities and methodologies that will be carried out while conducting the ESIA studies. ▶ Relevance of soil, water and air testing for the water supply project ▶ Thorough coordination should be done with the executive officer. ▶ All the ward members will act as a facilitators to complete the ESIA activities ▶ Discussion on the project structures and which wards will be the beneficiary ▶ If new wards are developed, whether they will be the beneficiary or not ▶ Discussion on the presence of rock at the inlet point there by reducing the depth and how to tackle the situation ▶ Discussion on the existing drainage system of the city.

Khunti City Level Consultations (Group) – 3rd February, 2017

Location	District Commissioner's office
Date	03.02.2017
Attendees from Consultant	Rita Dey Samudra Dutta Gupta
Attendees from Khunti Municipality	District commissioner, Chairman, Vice Chairman, Executive officers and various department of the municipality and the ward councilors
Key Discussion Points	<p>Discussion on ESMF</p> <ul style="list-style-type: none"> ▶ Key activities and methodologies that will be carried out while conducting the ESIA studies. ▶ Relevance of soil, water and air testing for the water supply project ▶ A work plan is to be shared with the DC prior to the starting of the ESIA activities. ▶ Thorough coordination should be done with the executive officer. ▶ All the ward members will act as a facilitator to realize the ESIA activities

City Level Stakeholder Consultation (One to One)

City Level Stakeholder Consultation (One to One) - Dhanbad

Brief report on Dhanbad Road projects visit and city level consultations (16th 18th and 27th January 2017)

Dhanbad is one of the largest industrial towns of Jharkhand and is known as the Coal Capital of India, with nearly half of area under Dhanbad Municipal Corporation (DMC) is allocated for coal mines. The roads to be included in Phase 1

Road ID	Road name	Length(Km)	Existing Configuration	Proposed Configuration
11	Kanko Chowk - Vinod Vihari Chowk - Memco Chowk - Gol Building Chowk	20	2 Lane	4 Laning with Cycle Track and Service Roads
12	Bekar Bandh Chowk – Gandhi /Combined Building Chowk	0.6	2 Lane	4 Laning with Cycle Track and Autorickshaw Lane
13	Birsa Munda Chowk (NH 32)- Purana Bazar Chowk - Jorapathak Chowk - Dhansar Chowk	1.9	2 Lane	4 Laning + Hawker Zone
14	Jharia Market Road (No. 4 Main Road)	0.9	Intermediate Lane	2 Lane + Hawker Zone
15	Telipada Mode (NH32) - Telipada - Law College Mode	1.2	Single Lane	2 Lane
16	Hatia Mode (NH 32) - Hatia - ROB - Old	4.8	Single /Intermediate	2 Lane + Hawker Zone

	Railway Station - Purana Bazar Chowk		Lane	
--	--------------------------------------	--	------	--

Given this, the target audience and customized social survey methods will be follows-

Category respondent	of	Type of respondents	Survey method	No. (suggested)
Qualitative				
Citizens		Citizens' consultation in each Ward	FGDs - gender dis aggregated as possible	
Govt. Stakeholders		<ul style="list-style-type: none"> ▶ Nagar Nigam ▶ Health Deptt. (District Hospital) ▶ PHED ▶ PWD Roads ▶ RCD ▶ Electricity ▶ Drinking water and sanitation department ▶ Sewerage Department ▶ Forest Deptt ▶ Police ▶ Rural Roads Division ▶ Irrigation Deptt. ▶ Airport Authority 	Meetings / FGDs / Depth Interviews	
Private Stakeholders		<ul style="list-style-type: none"> ▶ Members of Vendor Committee (which is very vibrant and organized) ▶ Educational institutions ▶ Other offices 	Meetings / FGDs / Depth Interviews	
Quantitative				
Environmental		Environmental Baseline monitoring		
All Wards		Residents	Socio-economic quantitative (semi structured) questionnaireapprox. (10% HHs distributed proportionately)
Identified Ward/s		Households whose crops/vegetables are affected due to new WTP + access road to be factored in	Census	

Observations:

All the stretches were visited and visual assessments reveal,

- ▶ In road 11 density of impacted persons is less. Most of the people are squatters (residential/commercial/ resi-commercial).
- ▶ In road 12 there is likely impact on mobile hawkers and the boundary wall of some of the houses / buildings. Roadside parking places will be impacted too.
- ▶ Road 13 will impact mostly commercial encroachments and stationary and mobile hawkers. It is expected that one stretch will be closed during construction but an alternate road to divert traffic exists.

Category of respondent	Type of respondents	Survey method	No. (suggested)
	<ul style="list-style-type: none"> ▶ Road 14 densely populated stretch ▶ Road 15 reclaiming the RoW will bring the road to the edge of some of the residential walls thereby making safety and security an issue. Also many of the encroached building have their entrance steps on the RoW thereby resulting in access issues to these buildings once the land is reclaimed. Some of the buildings will lose their extended balconies at the first and second floor levels. These balconies act as corridors of access to the shops and offices there. Therefore these enterprises will also lose their access and if alternate access points are not available the buildings maybe rendered redundant. ▶ Road 16 densely populated in stretches. Will impact some residential structures. Existing parking spaces on the road will be lost ▶ Construction debris and dust requires management ▶ Reptiles and bird will affected the most due to tree loss ▶ Nagar Nigam with Sanmam has already carried out the survey and they are developing a plan on hoe to relocate them. There are 14 places identified, where the vendors can be relocated, ▶ To perform the relocation of the vendors the Nagar Nigam, consents are taken from the relevant vendor associations. ▶ No ponds or wetlands are affected due to the above activities ▶ Around 5000 to 7000 trees will be felled or transplanted ▶ For each tree felled the forest department has guidelines to plant 5 to 10 trees 		

Summary of discussions

Position	Dhanbad Mayor
Department	Dhanbad Municipal Corporation
Key Discussion Points:	
<ul style="list-style-type: none"> ▶ First Phase of the project does not involve any encroachment ▶ The roads are clear and no one will dispossess their property ▶ In the second phase some of the commercial establishments of the street vendors will be relocated ▶ Nagar Nigam with Sanmam has already carried out the survey and they are developing a plan on how to relocate them. There are 14 places identified, where the vendors can be relocated, ▶ To perform the relocation of the vendors the nagar nigam, consents are taken from the relevant vendor associations. ▶ No ponds or wetlands are affected due to the above activities ▶ As Dhanbad has always been proactive in planting trees from the beginning. Huge number of trees will be felled or transplanted. ▶ The forest department is in charge of the above activity and this activity will be done only after all the norms and NOCs are achieved from the forest department. ▶ For each tree felled the forest department has guidelines to plant 5 to 10 trees. 	
Name :	
Position:	City Municipal Commissioner
Department	Dhanbad Municipal Corporation
<ul style="list-style-type: none"> ▶ Key discussion Points: ▶ Dhanbad has drastically improved in the last 2 years. ▶ Dhanbad Municipal corporation has installed more than 15000 sulabh sauchalayay ▶ As the population is increasing, he believes that the infrastructure should grow hand in hand to support the varying needs of the population. ▶ DMC is also trying to improve on the safety of women. They are starting bus services only for women and college going girls. ▶ DMC is completely ready for carrying out any stakeholder consultation. Since the meeting will be attended by high ranking officials, the results of the survey should be discussed and issues should be solved in that meeting, ▶ We are ready to support you in carrying out the ESIA surveys and studies. 	
Name :	▶ Vishal Singh
Position:	City Mission Manager
Department	Dhanbad Municipal Corporation
Key Discussion Points:	
<ul style="list-style-type: none"> ▶ His role is to provide support for the following activities <ul style="list-style-type: none"> a) Skill Development b) Shelter for Homeless c) Support for street vendor ▶ Dhanbad has a street vendor committee. The committee comprises of the following members <ul style="list-style-type: none"> a) Street vendor b) Association leaders c) Doctor d) Road Department chief engineer e) Traffic department f) Deputy commissioner g) City SP and DSP ▶ For roads other than the project area, where other road projects are going on, the street vendors are removed from sitting ▶ A survey was carried out by a NGO called Sanman and an identity number has been provided. The details are shared with us. ▶ For the roads falling under the project zone 43 places are identified. Alternate car parking and vendor zone will be provided. 	

<ul style="list-style-type: none"> ▶ DPRs are yet to be developed for the construction of designated street vendor zone. ▶ Once the project is approved, the administration will search for suitable land and relocate the street vendors 	
Name :	Amit Yadav
Position:	Junior Engineer
Department	Dhanbad Municipal Corporation
Key Discussion point:	
<ul style="list-style-type: none"> ▶ There are no plans in place to relocate the street vendor. There is a plan to create a vendor zone. ▶ ROW is there for the above ▶ The number of trees to be felled or transplanted are submitted by the DPR consultants and are now in the process of review. ▶ The street vendors survey has been carried out by SAMMAN and is submitted to JNNILM ▶ Ward wise census is available ▶ There are a lot of empty space where the street vendors can be relocated ▶ He will be the main coordinator who will arrange for the stakeholder consultation for Dhanbad. He has suggested that after the surveys, the results can be discussed with the respective stakeholders ▶ All the existing utilities like pump and electricity pole will be relocated while widening the road or laying down the drainage system. To carry out the above program, DPRs are been prepared by another Consultant: NGS. It is called the missing link project ▶ The drainage DPR will also be finalized once the road DPR is finalized and all activities will be carried out in coordination with the road project. ▶ In case of trees, NOC from the forest department is yet to be taken. The forest department is yet to identify the land for transplanting or planting the felled trees. ▶ All the relevant authorities should sit for smooth implementation of the project. 	
Name :	Asdgar Ansari
Position :	Chief Electrical Engineer
Department	Electricity Distribution
Key Discussion Points:	
<ul style="list-style-type: none"> ▶ The Widening of the road is not a challenge but work, there will be utility shifting. They have to give shutdown and that can be annoying. People should be aware of the inconvenience. ▶ To reduce the inconvenience a plan is to be made. ▶ According to him, new electric line is to be installed before severing the old lines. ▶ They have their in- house engineers who will carry out the surveys and identify the positions for installing the poles for the new line. ▶ This project will bring immense benefit to the people. The city will become more efficient in handling congestion and reducing carbon foot print. ▶ As the city is growing tremendously fast, the infrastructure should grow hand in hand to support the needs of the city. ▶ The electricity department is currently making 3 years plan to develop substations and propose budgets accordingly. We are aiming to avail finances through RAPDR- central sponsored project ▶ We use government guidelines for health and safety of the labors deployed for carrying out our projects 	
Name :	Sunil Kumar Rahul Priyadarshi Devendra Nath Mahato
Position:	Executive Engineer SDO Junior Engineer
Department	DW & SDIV1
Key Discussion Points:	
Out of 5 roads rebuild by Darashaw only 3 road are widened and the other 2 are not. Hence	

pipeline relocation is not required in two roads.

- ▶ Though it is challenging to provide 24 hours water supply, but water being a primary good, services should not be disrupted.
- ▶ Once the new network of pipes are installed, old pipes will be removed.
- ▶ The installation of the new pipes and removal of the old pipes should be done before the road projects.
- ▶ The pipe shifting can only happen once the encroachments are removed
- ▶ The district administration should ensure the following
 - Removal of encroachers and permanent settlement
 - Removal of trees
 - Safety measures during project implementation
- ▶ New pipes will be laid based on 30 years of population projection and its respective water demand. DI pipes will be laid and the width may vary depending on the usage.
- ▶ There is a huge communication between the Darashaw and the DW& SD 1 and this should improve.
- ▶ Any projects undertaken by DW&SD complies with the labor compensation and H&S guidelines laid down by the State government.
- ▶ Dw&SD use global tender to appoint vendors to implement the project.
- ▶ Local labor are generally used and experts are hired from outside
- ▶ Encroachment are lesser on some roads under the project and they feel more congested roads should be taken under consideration.
- ▶ Rather than horizontal laying of roads, Dhanbad should focus on vertical laying (flyovers)and this will lead to lesser impact on street vendors or encroachers
- ▶ Darashaws plan has not yet been approved by the administration. Depending on their budget the sanction will be approves by chief engineer (value less than INR 1 Cr) or by engineer in chief(exceeds INR 1 cr)

Name:	A.B Kesari
Position	Junior Engineer
Department	Road Construction

- ▶ Problem is land acquisition
- ▶ Surveys should be carried out and encroachers should be removed tactfully
- ▶ Less congestion roads are selected which is not helping the cause. More congested roads should be selected.
- ▶ Conducting Stakeholder Consultation

Name :	-
Position:	DFO (Dhanbad) (IFS)
Department	Forest Department

Key Discussion Points
<ul style="list-style-type: none"> ▶ There will be around 5000 trees that are to be felled or transplanted ▶ If the girth of the tree is less than 50 Cm then the tree will be transplanted. ▶ There is a high level committee that makes the decision and the committee sits in Ranchi. ▶ Whatever amount of trees to be felled the DFO will forward the proposal to the high level committee. ▶ If the number of trees are huge the committee will carry out a survey at the site and give the decision. ▶ The reptiles and birds will be affected the most. ▶ The felling and replanting of the trees are carried out based on the guidelines set by the forest conservation act and the MoEFCC, India. ▶ Compulsory afforestation is to be done and for each tree fell we plant 5 to 10 trees. ▶ Sites for replanting the tree is already identified

City Level Stakeholder Consultation (One to One) - Basukinath

Brief report on Basukinath Water Supply visit (17/01/2017)

Basukinath is a temple town located in Dumka District. Basukinath temple is the main point of attraction. The approved DPR has plan to supply piped water 24X7 basis to all households in all 10 Wards¹² of Basukinath. This will equip the town with adequate supply of water even for the yearly Shraavan Mela which brings in more than 60 thousand people. This is in addition to the population of the town which is projected to be 22319 in 2018,¹³ approx. 4464 families considering family size to be 5. Since a length of new pipeline would be around 82 km, the entire population of the city will be affected temporarily during the construction phase and the duration of the same in different Wards will vary. Given this, the target audience and customized social survey methods will be follows-

Category of respondent	Type of respondents	Survey method	No.
Desk research of available Census data will be done for Basukinath to understand demographic scenario.			
Qualitative			
Citizens	Citizens' consultation in each Ward	FGDs - gender disaggregated as possible	20
Govt. Stakeholders	<ul style="list-style-type: none"> • Nagar Panchayat • PHED • PWD Roads, Forest Deptt, Police, • Any other 	Meetings / FGDs / Depth Interviews	4
Pvt. Stakeholders	<ul style="list-style-type: none"> • Members of Temple Trusts • Educational institutions • Market and Vendor Association • Other offices 	Meetings / FGDs / Depth Interviews	5
Temple site	Pilgrims at	FGD	2
Quantitative			
Environmental baseline Monitoring	3 to 4 points		
All Wards	Residents	Socio-economic quantitative (semi structured) questionnaire	500 approx. (10% of HHs distributed proportionately)

¹²Wards divided into 4 zones – Zone 1:Wards 9&10; Zone 2: Ward 8; Zone 3: Wards 2,3,4,5,6&7; Zone 4: Ward 1

¹³ Population projections

Year	Pop. projection
2033	29229
2048	37982

Summary of discussions

Name :	<ol style="list-style-type: none"> 1. Jyoti Kumar Singh 2. Satish Kumar 3. Robin Kumar
Position	<ol style="list-style-type: none"> 1. Ex. Officer, Nagar Panchayat 2. City Manager 3. Engineer, DPR Consultant
Department	Basukinath Nagar Nigam
<p>Key Discussion Points:</p> <ul style="list-style-type: none"> ▶ The water source is River Mayurakshi. ▶ A complete new water supplying infrastructure is to be developed and the old retrofits are to be removed. ▶ The lanes within the Wards vary between 10 to 14 ft. in width. The pipes will be laid on both the sides. There is no problem in the water quality but water test is yet to be done. ▶ There has been no epidemic in the recent past ▶ Currently there are sufficient hand pumps to provide water to the communities. Once the pipelines are installed the hand pumps will be removed. ▶ Metering system is preferred ▶ At present for every connection the following water taxes are collected <ul style="list-style-type: none"> ▪ INR 180 for private ▪ INR 120 Residential ▶ At present the existing connection receives 2 to 3 hours of water and the rest is availed water from the hand - pump ▶ Awareness building has been created through paper advertisements ▶ The new pipe line covers all 10 wards ▶ As the pipe will provide water to all houses. EIA and SIA of all the arterial pipeline of the arterial pipes are to be done ▶ Safety issues has to be considered while laying the pipes ▶ Pipes form water and drains should be separated at a distance that leakages do not impact on water supply. ▶ The demand is to meet water requirement of all residents in Basukinath. ▶ The water supply should be able to cater to the high floating population of 50 thousand to 1 lakh per day during Shraavan Mela as also the 5 to 10 thousand pilgrims per day on other months which is generally for "Sparsh Puja". ▶ Land is yet to be selected to relocate shop vendors ▶ The construction will take about 2 years and execution needs to be planned meticulously. ▶ All agreed that robust consultation is required with the residents as it will involve high level of temporary inconvenience ▶ There are no land acquisition. ▶ Drinking water pipe and drainage pipes are very close. So the design should be such that a minimum distance is there and the pipes should be laid in parallel to each other. ▶ The average family size is 5 ▶ Water supply projection is calculated based on the 100 % population projection for the next 25 years and floating population. ▶ The town is not expected to grow into a city. But since the population is increasing and it's a religious site the tourism activity will increase. Hence railways and roadways are to be improved for better connectivity. ▶ Land for WTP, ESRs and intake have not been demarcated on the ground. 	

City Level Stakeholder Consultation (One to One) - Khunti

Brief report on Khunti Water Supply visit (19/01/2017)

Khunti is a small town at a distance of about 45 kms from Ranchi, Capital of Jharkhand, in Khunti District. The approved DPR plans to supply piped water 24X7 basis to all Households in all 16 Wards of Khunti. The population of the town is projected to be 42353 in 2018,¹⁴ with approx. 8470 families considering family size at 5. The population based on the Census of 2011 is 36329 (7265 families). The Wards have been divided into four zones.¹⁵

The intake will be from Tejna Barrage. A new WTP of 16 MLD capacity will be constructed, and will be connected to the new proposed intake by 500mm diameter and 3810m length pipe. Since all houses will be connected, entire population of the city will be affected temporarily during the construction phase and the duration of the same in different Wards will vary. Along with this, the construction works will bring in workers which may need to be camped in Khunti.

The representative of the DPR Consultants was not able to identify the tribal houses mentioned in the ES report. Given this, the target audience and customized social survey methods will be follows-

Category of respondent	Type of respondents	Survey method	No. (suggested)
Desk research of available Census data will be done for Khunti to understand the demographic scenario.			
Qualitative			
Citizens	Citizens' consultation in each Ward	FGDs - gender disaggregated as possible	20
Govt. Stakeholders	<ul style="list-style-type: none"> ▶ ULB, Khunti ▶ PHED ▶ PWD Roads ▶ NH ▶ Forest Deptement ▶ Police ▶ Rural Roads Division ▶ Irrigation Department ▶ Any other 	Meetings / FGDs / Depth Interviews	4
Pvt. Stakeholders	<ul style="list-style-type: none"> ▶ Members of Vendor Committee (which is very vibrant and organized) ▶ Educational institutions ▶ Other offices 	Meetings / FGDs / Depth Interviews	4
Quantitative			
Environmental baseline Monitoring	3 to 4 points		
All Wards	Residents	Socio-economic quantitative (semi structured) questionnaire	700 approx. (10% HHs distributed proportionately)
Identified Ward	Affected tribal households	Census	

¹⁴ Population projections

Year	Pop. projection
2033	56546
2048	74921

¹⁵ Zone 1: Wards 1&2; Zone 2: Wards 3,4,5,6,7,&8; Zone 3: Wards 9,10,11,12 &13; Zone 4: Wards 14,15 & 16.

Summary of discussions

Name :	<ol style="list-style-type: none"> 1. Smt. Meghna Ruby Kashyap, 2. Mr. Madan Mohan Mishra 3. Mr. Vijay Kumar 4. Mr., Aman Mishra
Position	<ol style="list-style-type: none"> 1. Executive Engineer City Manager 2. Vice Chairman 3. City Manager 4. DPR Consultant
Department	Khunti Nagar Nigam
<p>Key Discussion Points:</p> <ul style="list-style-type: none"> ▶ The objective is to provide piped water to all residents in Khunti through the proposed project. ▶ At present, Ward Nos. 2& 3 are served fully and some served in in Ward Nos. 3, 4 & 5. ▶ The present tariff is Rs. 120 per month per household and commercial establishments. ▶ The HHs wanting a connection have to buy pipes and pay for plumbers for extending the connection to their residences from the nearest node. All APL households have to pay Rs. 4000/- for this. The Mason deputed by the ULB guides on this. However, those who are BPL are provided free connection. However they will pay the monthly amount as mentioned above. There is an Office Order promulgated in 2015 to this effect. ▶ For new water infrastructures, more technical people will be required for uninterrupted 24X7 supply. More plumbers will need to be trained. ▶ 135 lpcd for urban and 90 lpcd for rural areas is provided now and the same has been considered both for households and commercial establishments in the proposed plan. ▶ Most people do not know about the project. All agreed that robust consultation is required with the residents as it will involve high level of temporary inconvenience. ▶ Some of the roundals on the main road which is NH 75 and the shops and hawkers will be affected during works. All JEs of the Chaibasa NH Office have been informed and consulted. ▶ The width of the lanes within the Wards vary between 6 to 10 ft. The pipes will be laid on both the sides depending on how the houses are located. ▶ The construction will take about 2 years ▶ A Master Plan for Khunti is being prepared. ▶ All vendors in Khunti have a license for operating. ▶ Khunti has achieved ODF status. ▶ Occupation of the people here is mixed – farmers (more in Ward 8), shop keepers, vendors and holding jobs. ▶ Water supply is now ULB's responsibility, technical support is provided by the JEs of PHED. ▶ Drains are open, hence pipelines close to the drains are vulnerable to contamination if there is any leakage. ▶ It was suggested that we meet with the Secretary of the Vendors' Committee. The DC is the Chairperson of this committee. ▶ A vendors' zone is being created where all vendors are to be shifted. ▶ The water supply services are transferred under the ULB from the PHED department ▶ The ULB have appointed a full time junior engineer to look after the technical aspects. ▶ There are 3 plumbers who aids the ULB. But proper training is not provided to the plumber ▶ Currently drainage and water supply pipes are laid down in a haphazard manner. ▶ No specific distance is maintained and there are stretched where the two pipes are very close. ▶ The land for WTP, ESRs and intake well have not be pegged or demarcated on ground. 	

Name :	<ol style="list-style-type: none"> 1. Md. Sabbeer Ahmed 2. Sudhesh Kumar Rao 3. Sekhar Kumar Rao 4. Suresh Kumar Rao 5. B. Chowbey 6. G. Thakur
Position	<ol style="list-style-type: none"> 1. Secretary 2. Member 3. Member 4. Member 5. Member 6. Member
Department	Vendor Committee
Key Discussion Points: <ul style="list-style-type: none"> ▶ He did not have any knowledge of the project. ▶ The shops and hawkers are operating for more than 30 to 40 years. The present location of majority of hawkers is on NH 75 with the permission of the ULB. They pay a rental of Rs. 2/- to 10/- per day depending on the size of business and receive receipts. The area is auctioned for hawking every year. The space belongs to NH. ▶ They were not happy about the hawkers' zone as it would be away from the main market hub. ▶ There is a vendor report submitted by an NGO called Sanman which has recorded all the vendors in Khunti. ▶ There is a vacant unused school hostel building (S S High School) in the same area, it is the preferred vendor zone. ▶ They would be happy to help us with the study and were ready to endure inconvenience for a few days. They want the digging, laying of pipes and covering should be done together so that their work or sale is not affected unduly for a long time. ▶ He also suggested that the works should be done at night in the congested areas to avoid inconvenience to buyers, sellers and commuters. ▶ They complained that there is no grievance redressal mechanism in the ULB that would look into problems faced by citizens. 	

City Level Stakeholder Consultation (One to One) - Hussainabad

Brief report on Hussainabad Water Supply visit (20/01/2017)

Hussainabd is a small town at a distance of about 244.8 Km from Ranchi and 52.2 kms from Aurangabad (Daltongunj). The approved DPR plans to supply piped water 24X7 basis to all Households in all wards of Hussainabd. The population of the town is projected to be 34619 in 2019,¹⁶ with approx. 7000 families considering average family size at 5. The population based on the Census of 2011 is 29241 (6000 families). The Wards have been divided into four zones.¹⁷

¹⁶ Population projections

Year	Pop. projection
2034	46410
2049	61314

¹⁷ Zone 1: Wards 3 (50%), 4, 5; Zone 2: Wards 9, 10, 11, 12, 13; Zone 3: Wards 6, 7, 8; Zone 4: Wards 1, 2, 3 (50%).

The intake will be from Sone river. Raw water Rising Main has been proposed from Jack well to Water Treatment Plant at about 6 km. from source. It will consists of 350 mm dia. DI K-9 pipeline and length 5840 m. Since all houses will be connected, entire population of the city will be affected temporarily during the construction phase and the duration of the same in different. Along with this, the construction works will bring in workers which may need to be camped in Hussainabad.

The representative of the DPR Consultants was not able to identify the tribal houses mentioned in the ES report.

Given this, the target audience and customized social survey methods will be follows-

Category of respondent	Type of respondents	Survey method	No. (suggested)
Desk research of available Census data will be done for Hussainabad to understand the demographic scenario.			
Qualitative			
Citizens	Citizens' consultation in each Ward	FGDs - gender disaggregated as possible	20
Govt. Stakeholders	<ul style="list-style-type: none"> • Nagar Panchayat, Hussianbad • Amin of Land Department • Health Department (District Hospital) • PHED • PWD Roads • Forest Department • Police • Rural Roads Division • Irrigation Department • Any other 	Meetings / FGDs / Depth Interviews	6 (Amin is an important stakeholder here)
Pvt. Stakeholders	<ul style="list-style-type: none"> • Members of Vendor Committee (which is very vibrant and organized) • Educational institutions • Other offices 	Meetings / FGDs / Depth Interviews	4
Quantitative			
Environmental baseline monitoring	3 to 4 points		
All Wards	Residents	Socio-economic quantitative (semi structured) questionnaireapprox. (10% HHs distributed proportionately)
Identified Ward/s	Households whose crops/vegetables are affected due to new WTP + access road to be factored in	Census	

Summary of discussions

Name :	<ol style="list-style-type: none"> 1. Mr. Rameswar Ram, 2. Mr. Surjit Kumar Singh,
---------------	--

	3. Mr. Bhim Dayal Rahgu, 4. Mr. Waris Hussain (Computer) 5. Mr. Chnadan Kr. Singh, (Ward No. 2) 6. Mr. Immamuddin Ali,
Position	1. Chairman Nagar Panchayat 2. Executive Officer cum SDO 3. Associate City Manager 4. IT 5. H/o Ward Member Mrs. Jyotsna Singh 6. Ex. Engineer
Department	Hussainabad Nagar Panchayat
Key Discussion Points: <ul style="list-style-type: none"> ▶ The proposed plan will supply water to all households. ▶ Agriculture is the main occupation. ▶ Some others have shops and business. ▶ Households are provided 135 lpcd and charged 120/- per month and have to pay 4000/- for laying of pipes from the supply node, plumber charges, etc. The BPL families pay the same monthly charges as others but the connection is free. ▶ Since all households will be connected, the temporary impacts of construction will be felt all over Hussainabad. The vendors will be affected during this period for laying of the main pipe from the source to the WTP. There is a Vendor Committee. The space by the main road is used by vendors which is auctioned every year. The present leaseholder is Mr. Kasab who paid 2 lakhs for the space and has rented the space out to vegetable vendors. ▶ Visit to the source revealed a dilapidated pumping room with leaking water from the pipe joints. At the WTP site, the filth and poor housekeeping was glaring. The staff employed were using lime and chlorine for water purification but did not seem to know the ratios and proportions related to use. Since this will not be decommissioned, from health perspective of the citizens it could be vulnerable. ▶ The profile of the area is feudal where in Mr. Chandan Singh seems to be an important person and husband of the Ward Member, owning large landholdings. The clarity of the WTP site area could not be clearly identified due to lack of demarcation at the ground level. A part of Mr. Singh's inherited land was vested during the land ceiling process in 1956 but remained under his control or 'kubzaa', which he relinquished for WTP. There is a need for the Amin to be called in for clarification of land boundary here. Many land parcels here were seen under cultivation in the vicinity. As understood from discussions, that these cultivated portions are partly within the WTP site and partly outside but under Mr. Chandan Singh's control. ▶ The road leading to the WTP site has not been considered. ▶ Land for ESR, intake well, WTP not demarcated on ground. 	

ANNEXURE XXIII: LIST OF STAKEHOLDERS CONSULTED (ATTENDANCE SHEETS)

a) Group stakeholder consultation in Dhanbad held on 30.01.2017

NAME	Ph. No.	EMAIL ID	QUESTION
Shezavan Kumbhar	93341937155 9835836795	shezavaninup23@gmail.com	
Vinod K. Ganani	9431371279	vinodk@rediffmail.com Vinod@rediffmail.com	(ii) No. Add new Road from Shakti Chowk to Nagamme vitha katha, Baran
Priya Ranjan Councillor ward no. 25 P.M.C & Member Standing Committee S.P.C & Member Dist. Planning Committee.	9431722230	prayan.mastha @gmail.com	
Mouhameed K. Councillor ward no. 15	9934567372	Mouhameed "com	L I C

Name	Email address
Binayak Gupta Mabhar Das	9835121410 ward no. 3 → Do; 9431358404 ward no. 8 → Shakti Chowk - Babras Road - Naya more - Dhanbad - 26me. (Prof. Sal)

<u>Name</u>	<u>Phone no.</u>	<u>Email address</u>	<u>Station</u>
Santosh Kumar Singh	9835713258	Santoshindia2016@gmail.com	
Pooja K. Singh	9108341383	Andraaj@rediffmail.com	
Bhram Prasad	9924056203	Bhram Prasad@rediffmail.com	
PRASHANTH KUMAR PRASAD - Addl Municipal Commissioner Chennai M.C.			94313 33991

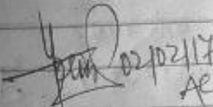
b) Group stakeholder consultation in Hussainabad held on 02.0.2017


①

आज दिनांक 02.02.2017 को हुसैनबाद पेपजलप्लांट योजना के Environment and Social Management Framework तैयार करने हेतु Stakeholders की एक बैठक महात्मा गांधी विवाह मंडप में आयोजित की गई। इस बैठक में निम्नलिखित Stakeholders उपस्थित हुए :-

(i) उपायुक्त, पलामू

(ii) उप विकास आयुक्त पलामू


(iii) सहायक अभियन्ता जलपण हुसैनबाद  AE


(iv) श्री कुमार पुजेय कृ. अभि. नं. 01 हुसैनबाद 

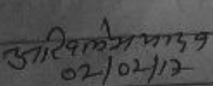
(v) श्री विजय राम, कृ. अभि. नं. 02 हुसैनबाद

(vi) कार्यपालक अभियन्ता सिंचाई विभाग, पलामू

(vii) जिला खनन पदाधिकारी पलामू

(viii) अध्यापक, महापय नं. 01 हुसैनबाद 

(ix) उपाध्यक्ष महापय नं. 02 हुसैनबाद 

(x) वार्ड पार्थक वार्ड सं. 01  उपाध्यक्ष महापय 02/02/17

(xi) वार्ड पार्थक वार्ड सं. 02

(xii) वार्ड पार्थक वार्ड सं. 03 उमादेवी 02/02/17

(XIII) वाई पाषंड

वाई से-4

(XIV) वाई पाषंड

वाई से-5

(XV) वाई पाषंड

वाई से-6

(XVI) वाई पाषंड

वाई से-7

(XVII) वाई पाषंड

वाई से-8

(XVIII) वाई पाषंड

वाई से-9

(XIX) वाई पाषंड

वाई से-12

(XX) वाई पाषंड

वाई से-13

(XXI) सहायक अभियन्ता

ग्रँथ मन्त्र वेक्रे जपसा

(XXII) कार्यपालक अभियन्ता

पेपजल एवं स्वच्छता विभाग, पलामू

(XXIII) निला परिवहन पदाधिकारी

पलामू

(XXIV) कार्यपालक अभियन्ता

RCD, पलामू

(XXV) कार्यपालक अभियन्ता

PHED, पलामू

(XXVI) सहायक अभियन्ता

ISNL, मेदिनीगढ़

(XXVII) कार्यपालक अभियन्ता

NHA, Palamau

एन सी ई आर

सेवादा यामुग
21/3/17

A. P. Singh

21/3/17

21/3/17

21/3/17

(XXVIII) NCD के प्रतिनिधि - Amicus/Note

(XXIX) दुर्गनाथदेव व्यवसायी संघ
के प्रतिनिधि

(XXX) कार्यपालक अधिकारी
PWD, Palamu.

(XXXI) श्री प्रमान कुमार
नगर प्रबंधक

(XXXII) श्री चंदन कुमार सिंह
समाजसेवी

Rakhatki
02/02/2017

[Signature]

02/02/2017

(XXXIII) Red Day बीता के
एव

R. Singh

(XXXIV) Samudra Datta Gupta

(XXXIV) नेहाल अलगा
सामाजिक कार्यकर्ता

नेहाल अलगा

(XXXV) श्री सखु चौधरी
सहायक

(XXXV) श्री वारिस दुर्ग
कमिश्नर अपर

(XXXVI) श्री दबिबल प्रसाद
कबीर कमिश्नर

पेपनल एव कबीर कमिश्नर

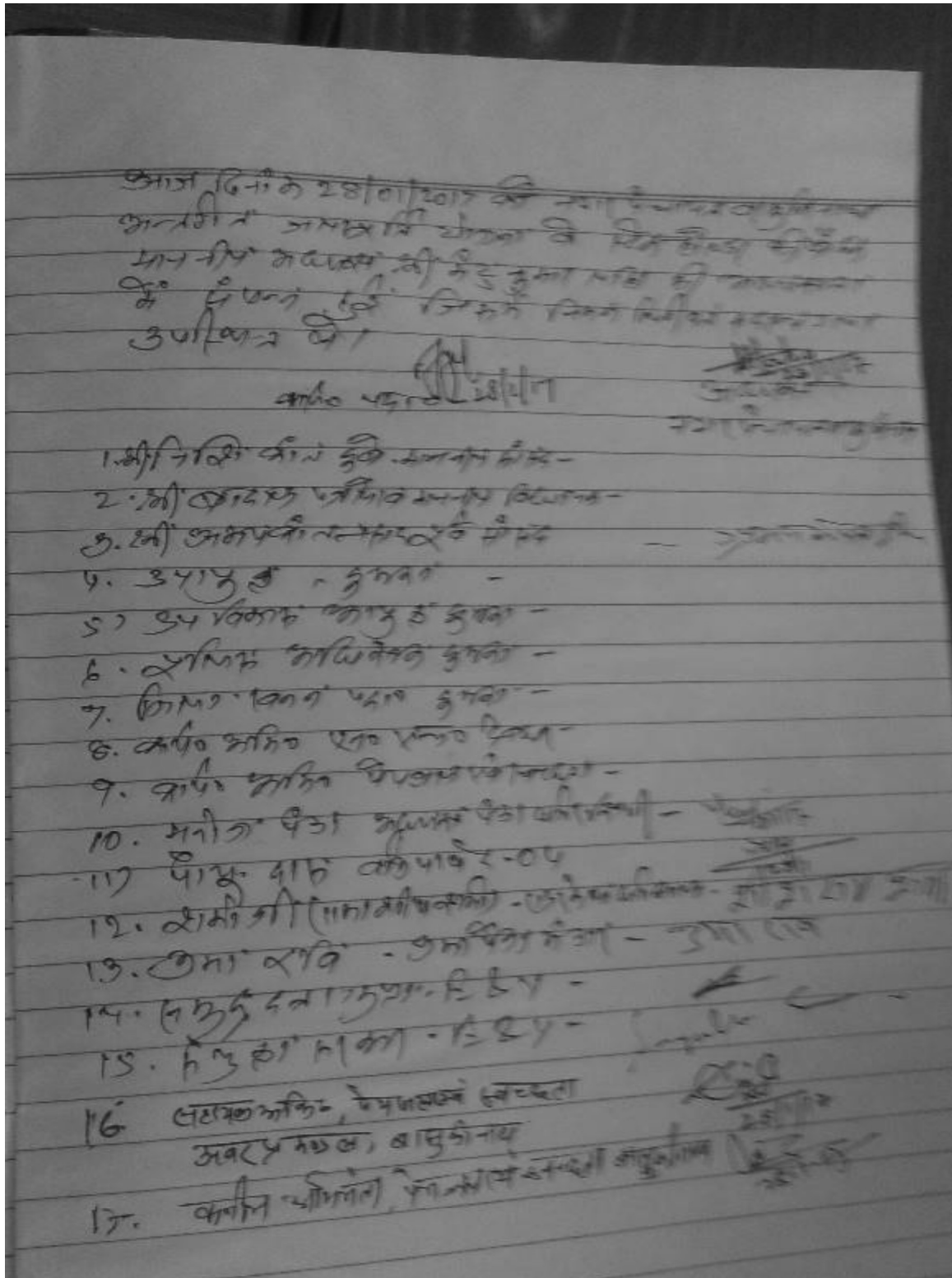
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2/2/17

संगी माननीय वाई पाषंद

नाम	वाई नं०	डॉ. नं०
राम	वाई नं०	डॉ. नं०
Remu Singh	20	डॉ. नं०
Lalita Karammal	19	डॉ. नं०
रिता श्यामल	32	डॉ. नं०
सुमन देवी	17	डॉ. नं०
सुमन देवी	21	डॉ. नं०
रंजना देवी	18	डॉ. नं०
Rafan sint	06	डॉ. नं०
Scanda Bette Gupta	EY	डॉ. नं०
Prince Singhal	MP-Admission	डॉ. नं०
Shanti Devi	W-No-14	डॉ. नं०

d) Group stakeholder consultation in Basukinath held on 28.01.2017



(e) Attendance sheet for stakeholder consultation held in Khunti

Page: 4
Date: / /

पंचविरण एवं सामाजिक प्रबोधन पर परिचया-
न्तार विकास एवं आवास विभाग आरक्षक सहायक
के परिचालन निदेशक (PMU, WB) सह मूला निदेशक
श्री राजेश कुमार शर्मा के विभागीय पत्रांक 252/2017
दिनांक 23.01.17 के प्राप्ति के आज दिनांक 31/1/17
आवक 5 वके समारोह समारोह में सूची शर्मा
अनापूर्ति योजना हेतु एक बूक की कार्यवाही -

उपस्थिति :-

(1) श्री कर्पूषा सुब्बा
सावनीय सांसद, सूँची

(2) श्री नीलकंठ सिंह सुब्बा — प्रतिनिधि - ज्योतिष मण्डल
सावनीय संतो सावनीय विकास
आयुक्त, सुदूर

(3) उपस्थित, सूँची

(4) पुलिस अधीक्षक, सूँची

(5) उप विकास आयुक्त, सूँची — 31/1/17

(6) अधीक्षक, नगर संचालन सूँची

(7) उपस्थित नगर संचालन सूँची 31/1/17

(8) कार्यपालक पदाधिकारी नगर सूँची 31/1/17

(9) नगर प्रबंधक, न.प. सूँची - Vijay Kumar
31/1/17

- (18) श्रीमती शशी कश्यप
पार्षद कार्ड नं० ०१ R. Kashyap
3/2/2017
- (19) श्रीमती अंजलि देवी
पार्षद कार्ड नं० ०२ आंचल देवी
3/2/2017
- (20) श्री संजय मसाद
पार्षद कार्ड नं० ०३
- (21) श्री मनीष नाथ
पार्षद कार्ड नं०-०४
- (22) श्रीमती सुकन्या खापुर
पार्षद कार्ड नं० ०५
- (23) श्रीमती मेलाणी सुंगा
पार्षद कार्ड नं० ०६
- (24) श्री सुरेश कुडा
पार्षद कार्ड नं० ०७
- (25) श्री सुरेश सिंह
पार्षद कार्ड नं० ०८
- (26) श्रीमती अंजली सुमिका चौध
पार्षद कार्ड नं० ०९ Jini Gade
03/2/17
- (27) श्रीमती मंजु देवी
पार्षद कार्ड नं० १० मंजु देवी

(28) श्री. कर्पुन चव्हाण
कार्ड नं 11

(29) श्री. निरंजन भगत
कार्ड नं 12

(30) श्रीमती. पारिजात शर्मा
कार्ड नं 13

(31) श्री. सचिनकुमार शर्मा
कार्ड नं 14

(32) श्रीमती. सोनिया शर्मा
कार्ड नं 16

(33) Sunder Kachhal
Assistant Project Manager (JWIDCO)

(34) Kishu Dey
Consultant, E&Y, Kolkata

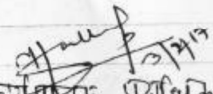
(35) Paras Pal Singh
MR. Parshyati

सर्वप्रथम नगर पंचायत अधिनियम
द्वारा दूरी के द्वारा अधिनियम सभी राजमान्य
व्यक्तियों एवं पदाधिकारियों का स्वागत
किया गया। इसके बाद अर्जेंट एंड यंग (परामर्शी)
को कार्यवाहक पदाधिकारी न.प. खुंटी
द्वारा योजना के बारे में बताने का
अभ्युक्ति किया गया। सर्वप्रथम परामर्शी द्वारा

बुंदी राष्ट्रीय योजना के बारे में बताया गया। इसमें योजना के विभिन्न अवयवों के बारे में विस्तृत रूप से जानकारी दी गई। इसके बाद योजना के लागू होने के बाद एवं निर्माण के दौरान लोगों को मित्र-सिक्तों का सामना करना पड़ेगा इसके बारे में चर्चा की गई। इसके विस्तारकर फूटपाथ दुकानदारों एवं आसनों को छोड़ने वाली परियोजनाओं के बारे में चर्चा की गई। परियोजना के अन्तर्गत होने वाले पर्यावरणीय प्रभावों के बारे में प्रकाश डाला गया।

परिचर्चा के अन्तर्गत होने के बाद उपविभागाध्यक्ष महोदय द्वारा परामर्शी को निर्देश दिया गया कि आगामी वर्ष फूटपाथ दुकानदारों एवं उनके निर्माण के समय होने वाली सिक्तों से पहले ही अवगत कराया जाए ताकि उन्हें कोई परेशानी का सामना नहीं करना पड़े।

अन्त में कार्यपालक परामर्शी के द्वारा अध्यक्षों को सूचित के बाद बैठक की कार्यवाही समाप्त की गई।


कार्यपालक परामर्शी
नगर पंचायत, बुंदी

ANNEXURE XXIV: INSPECTION CHECKLIST FOR MONTHLY PROGRESS REPORTING BY JMDP-PIU

Name of Sub-Project: _____

Name of ULB: _____

The components/Packages taken up for _____ town are detailed in the following Table.

Package	Particulars	Status	Date of Award	Date of Completion

The status of Environmental and Social Management Plan (ESMP) for the month _____ year _____ are presented in the following sections

Permissions/Consents/Clearances/Approvals:

S.no	Particulars	Competent Authority	Status (applied/obtained)
1.	Forest		
2	Railways		
3	National Highway		
4	Irrigation Department		
5	NOC for water abstraction from source		
6	CTO (batching plant)		
7	CTE (batching plant)		
8	Ground water extraction for construction activity		
9	Establishment of DG-set (as per Air Act, 1981.)		
10	PUC certificates		
11	Labour License (as per Labour Act 1970)		
12	Labour Registration (as per BOC Act -1996)		
13	Certificate of Employing Labour (as per BOC Act -1996)		

Field Visits & Training Conducted

Field Visit/ Training	Date	Sites Visited	Persons Met	Remarks

1.5 DESIGN CHANGES

Design Parameter	New scope of work	Environmental Impacts/Risks	Mitigation measures	Cost of mitigation (if Applicable)

Compliance to EMP¹⁸ (PLEASE list all the applicable mitigations under each stage of the contract packages)

Particulars	Mitigation Action	Complied	Compliance to EMP
Pre-Construction Phase		<input type="checkbox"/>	
Construction Phase		<input type="checkbox"/>	
Monitoring Requirements & Specifications		<input type="checkbox"/>	

Redress of Grievances/ compliant handling

Sub Project	Registers Maintained	No. of Grievances received in the month	Action Taken

Labour Registration and licenses obtained

Sub Project	Labour license obtained (no. of labour)	Total labour registered/working on the project on the date of inspection	M/F	Local/Migrant

¹⁸Insert Construction Stage EMP table here and provide compliance status, and Recommendations for each EMP measures and environment monitoring reports

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Accidents, INJURY, DisABILITY DEATH on site

Sub Project	Total accidents in project site/camps etc. this months	Fatal/serious injury	FIR available	Action taken

Temporary impacts on structures and livelihoods

Sub Project	Total affected identified so far.	PAH identified this month	ARAP/RAP/SMP approved so far	Received entitlement so far.

ENVIRONMENTAL MONITORING VERIFICATION

Air Quality Monitoring

Time-period of Monitoring:

S.No	Location of sampling	Observed Value	NAAQS Standard	Compliance	Mitigation

Water Quality Monitoring

Time-period of Monitoring:

S.No	Location of sampling	Observed Value	IS:10500 Values	Compliance	Mitigation

Ambient Noise Monitoring

Time-period of Monitoring:

S.No	Location of sampling	Observed Value	CPCB Values	Compliance	Mitigation

TREES PLANTED

S.No	Location	Species Panted	Quantity	Survival (%)

WASTE MANAGEMENT PLAN VERIFICATION

S. No	Waste Type	Quantity	Disposal Method/ Reuse site
1	Excavated Soil		
2	Domestic Solid Waste		
3	Construction debris		
4	Hazardous Waste		
5	Labour Camp Waste		

Summary and Conclusions

ESMP monitoring being done daily on the critical issues and following improvements/ positive developments are observed.

SI	Details	Compliance Status
1		
2		
3		
4		
5		

However, the following issues need to be addressed.

SI	Issues/Deviations	Compliance status last visit	Corrective Actions to be taken	Compliance status during this month
1				
2				
3				
4.				
5				
6.				

7				
8				
9				

Prepared by: _____

Date: _____

Signature: Assigned officer/environment officer: _____

Countersigned: PIU Head _____

ANNEXURE XXV: LIST OF REFERENCES

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