

# **Bhedaghat Sewerage Subproject, Dist. Jabalpur (M.P.)**

## **Introduction**

1. Madhya Pradesh (MP) is geographically the second largest, fifth populous and eighth most urbanized state in India. MP's total urban population is 20.1 million which is 28% of total population spread over 476 urban centers.
2. Rapid urbanization in MP has seen sprouting of new urban settlements across the state, more often close to existing cities. The last decade (2001-2011) has seen a 20% increase in the number of urban centers, including a 50% increase in census towns, compared to a 6% increase in previous decade (1991-2001).
3. Government of Madhya Pradesh through its Vision Document 2018 has shown its determination to face the challenges of urbanization and has undertaken many programs to support the urban infrastructure. Madhya Pradesh Urban Development Project (MPUDP) is one of them, which envisage financial support from The World Bank for various sub projects of Water Supply and Waste Water Management.

## **Subproject Description**

4. Bhedaghat is a small municipality (Nagar Parishad) in Jabalpur district in the state of Madhya Pradesh, India. Geographically, Bhedaghat lies between 23°08'N 79°48'E and 23°13'N 79°80'E. Situated on the banks of River Narmada, Bhedaghat is a major tourist town situated close to Jabalpur, the third largest city of Madhya Pradesh. The marble rocks accompanying graceful Narmada River at Bhedaghat provides a spell bounding experience to the tourists. These tall marble mountains on the Banks of Narmada are known to magically change shapes as you sail along the river. The calm Narmada throws in a beautiful surprise as she descends a massive 98 ft, creating the spectacular Dhuandhar falls. While nature flaunts its beauty, the magnificent Chaunsath Yogini Temple, dedicated to the goddess Durga, will take you back in time with its inimitable artistry.
5. Currently water in Bhedaghat is supplied at 53 LPCD partly through ground water and partly through direct pumping from River Narmada. To augment water supply of Bhedaghat MPUDC is implementing a water supply augmentation project under Asian Development Bank assisted Madhya Pradesh Urban Services Improvement Project (MPUSIP). This is a group water supply scheme comprising of Bhedaghat, Patan, Tendukheda, Majhouli, Sihora, Panagar and Katangi Nagar Parishad. The detailed project report, initial environmental examination and due diligence reports for involuntary resettlement and indigenous people have already been prepared and approved by the Asian Development Bank. Contract for this project has been awarded on 05-08-2017 and work is in progress. This augmentation project envisages a clear water supply of 1.24 MLD in the year 2048, at a rate of 135 LPCD to the inhabitants of Bhedaghat. The source of water supply is River Narmada. The scheduled date of completion of the project is 04.08.2019.
6. With the increased water supply and also to protect holy River Narmada from pollution, MPUDC is now proposing sewage collection and treatment project under The World Bank assisted MPUDPC.

7. Proposals for Bhedaghat Sewerage Project: Bhedaghat town is proposed to be covered by de-centralised sewerage system considering the topography of the town and location of the municipal wards. The Bhedaghat town has been divided into Five main clusters; the sewage generated from these clusters will be collected by small bore sewer and will be treated through either with Bio-Remediation with Re-circulating Reactors (BRR) treatment plant (Cluster 1,2 and 5) or Package Treatment (Cluster 3 and 4) by providing bio digester and small bore sewer network. Following are the details of proposed sewerage components:
  - (A) Sewage Pumping Station. Three SPS and one IPS will be required to collect waste water of each three cluster i.e. 1,2&5 after that waste water will be pumped by DI pumping main of average length 150 m. and diameter of 100mm. The SPS are proposed to be constructed for 60 min. detention and average sewage flow for the ultimate year 2048. Pumping units are proposed to be installed for the sewage flow of intermediate design period of 2033 i.e. for 15 years.
  - (B) Sewage Treatment Plant. Three BRR STP in cluster no. 1, 2 & 5 of 0.43MLD, 0.11 MLD and 0.22 MLD and two STP on package treatment of capacity 0.06 MLD each for cluster 3 and 4 have been proposed.
  - (C) Sewer Network. RCC pipe with diameter 100,150 mm, and 200 mm are proposed. DWC 120/100 mm shall be used for making connections from house to sewer. The length of Different pipe shall be approximately 7.055 Km.
  - (D) House connections. It is proposed to lay 120/100 mm DWC pipe for the purpose of HH connection to connect house utility to nearby sewer. This will ensure fast connectivity and avoid damage to manhole by unskilled people during connection.

### **Environment and Social Assessment**

8. This report presents an Environmental and Social Assessment (ESA) of the Bhedaghat Sewerage Scheme subproject under MPUDP. The assessment has been done on the basis of review of literature, public /other stakeholders' consultations and field visits, which could identify potential impacts on the natural environment and the social situation in the subproject region during pre-construction, construction and operation phase of the sub project.
9. Various environmental factors such as the presence of eco-sensitive region in and around the project area, clearance of tree cover, improper storage of excavation spoils, flooding of adjacent areas, elevated noise and dust levels, damage to existing utilities were reviewed based on the Environmental and Social Management Framework (ESMF) of MPUDP. Based on the above and considering that the sub-project is an Integrated Sewerage System involving construction of conventional sewer system treatment plant, pumping station, outfall sewers, and Small Bore Solid Free System (SBSFS), . The project has been categorized as 'E<sub>a</sub>' from environment perspective. .
10. Based on the criteria set up for social screening and categorization of sub-projects as

per the ESMF of MPUDP, the present sub project falls under low impact category, which does not involve any land acquisition and has overall positive impact by treating the wastewater of the town, which was earlier polluting the Narmada river. The subproject hence has been identified as a Category S<sub>c</sub> from social safeguards perspective since all the sites proposed are on government land and no non-title holders are being affected.

11. Where potential adverse effects are predicted and can't be avoided, mitigation measures have been proposed and its implementation is presented in an Environmental and Social Management Plan (ESMP) and Environmental Monitoring Plan (EMP) (EMP) / Social Monitoring Plan (SMP).

### **Legal, Policy and Administrative Framework**

12. Construction of sewage treatment plants does not attract Environmental Impact Assessment (EIA) notification of Government of India (GoI), the project does not require Environmental clearance from Ministry of Environment, Forest and Climate Change MoEF&CC/ State Environment Impact Assessment Authority (SEIAA). The following National and State level environmental and social acts, laws and the Operational Policies of the World Bank will be applicable to the Bhedaghat Sewerage sub project :
  - i. Environment (Protection) Act, 1986: This is an umbrella Act of GoI and will be applicable for the project.
  - ii. Water (Prevention and Control of Pollution) Act of 1974, Rules of 1975, and amendments: This act/ rules will be applicable to the sub-project and the proposed sewage treatment plant will require 'Consent to Establish' and 'Operate' from the Madhya Pradesh State Pollution Control Board (MPSPCB).
  - iii. Air (Prevention and Control of Pollution) Act of 1981, Rules of 1982 and amendments: Requirements of this act/rule will be applicable both during construction and operation phase of the sub project.
  - iv. Child Labour (Prohibition and Regulation) Act, 2000 shall be applicable
  - v. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013(RTFCTLARR Act 2013): No land acquisition or resettlement impacts are anticipated for any of the proposed civil works for this sub project, hence this act is not applicable to the propose subproject.
  - vi. The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014: Requirements under this act will be applicable during construction.
  - vii. Environmental and Social Management Framework of MPUDC
13. The Project is financed by the World Bank and hence Bank's environmental and social safeguard policies are also applicable to this Project. The applicability of OPs in line with project activities and project settings are:

- i. OP 4.01 Environmental Assessment: The OP 4.01 is applicable to the sub project.
- ii. OP/BP 4.12 Involuntary Resettlement: Since no involuntary resettlement is needed, this policy is not applicable, No separate RAP preparation is required.
- iii. OP / BP 4.10 Indigenous People: Bhedaghat does not falls in Schedule V area, as per Constitution of India, but people are not residing in groups / tolas. They are scattered in different wards of the project area. Moreover, they have become part of the mainstream in terms of their language and culture, therefore no need of separate IPP.
- iv. OP / BP 4.11 Physical Cultural Resources: Bhedaghat is a famous archeological place and there are monuments of national importance, therefore policy will be applicable to the sub-project.

### **Baseline Environment Profile**

14. Environmental and Social Profile of the study area is assessed based on available secondary data on Physiographic, Topology, Climatic, water quality, Biological profile of Bhedaghat town. The flora and fauna identified in the study area are commonly found and not specific to the region. Also, there are no National Parks, Wild life sanctuaries, Bird sanctuaries within 10 Km radius of the project site. There are no rare and endangered species in the subproject area.
15. The data on ambient air quality of Bhedaghat is not available at present since this town is not subjected to the monitoring by the Madhya Pradesh Pollution Control Board (MPPCB) as there are no major industries in the project area. Therefore, initial ambient air quality monitoring was conducted by the support agency appointed by MPUDC, so baseline air quality data is available during the DPR stage (before construction). The monitoring was done for the period July 10<sup>th</sup> to July 12<sup>th</sup>, 2018 results reveal that the quality of ambient air in Bhedaghat is within the Standards prescribed by CPCB.
16. Social study was undertaken to understand the cultural and social status of the residing community. As per 2011 Census of India, Bhedaghat had a population of 6657. Sex ratio is 884. Bhedaghat has an average literacy rate of 66.40, higher than the national average of 64.8%. Scheduled Caste population comprises 903 whereas tribal population constitutes a mere 1174 of the total population.

### **Assessment of Anticipated Impacts**

17. The anticipated impacts and corresponding mitigation measures are discussed in Phases namely: Influence area and general impacts. Based on the magnitude and duration of the project activities, the nature, duration and extent of impact are assessed.
18. The overall impact of the project on the beneficiary communities and the environment is expected to be positive resulting in an improvement in the health and quality of life of the people in the subproject area. There are no environmental sensitive areas in the

subproject area, whereas the sub-project is an Integrated Sewerage System involving construction of conventional sewer system treatment plant, pumping station, outfall sewers, and Small Bore Solid Free System (SBSFS), hence the subproject has been Categorized as 'E<sub>a</sub>' from environment perspective. .

19. STPs and IPS for the proposed project have been planned to setup on Government lands. No squatters or encroachers in and around these sites are likely to be affected by the project. For laying of sewer works, there will be temporary disruption to the local community in terms of traffic congestion, access to roads, (especially in dense areas and narrow roads), shops and residences. In congested streets, the residents have built ramps over the drains to have a direct access to the road or pathway. During laying of pipelines, due care will be taken to not to disturb these ramps; however, in some cases such ramps may have to be demolished, and restored after the construction work is completed..
20. Possible Environmental and Social Impacts during preconstruction, Construction Phase and Operation Phase has been identified and mitigations during these phases have been suggested. Various environment and social impacts identified include 1) air pollution due to dust and noise pollution during construction; 2) disposal of waste produced due to excavation activities; 3) loss of vegetation at STP/SPS site and while laying sewer network (tress mainly of Babul- *Vachellia Nilotica*, Neem-*Azadirachta indica* along the alignment of network); 4) temporary loss of access to residents, due to laying of sewer network; 5) temporary disruption of traffic (for 2 to 3 days at each stretch), 6) Temporary shifting of vendors (sitting on ground or having mobile carts) - in total 35 vendors to be temporarily affected; 7) Extensions like approach for houses over drains: to be temporarily affected-100); 8) Access to appx 40 small shopkeepers likely to be affected etc. Such impacts would be jointly verified and estimated during construction stage by the PIU and Design Review Built Operate Contractors (DRBOC).

### **Stakeholder and Public Consultation**

21. Stakeholder and Public consultation is useful for gathering environmental data, understanding likely impacts, determining community and individual preferences, selecting project alternatives and designing viable and sustainable mitigation and compensation plans. The main objective for the consultation process was to involve the community at the very early stages so as to identify likely negative impacts and find ways to minimize negative impacts and enhance positive impacts of the project. Extensive public consultation meetings for the Bhedaghat Sewerage Scheme took place while undertaking this ESA study.
22. Stakeholders and Public consultation and sensitization meetings were held within selected wards of the project area from April 2017 to May 2018. Five meetings/public consultations were held with community members.

Representation of all categories and different income level groups in these meetings were also ensured. Key outputs of consultations have been taken into consideration and suggested changes in the design and implementation activities.

23. Key issues discussed included: project background, problems and benefit of the project implementation, absence of sewerage system in the town, sludge and stagnant pools of water in the entire town is visibly disturbing and leading to pollution and mosquito menace, causing many health problems; Physical relocation and resettlement should be minimized and efforts should be made to prevent loss of access to livelihood activities; women participation in the project activity, local labourers participation, safety of children, etc. Many families have to go out for defecation due to which they face many health problems.

#### **Tribal and Vulnerable Population Identification and Assessment of Bhedaghat**

24. The tribal population of Madhya Pradesh increased to 15,316,784 in 2011 from 12,233,474 in 2001. In Madhya Pradesh certain areas have been declared as scheduled area as Specified by the "Scheduled Areas under the fifth Schedule of Indian Constitution". Bhedaghat does not find a place under the Schedule V. However, social impact screening and assessment was done and no negative impacts due to the project were identified on tribal people
25. On the basis of identification, social impact screening and assessment and prior informed consultations, it was found that these groups are not a distinct groups, and also do not have any separate cultural, economic, social, or political institutions. They are well versed with local Hindi language also. No negative impact assessed during the process, so no separate IPP/TVDP is prepared.

#### **Environmental and Social Management Plan**

26. **Environmental and Social Management Plan.** An environmental and social management plan (ESMP) has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels. Location and setting of the proposed infrastructure was considered to further reduce impacts. These include (i) locating facilities on government-owned land to avoid the need for land acquisition and relocation of people; and (ii) laying of pipes in RoW alongside main/access roads, to reduce acquisition of land and impacts on livelihoods specifically in densely populated areas of the town.
27. The ESMP includes mitigation measures such as (i) implementation of traffic management plan in coordination with local traffic police to minimize traffic impacts; (ii) awareness campaigns and consultations to inform residents and businesses of potential disturbances; (iii) provision of walkways and planks over trenches to ensure access will not be impeded; (iv) use of noise-dampening measures in areas with sensitive receptors such as hospitals, schools, places of worships and other silence-zones; (vi) use of dust-suppression methods such as

watering and/or covering of stockpiles; (vii) finding beneficial use of excavated materials to extent possible to reduce the quantity that will be disposed of; and (viii) selection of construction methodology near protected monuments in discussion with the ASI, having the excavation observed by person with archaeological knowledge for chance finds,.

28. As for the O&M phase, facilities will need to be repaired from time to time, but environmental and social impacts will be much less than those of the construction period as the work will be infrequent, affecting small areas only. The ESMP includes mitigation measures and monitoring plan to ensure compliance to environmental and social standards during O&M phase.
29. As a part of the EMP, Traffic Management Plan, Awareness campaigns, dust suppression measures, etc. have been formulated to ameliorate the adverse impacts on environment.
30. The ESMP will guide the environmentally-sound construction of the subproject and ensure efficient lines of communication between Madhya Pradesh Urban Development Company (MPUDC), project management unit (PMU), project implementing unit (PIU), consultants and contractors. The ESMP will (i) ensure that the activities are undertaken in a responsible non-detrimental manner; (ii) provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental and social performance on site; (iii) guide and control the implementation of findings and recommendations of the environmental and social assessment conducted for the subproject; (iv) detailed specific actions deemed necessary to assist in mitigating the environmental and social impact of the subproject; and (v) ensure that environment, health and safety guide lines of the GoI and World Bank are complied with. The ESMP includes a monitoring program to measure the environmental condition and effectiveness of implementation of the mitigation measures. Environmental Monitoring Programmes have been formulated for implementation during project construction and operation phases. The environmental monitoring has been suggested for monitoring of various parameters including: ambient air quality, ambient noise level, soil, etc. It also includes observations on- and off-site, document checks, and interviews with workers and beneficiaries. The estimated cost of implementing ESMP measures is about INR. 3.02 Million (INR. 30.22 Lakh). The Environmental Monitoring is recommended to be conducted for the entire subproject construction and operation phases.
31. This ESA will be verified by MPUDC through its Project Implementation Unit PIUs based on the final design of the Design Review, Build and Operate (DRBO) Contractor and the relevant ESMP provisions will be updated to address the impacts due to the design changes (if any) during the construction phase. The updated ESA and ESMP will be shared with World Bank for necessary clearance and disclosure by MPUDC.

## **Monitoring and Evaluation**

32. Urban Development and Housing Department (UDHD) of Government of Madhya Pradesh (GoMP) is the Executing Agency for MPUDP and is responsible for management, coordination and execution of all investment program activities. Implementing agency is the Madhya Pradesh Urban Development Company Limited (MPUDC) of GoMP, which is implementing this program via a Project Management Unit (PMU) at Bhopal, and regional Project Implementation Units (PIUs). The PMU will appoint contractors to build infrastructure and PIUs will coordinate the construction. PMU and PIUs will be assisted by Project Management Consultants (PMC).
33. The contractor will be required to submit to PMU, for review and approval, a Contractor's Environmental and Social Management plan (CESMP) including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, disposal areas for construction and demolition wastes and digested sludge; (ii) specific mitigation measures following the approved ESMP; (iii) monitoring program as per CESMP such as labour management plan, social impact management; and (iv) budget for CESMP implementation. And no works are allowed to commence prior to approval of CESMP. During implementation, the Contractor would be required to submit periodic reports as outlined in the Environmental Monitoring Programme covering ESHS parameters as required in the CESMP.
34. A copy of the ESMP/approved CESMP will be kept on site during the construction period at all times. The ESMP will be included in the bid and contract documents. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

## **Grievance Redressal Mechanism**

35. A Grievance Redressal Mechanism is proposed at the town level, which includes formulation of a Grievance Redressal Committee consisting of an Elected Representative (preferably female), a person who is publicly known and accepted by the locals to speak on their behalf (to be identified by the Elected Representatives of the Bhedaghat Nagar Parishad (BNP), Community Development officer from PIU and BNP level community organizer.
36. Affected person(s) shall file its grievance with the respective ULB, PIU or Contractor in writing or through telephone, clarifying the area of grievance i.e., grievances related to construction activities affecting the livelihood or loss of property/utility or restriction of access and the grievances regarding the quality of

service during operation and maintenance period. The grievance shall be addressed within 48 hours. However, if there is any technical issue, the aggrieved will be informed accordingly.

37. The Design Engineer in-charge from PIU for the project shall be the nodal officer for the grievance redressal. The meeting of the committee shall be convened as and when necessary and at such place or places as it considers appropriate; and conduct the proceedings in an informal manner as he / she considers appropriate with the object to bring an amicable settlement between the aggrieved parties.

### **Conclusion and Recommendations**

38. The project report of the proposed sub-project Bhedaghat Town after environment and social analysis concludes that the project have overall positive benefits on the life, health and environment of the people. There is no land acquisition or livelihood losses reported to be caused under this project. As per environmental and social management framework of MPUDD, Environmental and Social Assessment, was conducted for addressing possible issues/ concerns arising from proposed project.
39. There are no environmentally sensitive areas (like forest, sanctuaries, etc.) in or near sub-project area. There are archaeological and historical protected areas/ sites within the town; but none of the subproject components comes within 100m/300m area, therefore permission from ASI department is not required. Other than this, the impact identified are mostly related to construction and operation phase.
40. There is no land acquisition is expected also no permanent adverse impacts on assets and livelihood is anticipated; hence, no RAP is required as per ESMF. Only minor damage to road side properties and loss of income for certain days and locations during construction phase may be identified. Such impacts shall be assessed by DRBO contractor and this ESA and SMP will be updated and approved by MPUDD. In Project area, no indigenous people are identified meeting the requirement of indigenous peoples policy and hence, no separate Indigenous Peoples Development Plan (IPDP) is required.