

# DAM REHABILITATION AND IMPROVEMENT PROJECT (DRIP) II

(Funded by World Bank)

## MATRIKUNDIA DAM

### ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT



February 2020

(Draft Report)

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## ABBREVIATIONS AND ACRONYMS

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AIBP	:	Accelerated Irrigation Benefit Program
AIDS	:	Acquired Immunodeficiency Syndrome
ASHA	:	Accredited Social Health Activist
ASI	:	Archaeological Survey of India
AWS	:	Automatic Weather Station
BOCWW	:	Building and Other Construction Workers Welfare
CCA	:	Culturable Command Area
CE	:	Chief Engineer
CPCB	:	Central Pollution Control Board
CPMU	:	Central Project Management Unit
CRZ	:	Coastal Regulation Zone
CWC	:	Central Water Commission
DEIAA	:	District Environment Impact Assessment Authority
DRIP	:	Dam Rehabilitation and Improvement Project
EAP	:	Emergency Action Plan
ERP	:	Emergency Response Procedure
ESCP	:	Environmental and Social Commitment Plan
ESF	:	Environmental and Social Framework
ESIA	:	Environmental and Social Impact Assessment
ESS	:	Environmental and Social Standard
FI	:	Financial Intermediaries
FSI	:	Forest Survey of India
GBV	:	Gender Based Violence
GCA	:	Gross Command Area
GIS	:	Geographic Information System
GRM	:	Grievance Redressal Mechanism
HIV	:	Human Immunodeficiency Virus
ICDS	:	Integrated Child Development Services
ID&R	:	Investigation Design & Research
IGND	:	Indira Gandhi Nahar Division
IPF	:	Investment Project Financing
IS	:	Indian Standards
JICA	:	Japan International Cooperation Agency
JTU	:	Jackson Turbidity Unit
LMP	:	Labour Management Procedure
MCM	:	Million Cubic Meters
MDDL	:	Minimum Draw Down Level
MJSA	:	Mukhyamantri Jal Swavlamban Abhiyan
MOEF&CC	:	Ministry of Environment, Forest & Climate Change
MSDS	:	Material safety data sheet
MSIHC	:	Manufacture Storage & Imports of Hazardous Chemicals
MWL	:	Maximum Water Level
NAAQS	:	National Ambient Air Quality Standards
NH	:	National Highway
NTU	:	Nephelometric Turbidity Unit

O&M	:	Operation & Maintenance
OBC	:	Other Backward Class
OHS	:	Occupational Health & Safety
PD	:	Project Director
PESO	:	Petroleum and Explosives Safety Organization
PMKSY	:	Pradhan Mantri Krishi Sinchayee Yojana
PMU	:	Project Management Unit
PPE	:	Personal Protective Equipment
PST	:	Project Screening Template
PUC	:	Pollution Under Control
PWD	:	Public Work Department
RCC	:	Reinforced Cement Concrete
SC	:	Scheduled Castes
SCADA	:	Supervisory Control and Data Acquisition
SEF	:	Stakeholder Engagement Framework
SEIAA	:	State Environment Impact Assessment Authority
SH	:	State Highway
SHG	:	Self-Help Group
SPCB	:	State Pollution Control Board
SPMU	:	State Project Management Unit
ST	:	Scheduled Tribes
TMC	:	Thousand Million Cubic Feet
WLS	:	Wildlife Sanctuary
WRD	:	Water Resources Department

## 1.1 OVERVIEW OF DRIP 2 PROGRAMME

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The proposed Dam Rehabilitation and Improvement Project (DRIP-2) would complement the suite of ongoing and pipeline operations supporting India's dam safety program. The project would continue to finance structural improvements but would break with the prevailing build-neglect-rebuild approach by giving greater emphasis to establishing sustainable mechanisms for financing regular O&M and dam rehabilitation, enhancing State capabilities to manage these critical assets through institutional strengthening, and introducing risk-informed dam safety management. The project development objective (PDO) is to increase the safety of selected dams and to strengthen institutional capacity for dam safety in participating States. Project Components include:

**Component 1: Institutional Strengthening (US\$ 40 million):** This component supports further strengthening of dam safety management in the country through institutional modernization. A major focus of activities under this component will be increasing the oversight of dam safety by developing dam safety guidelines and by strengthening the capacity of various dam safety actors to carry out the regulatory functions defined in the proposed Dam Safety Bill, which has been passed by the Lok Sabha.

**Component 2: Risk-informed Asset Management and Sustainable Financing (US\$ 25 million):** This component supports identifying long-term funding needs for dam safety based on asset management and risk assessment financing for dam safety. This component would focus on: (i) improving the efficiency of public financing; (ii) generating alternative revenue streams. Alternative revenue streams that could be developed include tourism and water recreational activities, fisheries, and other innovative schemes such as floating solar panels; and (iii) establishing financing arrangements for dam safety (e.g., dedicated budget lines).

**Component 3: Rehabilitation of Dams and Appurtenant Structures (US\$ 200 million):** This component supports improving the safety of dams through structural and non-structural interventions. Structural measures could include measures for seepage reduction (e.g., grouting, geo-membranes), hydrological and structural safety measures (e.g., additional spillways, fuse plugs), enhancing the reliability of operational facilities (e.g., gates), rehabilitating foundation deficiencies, strengthening dam concrete/embankment structures, and improving basic dam facilities (e.g., access roads). Non-structural measures could include standardized dam safety instrumentation, monitoring, assessment and reporting protocols for dam health; flood forecasting and early warning systems; integrated reservoir operations including streamflow forecasting for climate resilient dam management; preparation and implementation of EAPs; preparation and implementation of sediment management plans; and revised operational rule curves to account for climate change.

Component 4: Project Management (US\$ 15 million): This component will ensure effective implementation of project activities and monitoring and evaluating project implementation progress, outputs and outcomes. The component will support: (i) establishment of the Central Project Management Unit (CPMU), which will oversee and coordinate activities of the implementing agencies of the project, supported by a Engineering and Management Consultant (EMC), which is currently being procured; (ii) establishment and operations of State level Project Management Units (SPMUs) within State implementing agencies, which can hire experts in various fields as and when needed on a contractual basis; (iii) setting up of a monitoring and evaluation system; and (iv) establishment of a Quality Assurance and Quality Control system. This component will also finance consultancies, as well as related material, office equipment and incremental operating costs. The project will provide investment and technical support for the establishment of a Management Information System and Information and Communication Technology systems.

## 1.2 SUB-PROJECT DESCRIPTION – MATRIKUNDIA DAM

The construction of Matrikundia Dam Project across Banas river, a tributary of Kali Sindh river was completed in the year 2003 to divert water. Matrikundia Dam is located in Rashmi Tehsil of Chittorgarh District Rajasthan. Road Route to Matrikundia Dam- Nearest Highway to Project is Bhilwara – Rajsamand Highway (NH 758). The Project site is 5 km from Rashmi Tehsil and 30km from Karoi Tehsil Dist- Bhilwara. Nearest villages of site are Jawasiya, Gurjniya, Gilund, Dhulkera etc.

Salient features of the project area as reported below:

<b>Project</b>	Matrikundia Dam PROJECT
River	Banas river
Lat/Long	24 <sup>0</sup> 20' 34"/ 76 <sup>0</sup> 28' 20"
Catchment Area	3485 sq km
<b>Main Dam</b>	
Type	Earthen (Gated spillway)
Length	8400 m
Top elevation	471.80 m
Height of dam above lowest river bed level	14.60 m
Lowest river bed level	457.20 m
<b>Spillway</b>	
Type	Gated
Length	538 m
Location of spillway	CHAINAGE 33+16 TO 51+14 OF MAIN DAM
Crest level	465.30 m
Number of bays	52
Discharge capacity at MWL	8125 cumec
Revised design flood	14340 cumec
Size of spillway gate	36 gates of 8 m and 16 of 9 m width and 4.95 m height
<b>Reservoir</b>	
Maximum water level	470 m
Full Reservoir Level	470 m/468.5 m (restricted)
MDDL	461.62 m
Live storage	49.98 MCM
Gross storage	50.62 MCM
Reservoir spread area	1166 ha

Year of start of construction	1972
Date of completion	1981
Year of first impoundment	1983



View of the Dam

### **Proposed Interventions/ Activities at Matrikundia Dam**

The following rehabilitation proposals have been formulated and same are described in PST. Present ESIA report has been prepared considering these proposals/interventions:

### **Structural Rehabilitation Works**

#### **Civil Work**

1. Earth work for Rehabilitation and Modernization of dam
2. Parapet wall work for straightening of dam
3. Cut off trench for rehabilitation of dam
4. Pitching work for Rehabilitation and Modernization of dam
5. Supply of murrom for strengthening of guide bund of dam
6. Guniting of spillway of gates

#### **Electromechanical Work**

7. Construction of pipe railing on spillway of dam
8. Repairs of gates of matrikundia dam

#### **Basic Facilities Enhancement**

9. Cement Concrete road for tourism facility of matrikundia dam

Figures 1.1 and 1.2 provide photographs of key infrastructure proposed for rehabilitation works and also major interventions locations.

### **Implementation Schedule**

Timelines for implementing above proposals has been proposed as 36 months.



**Damaged Hoist Bridge**



**u/s surface**



**Damaged Panel**



**Damage Railing**



**Disturbed Pitching**

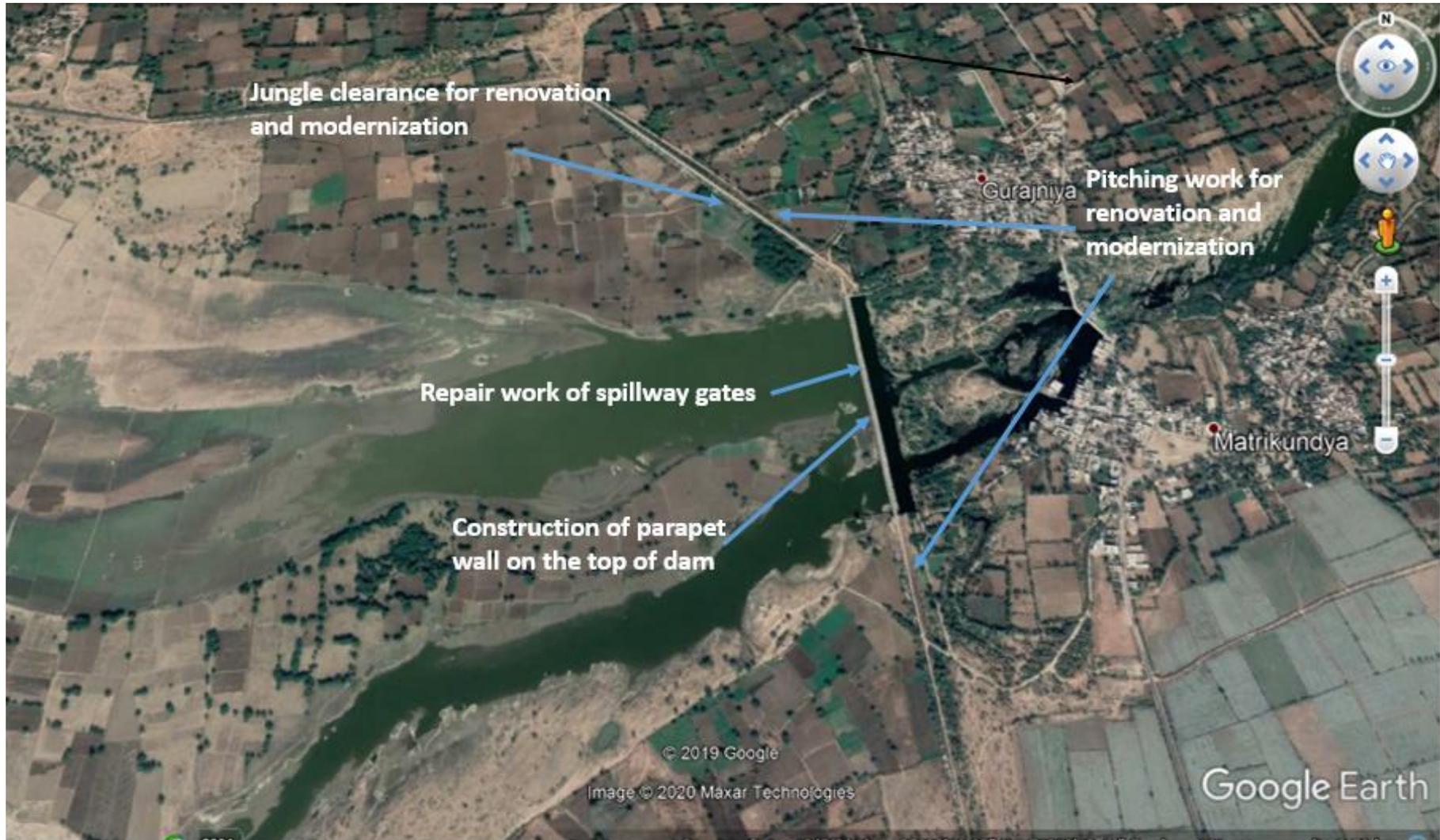


**Repairable DG set**



**Damaged Wire Cable**

**Figure 1.1: Selected Photographs of Improvement/Intervention area**



**Figure 1.2: Project Area showing major intervention location**

### **1.3 PURPOSE OF ESIA**

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The overall project (DRIP II) was categorized as **High Risk** as per the internal Environment and Social Risk Classification of the Bank. Hence, a separate agency was contracted to conduct the Environment and Social Impact Assessment to use it as tool for decision-making on the sub-project. Specifically, the objective of the ESIA is:

- i. To identify, evaluate and manage the environment and social risks and impacts of the project in a manner consistent with the ESSs;
- ii. To adopt a mitigation hierarchy approach to the project's E&S risks i.e. a) anticipate and avoid risks and impacts; b) minimize or reduce risks and impacts to acceptable levels, if not avoidable; c) once risks and impacts have been minimized or reduced, mitigate; and (d) where significant residual impacts remain, compensate for or offset them, where technically and financially feasible;
- iii. To help identify differentiated impacts on the disadvantaged or vulnerable and to identify differentiated measures to mitigate such impacts, wherever applicable;
- iv. To assess the relevance and applicability of environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects, whenever appropriate; identify gaps, if any exist, and
- v. To assess borrower's existing capacity, gaps therein, and identify areas for enhanced capacity towards management of E&S risks.

### **1.4 APPROACH AND METHODOLOGY OF ESIA**

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The following approach has been adopted for ESIA:

- i. Study sub-project information, proposed interventions, their magnitude and locations and carry out assessment of each proposed intervention to identify the magnitude of E&S risk and impacts;
- ii. Conduct site visit to understand baseline environment and social settings, proposed activities under the sub-project, their location and sensitivity, if any.
- iii. Conduct stakeholder consultations to help identify potential stakeholders; to provide information on the proposed interventions; to identify issues and concerns; and finally ascertain appropriate mechanisms for continued engagement
- iv. Prepare baseline data essential for impact assessment in immediate vicinity area of proposed interventions from secondary sources, such as land-use, protected areas in vicinity, habitation, access roads, ascertain presence of indigenous (schedule tribe)/vulnerable people, etc.
- v. Review relevance and applicability of national and state legal requirements and Bank's ESF policy, standards and directives and preliminary assessment of impacts as per ESS framework (2-8), suggest mitigation measures in accordance with the requirements of each applicable standard
- vi. Undertake institutional assessment to identify existing capacities & relevant gaps to manage E&S risks and impacts

All formats used for collection of the above information, checklists used for consultations and photographs towards preparation of the Draft ESIA report are in the project files

India has well defined environmental and social regulatory framework. The regulation applicability depends on nature of work and location of work. Broadly legislation can be divided into four categories viz environmental, social, wildlife protection, and forests conservation. The applicability of environmental laws to dam are mostly at setting up new dams compared to rehabilitation stage. The applicability analysis of regulations pertaining to all the above four categories is carried out and summarized at section 2.1.

Central Water Commission, Ministry of Jal Shakti, Government of India has also prepared “Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects” as a guiding document for the dam owners to systematically address in advance the environmental safeguard requirements and have discussed in detail all applicable legal requirement. Reference has been drawn from this document as well while carrying out applicability analysis.

The World Bank ESF comprises 10 ESSs (ESS1 to ESS10) and 2 Directives. The applicability of each standard to the proposed rehabilitation proposals and standard specific requirements is analysed and presented at Section 2.2.

## **2.1 APPLICABILITY ANALYSIS OF INDIAN REGULATION**

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The regulatory applicability analysis to the proposed rehabilitation work has been carried out considering nature of improvements, methodology of construction/improvement, material requirement, sourcing and transportation mode, and waste generation. The regulatory applicability analysis is summarised at **Table 2.1** below.

**Table 2.1: Applicability Analysis**

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
1	Environment Protection Act/Rules-1986	To protect and improve overall environment	Yes	Applicable to all activities in general	None	MoEF&CC
2	The Forest (Conservation) Act, 1980 and amendments and The Forest (conservation) Rules 1981 and amendments	To help conserve the country's forests. It strictly restricts and regulates the de-reservation of forests or use of forest land for non-forest purposes without the prior approval of the Government. To this end the Act lays down the pre-requisites for the diversion of forest land for non-forest purposes	No	No diversion of forest land involved	None	Forest Department
3	Rajasthan Forest Act, 1953	Conservation of forest and control felling of trees	No	No tree will be felled for proposed intervention	None	Forest Department
4	Coastal Regulation Zone (CRZ) notification 2011 and amendment till date	To regulate development activities within the 500 m of high tide line in coastal zone and 100 m of tidal influence rivers.	No	Project is not located in coastal area	None	SCZMA,
5	Air (Prevention and Control of Pollution) Act, 1981, 1987	An act to prevent and control Air pollution	Yes	Air pollution from proposed activities During construction stage	Consent to establish and operate by contractor for operation of Dg sets and any other air pollution system like ready mix plant etc.	SPCB
6	Water Prevention and Control of Pollution) Act, 1974, 1988	An act to prevent and control water pollution.	Yes	Water pollution from proposed activities during construction stage	Consent to establish and operate by contractor for setting up construction camp/labour camp	SPCB

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
7	Noise Pollution (Regulation and Control Act) 2000 and amendment till date	Ambient Noise Standards for different areas and zones	Yes	Noise emission from proposed activities during construction stage like operation of DG sets	None	CPCB & SPCB
8	Hazardous & Other Waste ( Management and Trans-boundary Movement) Rules, 2016	Protection to general public against improper handling storage and disposal of hazardous waste. The rules prescribe the management requirement of hazardous wastes from its generation to final disposal.	Yes	Hazardous waste generation from proposed activities like generation of paints waste	Authorisation for handling of hazardous wastes	SPCB
9	Manufacture Storage, & imports of Hazardous Chemicals (MSIHC) Rules, 1989 as amended till date	Usage and storage of hazardous substances	Yes	Painting is proposed which will require use of solvents/thinners which will falls under hazardous chemicals category	Arrange MSDS and store quantity of hazardous chemicals below threshold quantity	Chief Inspector of Factories
10	The Batteries (Management and Handling) Rules 2001	To regulate the disposal and recycling of lead acid batteries	No	Batteries will not be used for proposed activities	None	SPCB
11	Construction and Demolition Waste Management Rules , 2016	To manage the demolition and construction waste and prevent environmental degradation	Yes	Construction and demolition waste will be generated from proposed activities	Contractor needs to submit plan for reuse or safe disposal	Local bodies of the area
12	Solid Waste Management Rules, 2016	To manage solid waste or semi-solid domestic waste, sanitary waste,	Yes	Solid Waste will be generated from proposed activities due to influx of labour	Contractor needs to submit plants for its safe disposal/burial	Local bodies of the area
13	Motor Vehicle Act 1988 and amendment till date	To minimize the road accidents, penalizing the guilty, provision of compensation to victim and family and check vehicular air and noise pollution.	Yes	Transportation of manpower and material	None	Motor Vehicle Department (Licensing authority, registration authority & State Transport Authorities)

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
14	The Gas Cylinder Rules 2016	To regulate the storage of gas / possession of gas cylinder more than the exempted quantity.	Yes	gas cylinders will be used during welding and other electromechanical work. Storage within threshold quantity and as per capability analysis. Handling with define safe practices	None	PESO
15	Ancient Monuments and Archaeological Sites and Remains Act, 1958	Conservation of cultural and historical remains found in India.	Yes	Presence of historical sites of archaeological importance	None	Archaeological Dept. Gol
16	Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996	To regulate the employment and conditions of service of buildings and other construction workers and to provide for their safety, health and welfare measures and for other matters connected therewith or incidental thereto.	Yes	Involvement of workforce/labour	None	Labour Commissioner
17	Plastic waste management Rules, 2016	To manage the plastic waste generated so as it does not affect the water pipeline, animals and other environmental components	Yes	Plastic waste generation from proposed activities. Safe disposal as per Rules	None	Local bodies of the area
18	E-Waste Management Rules, 2016	Protection of environment against improper handling storage and disposal of hazardous waste.	Yes	E-waste generation from replacement of instrumentation. Safe disposal as per rules	None	CPCB &SPCB
19	Rajasthan Minor, Mineral Concession Rules, 2017	Control of extraction, collection and removal of minor minerals	Yes	requirement of construction material from quarries and borrow areas	None	Mines Department/ DEIAA/SEIAA
20	The Right to Fair Compensation and Transparency in Land	Regulates land acquisition and lays down the procedure and rules for granting compensation, rehabilitation	No	Land Acquisition is not involved	None	Revenue Department/District Administration

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
	Acquisition, Rehabilitation and Resettlement Act, 2013	and resettlement to the affected persons				
21	Rights of Persons with Disabilities Act, 2016	Ensures that the Persons with Disability (PWD) enjoy the <b>right</b> to equality, life with dignity, and respect for his or her own integrity equally with others.	Yes	Persons with disability	None	
22	Right To Information Act, 2005	Mandates timely response to citizen requests for government information	Yes	Borrower is government organization	None	Any Government Department
23	Article 366 (25) of the Constitution of India Article 244(1) of Constitution of India - The Fifth Schedule under Article 244(1) of a subsequent Act of Constitution “Scheduled Areas” as such areas as the President may by order declare to be Scheduled Areas after consultation with Governor of that State.	Defines following essential characteristics, for a community to be identified as Scheduled Tribes are; <ul style="list-style-type: none"> <li>• Indications of primitive traits;</li> <li>• Distinctive culture;</li> <li>• Shyness of contact with the community at large;</li> <li>• Geographical isolation; and</li> <li>• Backwardness.</li> </ul> <p>The criteria for declaring any area as a “Scheduled Area” under the Fifth Schedule are; (a) preponderance of tribal population, (b) compactness and reasonable size of the area, (c) a viable administrative entity such as a district, block or Taluka, and (d) economic backwardness of the area as compared to the neighbouring areas.</p>	No	Dam is not located in Scheduled Area	None	Government of India
24	Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	To recognize and vest the forest rights and occupation in forest land in forest dwelling STs and other traditional forest dwellers who are residing in such forests for generations but whose	No	No such activities impacting tribes and their rights are proposed	None	Ministry of Tribal Affairs

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
		rights could not be recorded. Its objective is to facilitate the overall development and welfare of the tribal people by empowering them socially, economically, politically without any impact on their culture, habitation and tradition and in terms of their age old rights and privileges.				
25	Panchayats (Extension to the Scheduled Areas) Act, 1996	The Gram Sabha or the Panchayats at the appropriate level shall be consulted before making the acquisition of land in the Scheduled Areas for development projects and before re-settling or rehabilitating persons affected by such projects in the Scheduled Areas.	No	No structural intervention is planned. Only awareness generation on EAP preparation and implementation shall take place in these areas.	None	Concerned State Government and Tribal Welfare Department
26	<b>Major Labour Laws Applicable To Establishments Engaged In Building And Other Construction Work</b>					
1	Employees Compensation Act 1923	The Act provides for compensation in case of injury, disease or death arising out of and during the course of employment.	Yes	Contractor/Labour engagement	None	Commissioner for Workmen's Compensation
2	Payment of Gratuity Act 1972	Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death at the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.	Yes	Contractor/Labour engagement	None	Chief Labour Commissioner
3	Employees P.F. and Miscellaneous Provision Act 1952 ( <i>since amended</i> )	The Act provides for monthly contribution by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are:	Yes	Contractor/Labour engagement	None	Ministry of Labour

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
4	Maternity Benefit Act 1961	The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.	Yes	Contractor/Labour engagement	None	Chief Labour Commissioner
5	Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013	This Act defines sexual harassment in the workplace, provides for an enquiry procedure in case of complaints and mandates the setting up of an Internal Complaints Committee or a Local Complaints Committee	Yes	Contractor/Labour engagement	None	District Officer (District Magistrate or Additional District Magistrate or the Collector or Deputy Collector)
6	Contract Labour (Regulation & Abolition) Act 1970	The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more contract labour.	Yes	Contractor/Labour engagement	None	Chief labour Commissioner
7	Minimum Wages Act 1948	The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employments.	Yes	Contractor/Labour engagement	None	Chief labour Commissioner
8	Payment of Wages Act 1936	It lays down the mode, manner and by what date the wages are to be paid, what deductions can be made from the wages of the workers.	Yes	Contractor/Labour engagement	None	Chief labour Commissioner
9	Equal Remuneration Act 1976	The Act provides for payment of equal wages for work of equal nature to male and female workers and for not making discrimination against Female	Yes	Contractor/Labour engagement	None	Chief labour Commissioner

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
		employees in the matters of transfers, training and promotions etc.				
10	Payment of Bonus Act 1965	The Act is applicable to all establishments employing 20 or more employees. Some of the State Governments have reduced this requirement from 20 to 10. The Act provides for payments of annual bonus subject to a minimum of 8.33% of the wages drawn in the relevant year. It applies to skilled or unskilled manual, supervisory, managerial, administrative, technical or clerical work for hire or reward to employees who draw a salary of Rs. 10,000/- per month or less. To be eligible for bonus, the employee should have worked in the establishment for not less than 30 working days in the relevant year. The Act does not apply to certain establishments.	Yes	Contractor/Labour engagement		Chief labour Commissioner
11	Industrial Disputes Act 1947	the Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations, a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.	Yes	Contractor/Labour engagement	None	Ministry of Labour and Employment
12	Trade Unions Act 1926	The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.	Yes	Contractor/Labour engagement	None	Ministry of Labour and Employment
13	Child Labour (Prohibition & Regulation) Act 1986	The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides	Yes	Contractor/Labour engagement	None	Chief labour Commissioner

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
		for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in the Building and Construction Industry.				
14	Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979	The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home up to the establishment and back, etc.	Yes	Contractor/Labour engagement	None	Chief labour Commissioner
15	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 and the Building and Other Construction Workers Welfare Cess Act, 1996 (BOCWW Cess Act)	All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under these Acts. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be notified by the Government. The Employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as Canteens, First – Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.	Yes	Contractor/Labour engagement	None	Chief labour Commissioner

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
16	Factories Act 1948	the Act lays down the procedure for approval of plans before setting up a factory engaged in manufacturing processes, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power.	Yes	Contractor/Labour engagement	None	Chief Inspector of Factories
17	Bonded Labour System (Abolition) Act, 1976	The Act provides for the abolition of bonded labour system with a view to preventing the economic and physical exploitation of weaker sections of society. Bonded labour covers all forms of forced labour, including that arising out of a loan, debt or advance.	Yes	Contractor/Labour engagement	None	Chief labour Commissioner
18	Employer's Liability Act, 1938	This Act protects workmen who bring suits for damages against employers in case of injuries endured in the course of employment. Such injuries could be on account of negligence on the part of the employer or persons employed by them in maintenance of all machinery, equipment etc. in healthy and sound condition.	Yes	Contractor/Labour engagement	None	Chief labour Commissioner
19	Employees State Insurance Act 1948	The Act provides for certain benefits to insured employees and their families in case of sickness, maternity and disablement arising out of an employment injury. The Act applies to all employees in factories (as defined) or establishments which may be so notified by the appropriate Government. The Act provides for the	Yes	Contractor/Labour engagement	None	Chief labour Commissioner

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
		setting up of an Employees' State Insurance Fund, which is to be administered by the Employees State Insurance Corporation. Contributions to the Fund are paid by the employer and the employee at rates as prescribed by the Central Government. The Act also provides for benefits to dependents of insured persons in case of death as a result of an employment injury.				
20	The Personal Injuries (Compensation Insurance) Act, 1963	This Act provides for the employer's liability and responsibility to pay compensation to employees where workmen sustain personal injuries in the course of employment.	Yes	Contractor/Labour engagement	None	Chief labour Commissioner
21	Industrial Employment (Standing Order) Act 1946	It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.	Yes	Contractor/Labour engagement	None	Chief labour Commissioner

## 2.2 APPLICABILITY ANALYSIS OF WB ENVIRONMENTAL AND SOCIAL FRAMEWORK STANDARDS

The World Bank Environmental and Social Framework comprises Policy, 10 standards and 2 Directives. The applicability of these standard vary depending on nature of activities. This applicability analysis is presented at **Table 2.2** below.

**Table 2.2: Relevance and requirements ESF Policy, Standards and Directives**

ESF Policy, Standards and Directives & Guidelines	Applicable Activities	Applicability / Requirements
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	All projects, sub-projects and associated facilities	<p>Applicable</p> <ul style="list-style-type: none"> <li>(a) Conduct an environmental and social assessment of the proposed project, including stake- holder engagement;</li> <li>(b) Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10;</li> <li>(c) Develop an ESCP, and implement all measures and actions set out in the legal agreement including the ESCP; and</li> <li>(d) Conduct monitoring and reporting on the environmental and social performance of the project against the ESSs</li> </ul>
ESS2: Labour and Working Conditions	Engagement of labour for various civil, paint and electro-mechanical or any other activities as part of rehabilitation proposal. It applies to project workers including full- time, part-time, temporary, seasonal and migrant workers. It covers working conditions, protecting workforce, Grievance Mechanism and Occupational Health and Safety (OHS).	<p>Applicable</p> <ul style="list-style-type: none"> <li>a) Preparation of Labour Management Procedures applicable to the project.</li> <li>b) Establishing Grievance Mechanism and sharing with all the workers</li> <li>c) Design and Implement OHS measures</li> </ul>
ESS3: Resource Efficiency, Pollution Prevention and Management	Resource consumption and pollution generation from proposed activities (civil, electromechanical and paint work). This includes both hazardous and non- hazardous chemical pollutants in the solid, liquid, or gaseous phases	<p>Applicable</p> <ul style="list-style-type: none"> <li>a) Assess the resource requirement and implement technically and financially feasible measures for improving efficient consumption of energy, water and raw materials, as well as other resources.</li> <li>b) Preparation of Resource Efficiency and Pollution Prevention Plan to assess and minimize/control the concentration of release of pollutants to air, water and land due to routine, non-routine, and accidental circumstances, and with the potential for local, regional, and transboundary impacts.</li> </ul>
ESS 4: Community Health and Safety	Applies to potential risks and impacts on communities that may be affected by project activities such as transportation of material to project site through village roads, labour colony housing migrant workers near the project site, pollution generation from civil and electro-mechanical work.	<p>Applicable</p> <ul style="list-style-type: none"> <li>a) Pollution from project activities and labour colony and traffic causing pollution and road safety risks on village roads during transportation of material</li> <li>b) Preparation of Emergency Response Procedure (ERP) to prevent injuries to health and for safety of the community during and emergency event arising from both natural and man-made hazards, typically in the form of fire, explosions, leaks or spills, flooding etc</li> </ul>

ESF Policy, Standards and Directives & Guidelines	Applicable Activities	Applicability / Requirements
ESS 5: Land Acquisition, Restrictions on Land use and Involuntary Resettlement	Applies to permanent or temporary physical and economic displacement resulting from land acquisition or restrictions on land use undertaken or imposed in connection with project implementation.	Not Applicable  Proposed interventions are limited to the existing dam and will take place on the existing dam structure and within its premises. Any of the proposed activities/interventions, does not involve acquisition of private land and/or private assets. These activities in no way cause restriction on access to land or use of resources by local communities and there is no economic displacement envisaged due to the sub-project.
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural resources	Applies to all projects that potentially affect biodiversity or habitats, either positively or negatively, directly or indirectly, or that depend upon biodiversity for their success.	Not Applicable  The present interventions do not involve any tree cutting or impacting any forest area in any way. Activities remain limited to the dam premises only. Impacts on wildlife including that on fish fauna in the reservoir and river are negligible due to the nature and location of activities proposed under this sub-project. There is no national park/wildlife sanctuary/Conservation Reserve within 10 Km of the project. No direct or indirect impacts on biodiversity are envisaged due to proposed interventions.
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Tradition Local Communities	Applies to traditional communities or schedule tribes, if they are present or have collective attachment to a proposed project area, as determined during the environmental and social assessment. This ESS applies regardless of whether such Communities are affected positively or negatively, and regardless of the significance of any such impacts.	Not Applicable  The project interventions do not directly or indirectly impact schedule tribe. Though there are scheduled tribe population in the downstream, assessment indicates that they are mainstreamed into overall society and do not possess characteristics as outlined under this standard. These groups will be taken into account as part of non-structural interventions such as in the preparation of the Emergency Action Plans.
ESS 8: Cultural Heritage	Applies to all projects that are likely to have risks/impacts on cultural heritage	Not Applicable  a) Project is not impacting any cultural heritage, directly or indirectly, as no such sites are in proximity to the project site. b) Access to temples/religious places in surrounding villages will not be blocked/hampered due to any of the proposed interventions as such activities are limited to dam premises only.
ESS 9: Financial Intermediaries	Applies to Financial Intermediaries (FIs) that receive financial support from the Bank. FIs include public and private financial services providers, including national and regional development banks, which channel financial	Not Applicable - Project does not have any FIs

ESF Policy, Standards and Directives & Guidelines	Applicable Activities	Applicability / Requirements
	resources to a range of economic activities across industry sectors.	
ESS 10: Stakeholder Engagement and Information Disclosure	Applies to all projects supported by the Bank through Investment Project Financing. The Borrower will engage with stakeholders as an integral part of the project's environmental and social assessment and project design and implementation	Applicable for the interventions of the dam as a whole and in particular in relation to the non-structural interventions involving Early flood Warning system having siren systems, broadcasting facilities, etc. Preparation of Stakeholder Engagement Plan Establishment of a project level GRM
Environmental and Social Directive for Investment Project Financing	This Directive applies to the Bank and sets out the mandatory requirements for the implementation of the Environmental and Social Policy for Investment Project Financing (IPF).	Applies to Bank in addressing E&S aspects of this project
Bank Directive Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups	This Directive establishes directions for Bank staff regarding due diligence obligations relating to the identification of, and mitigation of risks and impacts on, individuals or groups who, because of their particular circumstances, may be disadvantaged or vulnerable	Applies to Bank in addressing E&S risks and impacts on disadvantaged and vulnerable persons or groups that are identified in this project.
World Bank's Guidance note on managing the risks of adverse impacts on communities from temporary project induced labor influx, 2016	The document provides guidelines to address issues and risks arising from influx of migrant labour leading to gender-based violence, forced labour etc.	Not applicable as even though influx of skilled migrant labour in construction works is likely, these labor will operate within the dam premises which is a restricted access zone and distant from habitations. However, GBV related clauses would be included in the bid documents and sensitization/awareness trainings would be provided to all dam personnel, contractors, etc. during implementation

## **2.3 INSTITUTIONAL FRAMEWORK**

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The sub-project will be implemented by Water Resources Department (WRD, Rajasthan). The department has two distinct divisions – IGND (Indira Gandhi Nahar Division) and Water Resources Division. Water Resources Division who will be responsible for implementing the project is headed by Principal Secretary. The mandate of WRD is:

- Construction of major, medium and minor irrigation projects,
- Operation and maintenance of existing tanks, canals and other irrigation structures are the prime function of the Irrigation Department.
- Flood control measures and floods related remedial measures are also assigned to the Irrigation Department.
- Construction of irrigation structures under various special schemes like PMKSY, MJSA, AIBP, JICA etc. are entrusted to the Irrigation department.
- Collection of revenue pertaining to sale of water from tanks irrigating more than 1000 ha. of land is done by the Irrigation Department. However, collection of irrigation charges in respect of tanks Engineering irrigating less than 1000 ha. is assigned to the Patwaris of the Revenue Department.
- Construction and maintenance of the rest houses of irrigation department, office buildings, residential buildings of the staff, gardens, parks, roads etc.

Specifically, in respect of capacity to address E&S issues, WRD Rajasthan do not have in-house expertise. Chief Engineer at SPMU and Executive Engineer at dam level look after all the aspects.

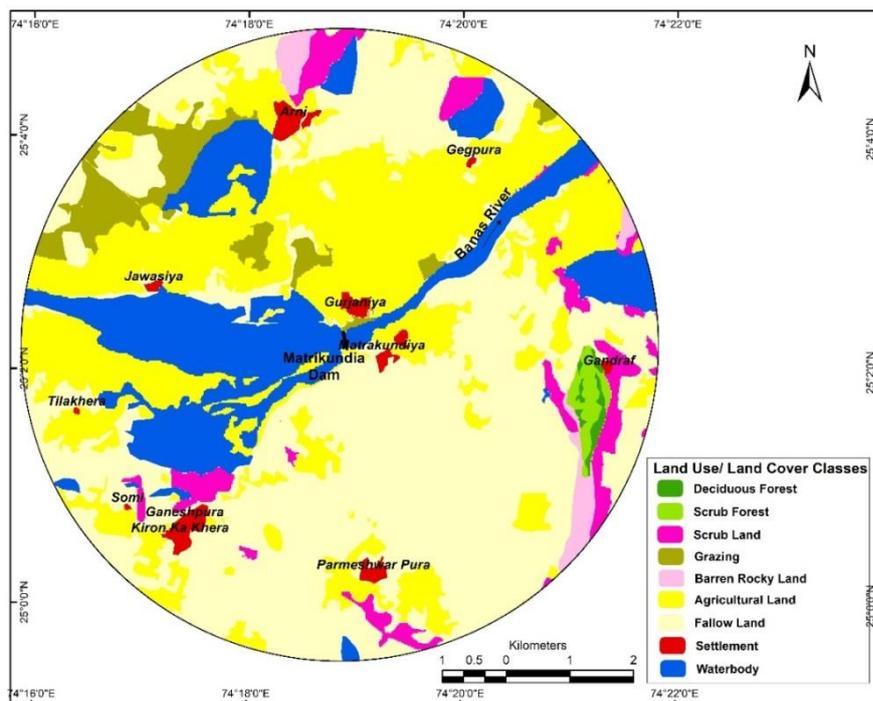
Presently, no formal system is established for dealing with external complaints.

The baseline conditions are analysed based on secondary information and site observations and are presented in following order Physical, Biological, Protected area and Socio-economic profile.

## 3.1 PHYSICAL ENVIRONMENT

### Land Use/ Land Cover

The project surrounding area land use and environmental sensitivity was analysed using Remote Sensing & GIS techniques and drawing 5 km radius land use/ land cover map presented at **Figure 3.1**. As can be seen from the map, present land use upstream of dam is waterbody (reservoir) surrounded by agriculture and fallow land on both sides and on downstream side along both the banks there are agriculture, settlements and fallow land. However, as discussed under Chapter 1 about project description, the project activities will be confined to dam body only and no activities are proposed beyond existing dam boundaries. Villages in proximity i.e. within 5 km distance from dam on downstream side have been identified as Arni, Gandraf, Ganeshpura, Geggura, Jawasiya, Kiron Ka Khera, Matrikundiya, Somi, Teela Khera, Parmeshwar Pura and Gurjaniya of Chittorgarh District. These are considered as vicinity villages which may get impacted due to project activities.



**Figure 3.1: Land use/ Land cover Map of 5 Km radius around Dam site**

## Ambient Air Quality and Noise

Site-specific data of ambient air quality and sound levels at project site is not available. However, general observation is made during site visit that area is free of air and noise pollution. This is substantiated by the fact that the dam is away from habitation, traffic and industries and are no anthropogenic sources of air/noise pollution in the vicinity. Road to dam site is private and public access is restricted. Therefore, ambient air is clean and sound levels are observed low. They are expected to be well within the prescribed limits.

## Water Quality

The gross catchment area is 3485 sq km out of which 2472 sq km has been intercepted by upstream reservoirs resulting into 943 sq km as being net free catchment area. Results of water quality monitored by Central Pollution Control Board monitoring are presented in **Table 3.1**. The water temperature varies from maximum 34 °C to minimum 16 °C. The water pH varies from 7.5 to 9.4 and the concentration of Conductivity varied in surface water from a maximum level of 2100 µmhos/cm to 160 µmhos/cm. Dissolved oxygen at different sites varied from minimum 1.9 mg/l to 7.3 mg/l.

**Table 3.1: Water Quality of Banas River at different locations in the study area**

Water quality criteria		Site 1	Site 2	Site 3
Temperature °C	min	16	17	20
	max	25	30	34
pH	min	7.5	8.1	7.8
	max	9	9.4	9.4
Conductivity (µmhos/cm)	min	160	220	210
	max	770	2100	480
Dissolved oxygen (mg/l)	min	4.5	1.9	3.6
	max	7.3	4.2	6.1
B.O.D. (mg/l)	min	0.7	3.9	0.7
	max	1.8	13	1.7
Nitrate-N + Nitrite-N (mg/l)	min	0.8	1.8	0.3
	max	4.4	5.5	1.7
Faecal Coli form (MPN/100ml)	min	4	7	4
	max	14	28	7
Total Coli form (MPN/100ml)	min	7	75	4
	max	150	460	75

*Source: Rajasthan Pollution Control Board, 2016*

*Site 1: BANAS, DHANARI DAM, NEAR SWAROOPGANJ*

*Site 2: BANAS, NEAR NEWTA DAM*

*Site 3: BANAS, BISALPUR DAM*

As can be seen from the data, the water quality is reasonably good. A comparison with Water Quality Criteria of Central Pollution Control Board show that samples fall under Class 'B'. *In India, the Central Pollution Control Board (CPCB) has developed a concept of designated best use. According to this, out of the several uses of water of a particular body, the use which demands highest quality is termed its designated best use. Five designated best uses have been identified. This classification helps the water quality managers and planners to set water quality targets and design suitable restoration programs for various water bodies. Class A corresponds to Drinking Water Source without conventional treatment but after disinfection and Class B corresponds Outdoor Bathing*

(organised).

### **Natural Hazards**

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Potential of natural hazards such as flooding and earthquake is not significant. Design flood has been revised from 4370 cumec to 5547 cumec and spillway capacity of the project at MWL has been calculated as 6240 in PST so its adequate to pass the revised flood. Project falls in earthquake zone II, there is no revision and dam design has taken care of this aspect as well. *Bureau of Indian Standards [IS 1893 (Part I):2002], has grouped the country into four seismic zones, viz. Zone II, III, IV and V. Zone II is the least active and Zone V is the most active.*

## **3.2 BIOLOGICAL ENVIRONMENT**

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### **Flora**

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According to Champion and Seth (1968), forest of the study the state has 20 forest types which belong to two forest type groups viz. Tropical Dry Deciduous, Tropical Thorn Forests, Bamboo Forests and Mixed Miscellaneous Forests.

The forest on the hills was represented by *Anogeissus pendula* associated with species like *Anogeissus latifolia*, *Terminalia tomentosa*, *Terminalia arjuna*, *Albizia lebbek*, *Dalbergia paniculata*, *Acacia senegal*, *Acacia nilotica*, *Acaica leucophloea*, *Bauhinia racemosa*, *Butea monosperma*, *Capparis sepiaria*, *Cassia fistula*, *Dalbergia sissoo*, *Ehretia aspera*, *Flacourtia indica*, *Grewia flavescens*, *Dendroclamus strictus*, *Grewia tenax*, *Holoptelea integrifolia*, *Lannea coromandelica*, *Moringa concanensis*, *Prosopis cineraria*, *Salvadora oleoides*, *Ziziphus nummularia*, *Phoenix sylvestris*, *Sterculia urens*, *Wrightia tinctoria*, *Wrightia tomentosa*, *Vitex negundo*, etc. In the rocky area *Euphrobia caducifolia* is dominant. *Abrus precatorius*, *Atlylosia scarabaeoides*, *Cocculus hirsutus*, *Maerua arenaria* and *Rhynchosia minima* are the common climbers in the area.

### **Fauna**

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Catchment of Banas rive provides habitation and sustenance for numerous fauna. The hillock forests, streams provide favorable factors for sheltering many kinds of wild animals. Rhesus Monkey, Blue Bull, Indian Fox, and Indian Palm Squirrel were sighted frequently species in the study area.

According to avifaunal study carried out by Joshi & Kumar (2015), total 129 bird of 48 families have been recorded out of which 44 were migratory and 85 were resident. Common bird species reported from the area are Babblers, Barbets, Bee eaters, Cuckoos, Bulbuls, Buntings, Cormorants, Flowerpeckers, Woodpeckers, Kingfishers, Kites, Lapwings, Minivets, Night Jars, Owlets, Parakeets, Pigeons, Quails, Flycatchers, Rollers, Tits and Heron are common in the area. Saras Crane, Storks (Painted and Blacknecked), Darter, Black-Headed Ibis are also reported from wetland sites.

Among Herprtofauna Common House Gecko, Leopard gecko, and Common garden lizard and Indian chameleon are commonly sighted species in the area.

Proposed activities remain limited to dam premises and therefore no risk is envisaged on flora and fauna in the surrounding areas.

These species are present in reservoir and also in river. None of the proposed activities under the sub-project will impact water quality of river/reservoir and therefore, there is no risk/impact on fish fauna.

### Fish & Fisheries

Fishes are the integral component of stream and rivers. Matrikundya is a medium reservoir wherein major carps contribute substantially. This reservoir supports good fishery and contributes to economy, provides a source of income for the local inhabitants. Fish spectrum of the reservoir was represented by *Catla catla*, *Labeo rohita*, *Cirrhinus mrigala*, *Heteropneustes fossilis*, *Aorichthys seenghala*, *Labeo bata*, *Puntius sarana*, *Tor tor* and *Wallago attu*.

## 3.3 PROTECTED AREA

### Nearest Protected Area

Bassi Wildlife Sanctuary is about 47.70 km from the Matrikundia dam location of the Project. The location of Bassi Wildlife Sanctuary in relation to Matrikundia dam Project is shown below.

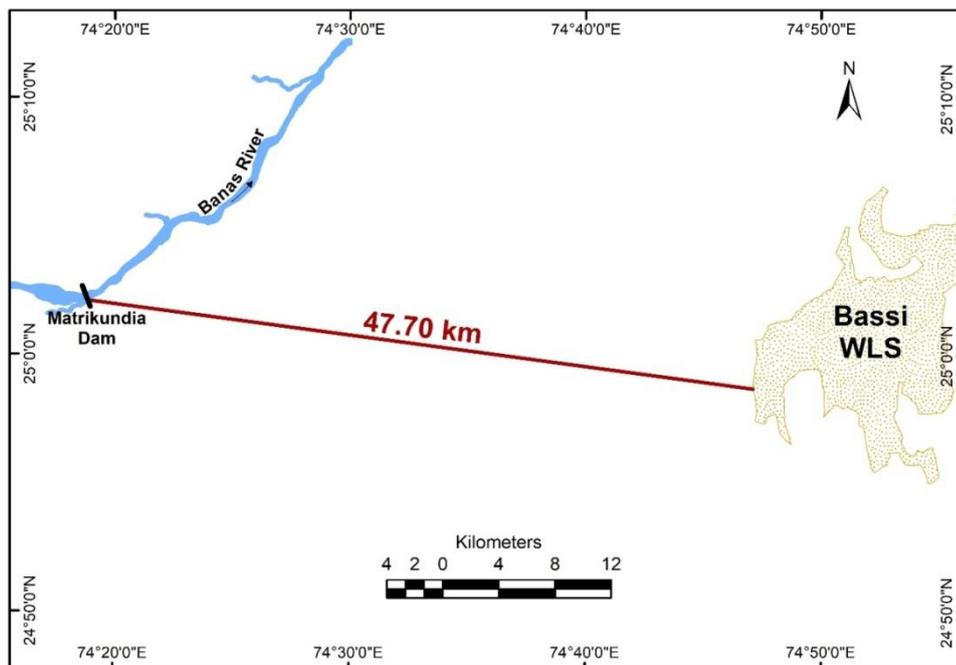


Figure 3.2: Map showing distances of protected areas from Matrikundia Dam

## 3.4 SOCIAL ENVIRONMENT

The dam is located in the district Chittorgarh. Eleven villages namely Arni, Gandraf, Ganeshpura, Geggura, Jawasiya, Kiron Ka Khera, Matrikundiya, Somi, Teela Khera, Parmeshwar Pura and Gurjaniya have been identified as falling in 5 km area on the

downstream side of the dam. The project area does not fall within the ‘Schedule V<sup>1</sup>’ areas of the area. Pratapgarh tehsil in Chittorgarh district is in Schedule V area while the project is in Rashmi tehsil and is far away from Pratapgarh tehsil border.

The district has ten sub-divisions i.e. ten Tehsil Headquarters. The brief demographic characteristic of the district is given in the table below:

<b>No. of Households</b>	<b>3,29,119</b>	<b>Household Size</b>	<b>5</b>
<b>Total Population</b>	<b>15,44,338</b>	<b>Population (0-6 age)</b>	<b>2,12,507</b>
Male	7,83,171	Boys (0-6 age)	1,11,120
Female	7,61,167	Girls (0-6 age)	1,01,387
Sex Ratio	972	Sex Ratio (0-6)	912
<b>Population (SC)</b>	<b>2,50,224</b>	<b>Population (ST)</b>	<b>2,01,546</b>
Male	1,26,748	Male	1,01,893
Female	1,23,476	Female	99,653
<b>Literates</b>	<b>8,21,825</b>	<b>Literacy Rate</b>	<b>61.7</b>
Male	5,14,851	Male	76.6
Female	3,06,974	Female	46.5
<b>No. of Workers</b>	<b>8,02,755</b>	<b>Cultivators</b>	4,53,201 (56.5%)
Male	4,56,632	<b>Agricultural Labours</b>	1,23,469 (15.4%)
Female	3,46,123	<b>Household Industrial Workers</b>	15,435 (1.9%)
<b>No. of Main Workers</b>	<b>6,56,904</b>	<b>Other Workers</b>	2,10,650 (26.2%)
<b>No. of Marginal Workers</b>	<b>1,45,851</b>		

*Source: Census of India, 2011 (District Handbook)*

Data on population, occupation and amenities of vicinity villages have been compiled from Census of India, 2011 (See **Annexure I** for more details).

According to Census 2011, total population of the study area has been worked out to 9,407. The gender wise distribution of the above population is 4,680 (49.75%) male and 4,725 (50.25%) female. The overall sex ratio of the study area has been worked out to 1,010 females per 1,000 males.

Total population of the study area is distributed into different social groups like Scheduled Caste (SC), Scheduled Tribe (ST) and General Category (including OBC). The share of these social groups’ population to the total population of the study area is 20.60%, 9.15% and 70.25% respectively.

In the study area, 44.06% of the population is literate in which male literates are 64.58% and that of females are 35.42%. The overall literacy rate in the study area has been worked out to 51.64%. The male literacy rate is 67.91% and female literacy rate is 35.94%, creating a gender gap in literacy rate of 31.97%.

The economic classification of workers as per Census 2011 is saying that total number of workers in the study area is 5,448 which constitute 57.91% of the total population. Of the total workers, 51.10% are males and remaining 48.90% are females. In absolute term, total

<sup>1</sup> **Scheduled Areas** are areas in India with a preponderance of tribal population subject to a special governance mechanism wherein the central government plays a direct role in safeguarding cultural and economic interests of **scheduled** tribes in the **area**

number of male workers is 2,784 and that of female is 2,664. The gender gap in work participation rate is 2.20%.

Agriculture and allied activities are the main occupation & sources of livelihood and income for most of the local people in the study area. Apart from this, other people are engaged in household industries and ancillary works. Rabi and Kharif, both are the main crops. Maize, jowar, cotton, pulses, groundnut, wheat, barley, gram, oilseeds are the main crops from production point of view in the study area. Vegetable and fruits are also being produced in the study area. In the study area, the major part of irrigation is doing by tube wells followed by canals and tanks.

Basic amenities like water supply for drinking and other uses is available with various sources such as Tap (Treated & Un-treated), Well (Covered & Un-covered), Hand Pump, Tube wells etc. Electricity is available for domestic, agriculture and commercial or industrial uses in almost all over the study area. The study area having approach roads as Black Topped (Paved), Gravel (Kachcha) and Footpath.

### **3.5 CULTURAL ENVIRONMENT**

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As per list of National Monuments in Rajasthan and list of State Protected monuments in Rajasthan; there are no protected monuments in and around dam site i.e. within 10 km radius of dam site.

However, Matrikundia is a temple town and is known as Prayag of Mewar, a holi place on Banas river bank having a grand Shiv Temple. This Matrikundia temple, known as the "Haridwar of Mewar", has a shrine dedicated to Lord Shiva and is an important pilgrimage spot. Other prominent temples in the Matrikundia are Gaytri Mata Temple, Dadhichi Rishi Temple and Laxman Pool (Jhoola) at bank of Banas.

#### 4.1 STAKEHOLDERS CONSULTATION

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Stakeholder consultation was conducted as part of environmental and social impact assessments. The purpose was to:

- a. provide initial information to the communities on the proposed project interventions and particularly the non-structural interventions;
- b. help identify potential stakeholders who are involved at this stage and will be involved a later stage.
- c. ascertain if there are any legacy issues relating to displacement, resettlement, etc.
- d. elicit their responses in relation to key non-structural interventions such as early warning systems, emergency action plans
- e. identify mechanisms that would be deployed to engage with different stakeholders and particularly communities living downstream

Stakeholder consultation meetings were conducted at both the dam sites on February 10 and 11, 2020. It was attended by permanent staff of the borrower (WRD) working at dam, workers from nearby villages; Sarpanch, women, youth and other household members from the villages.

##### ***Meeting with officials***

##### **Proposed rehabilitation works**

**Location of proposed works:** the “structural” interventions either on the dam body or within the premises.

Staff quarters, guest houses that might be demolished or rebuilt: No

**Land availability for proposed interventions:** all land required for the interventions available with the dam authorities.

**Legacy issues relating to displacement or resettlement i.e. pending from the time of dam construction:** No. However, Community’s concerns with respect to Matrikundia Dam Matrikundia dam was constructed at the confluence of Bhilwara, Rajsamand and Chittorgarh as an extension of the Meja Dam of Bhilwara in order to meet the water needs of Hindustan Zink Ltd and Meja Dam primarily. As per information, farmers affected by submergence area of Matrikundia dam have recently moved to High Court through a Public Interest Litigation for safeguarding their agricultural land affected by the dam water. As per that report; locals claim is that the dam has been receiving water to its full capacity almost every year, due to which the crops in the area have suffered consistently. This has turned into huge losses to the farmers, who are solely dependent on farming and cattle rearing. They further claim that not a single penny in the form of compensation has ever been disbursed to these aggrieved farmers. Department is looking into the issues to sort out the matter.

**Encroachments or squatters within the premises:** Yes, around 300 farms are being cultivated on government land along the reservoir. These farmers undertake cultivation when the water level recedes. The department turns a blind eye to this.

**Areas within the dam restricted access:** Access to the dam crest road is restricted. There is some encroachment by farmers on government lands in the submergence area.

**Tourism potential:** Significant number of tourists visit the Matrikundia temple (estimate: approximately 150 a day), located adjacent to the dam. There are no tourism related investments proposed in the PST. However, there is significant potential for tourism development in the region.

### **Institutional arrangements**

**Implementation arrangement:** No specific institutional structure to deal with E&S issues, though Executive Engineer will be in charge of rehabilitation activities. Assistant Engineer<sup>2</sup> deals with the communities. Sarpanches have the phone numbers of AE / JE.

**Grievance mechanism:** Complaints can be filed at the Assistant Engineer's office. People also have the option of using the Rajasthan Sampark portal (Chief Minister's Grievance Redressal System)

**Mechanisms for engagement with downstream communities on water discharge or any other issue:** A siren is sounded, which is heard in nearby villages. Dam officials inform the SDM office as well as police (for crowd control). Dam officials call up the public representatives (sarpanch) of downstream villages (at least 6-7 villages).

**Information dissemination regarding such "rehabilitation related" work related opportunities.** Department does not advertise opportunities. The work is tendered out to contractors, who may hire local labour subject to availability.

**Gender:** There are six women employees at the dam site and nearby rest house, employed as cleaners. These were employed after their husbands (who were the original employees) passed away.

**Tribal area:** This is not a Schedule V area, tribal population is less than 10% in the overall area

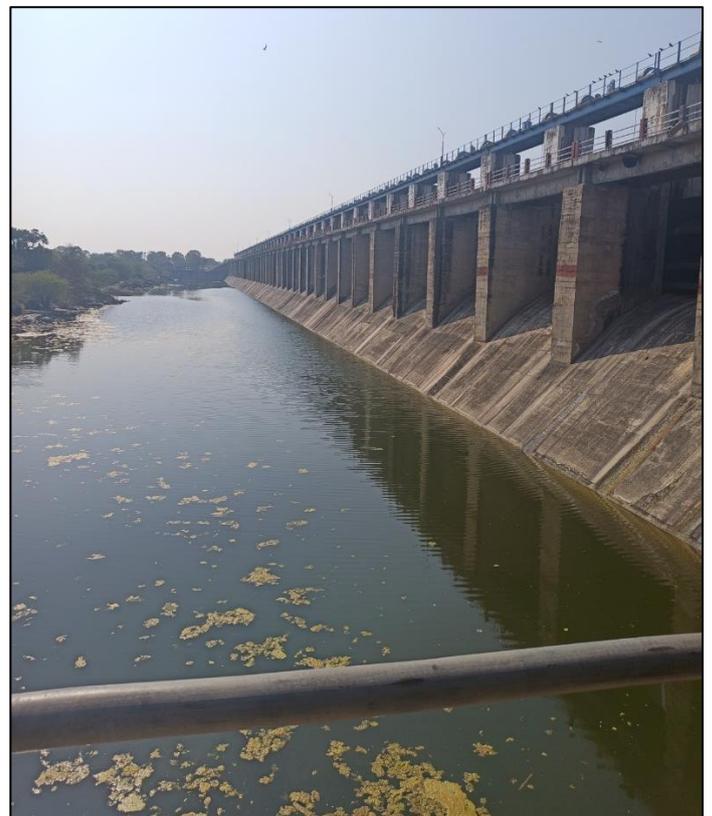
### **Meeting with Communities**

- **tribal area/Schedule V area:** Not a Schedule V area. 3 villages around the reservoir and many downstream
- **Lands taken for the original dam construction and legacy issues:** The dam was constructed in 1980. No pending resettlement issues.
- **Affected or impacts due to dam operations:** Seepage (in the three villages adjacent to reservoir) - At least 200 bighas affected by seepage.
- **Fishing occupation practiced in the area:** The Fisheries department contracts it out to private players who typically don't employ locals.

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<sup>2</sup> Mr. Kishanlal, AE, Matrikundiya

- **Women affected by the dam operations:** There isn't any significant differentiated impact on women in the area.
- **aware of any early flood warning system:** Villages in the immediate vicinity of the dam are aware of the siren.
- **any dam related accident:** No
- **Concerns about the dam:** Seepage (in the three villages adjacent to reservoir) - At least 200 bighas affected by seepage (b) Resentment in the villages through which the feeder line runs to Meja, that they are not benefiting from irrigation. The department estimates that a significant proportion of the water fed to Meja is illegally diverted by villages for use on farms. At least 25 villages along the feeder line have been demanding irrigation facilities.
- **Suggestions on mode of information dissemination:** Public representatives (sarpanch) can be informed, who will then inform residents. Whatsapp groups exist in villages that can circulate information quickly.
- **Work opportunities:** Public representatives (sarpanch) can be informed about any opportunities.



**Matrikundia dam ranks among the top dams in India in terms of the most number of gates (52 gates)**



**A temple complex adjacent to the Matrikundia dam receives significant local visitors, indicating substantial domestic tourist potential**

Based on these findings relating to both structural and non-structural interventions, potential stakeholders were categorized as follows: Affected, Other interested stakeholders, and disadvantaged and vulnerable stakeholders

**Affected parties:** There are no affected persons who shall be directly or indirectly adversely affected by the proposed interventions

**Other interested stakeholders:** In relation to structural interventions, these would be potential contractors, Project Management consultants, either regulatory bodies/institutional stakeholders such as Revenue, Environmental Authorities, etc. In relation to non-structural interventions, these would include: communities living downstream including farmers; Fishing Contractors; village heads (Sarpanchs), community leaders; district administration; police, state disaster management authority, revenue department; electronic and print media, etc. These communities would be key stakeholders requiring to be involved in the preparation and implementation of EAP.

**Disadvantaged and vulnerable persons and groups:** Illiterate persons, physically challenged, women and elderly would be key stakeholders – requiring special focus and outreach to ensure that they are well informed about the provisions of the EAP.

Communities welcomed such interactions and suggested the following modes of continued engagement:

- Dam officials inform village representatives (sarpanch) of all downstream villages as well as the local administration (SDM office).
- Also the practice of SDM office arranging for a vehicle with a loudspeaker to travel around the downstream villages and convey the message.
- Village level whatsapp groups typically circulate news of such events immediately.
- a whatsapp group of all downstream villages, can be created, through which information of community events as well as other emergency information may be circulated.

Based on the relevance of each Standard, as identified in the chapter on Legal, Regulatory and Institutional Framework, ensuing sections summarize the environmental and social risks and impacts likely due to the proposed interventions followed by the mitigation measures considered, for each relevant Standard. Table below, presents the Risk and impacts grouped in respect of the applicable ESS identified in chapter 3 earlier:

Applicable ESS	Risk and Impacts area assessed
ESS1	The risks and impacts is carried out as per requirement of this standard
ESS2- Labour and Working Conditions	Types of Workers/labour and working conditions
ESS3- Resource Efficiency and Pollution Prevention and Management	Impact on Physiography/land use/Geology/Soil Impacts on water resources/Water Quality Impact on Air quality/Noise levels  Impact due waste generation/disposal
ESS4	Community Health and safety

### 5.1 ASSESSMENT AND MANAGEMENT OF E&S RISK AND IMPACT (ESS 1)

Proposed intervention are categorised as civil, electromechanical and paint work requiring labour involvement for works and their stay at site for a period of about 3 years, use of resources such as water and power during construction, pollution generation from storage and handling of material, generation of waste, use of paints and other chemicals for construction activities, transportation of raw material, etc. In addition, labour intensive work always involves risks of accidents such as working at heights, working on upstream body of dam, underground activities, etc.

As all the proposed structural interventions are within the dam premises or the dam structure itself, no adverse impacts are not envisaged on communities including on the disadvantaged or vulnerable people. On the contrary, all communities including disadvantaged and vulnerable persons and groups will indirectly benefit from these proposed interventions that shall enhance dam safety.

However, in case of non-structural interventions relating to early flood warning systems having siren systems, broadcasting facilities and Emergency Action Plans, project will need to make extra efforts to reach out to the disadvantaged and vulnerable persons and groups to involve them in both preparation and implementation.

## 5.2 LABOUR AND WORKING CONDITIONS (ESS 2)

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Water Resources Department, Rajasthan shall contract agencies to undertake civil works, agencies/firms to support core-functions; primary suppliers of material/equipment and other implementation support partners, and these could be from anywhere in the country. Construction works will require labour force and associated goods and services. Based on the construction package sizes and the project implementation schedule, the peak construction workforce/manpower has been estimated as 40-50. These will be skilled and semi-skilled workforce of contractors and expected to stay on site for a period of 3 years. In addition, there will be floating population of suppliers, transporters of material and their labour who will keep on moving in and out of the site during the work period of 3 years. Construction contractors are expected to stay at/near dam, set up construction equipment and machinery near work location at pre-determined /approved sites.

### **Project shall comprise the following types of workers:**

1. **Direct workers:** Direct workers will include the project managers and supervisors, who are employees of WRD. The estimated number of direct workers is not likely to exceed 30 as per existing institutional arrangements and practices of WRD.
2. **Contracted workers:** All the work force deployed by the Contractors will be deemed to be contracted workers. The Contractor(s) might further engage multiple subcontractors. All work force of all such sub-contractors will be also deemed to be contracted workers. These will also include Migrant workers as all the required labor will not be fully supplied locally for a number of reasons, such as worker unavailability and lack of technical skills and capacity.

**Migrant Workers:** The migrant workers are that, who are employed for the Project but does not belong to the Project region and are not normally expected to return to their places of residence after work shift hours. The number of migrant workers in any contract package, would depend on decisions made by contractors, based on the locally available workforce and their skills for Project construction requirements. The migrant workers could be at all levels and include unskilled and semiskilled construction labour and could even comprise combination of male and women labour force. The migrant workers are either directly engaged by the contractor or through labour contractors, who supply the work force to as per the needs of the contractors.

3. **Primary Supply Workers:** No primary supplier or primary supply workers are anticipated as all goods and services essential to the core functions of the project shall be provided by the contractor – through a contract by Rajasthan WRD.
4. **Community Workers:** Community workers are envisaged under the Emergency Action Plans, who will be mostly volunteers for implementing parts of the EAP.

**Potential Labour risks:** Following are the potential risks associated with workers/labours engaged in execution of planned intervention works.

### **Impact/Risks on Community**

1. Waste generation from labour colony can pollute drinking water sources of community

### **Impacts/Risks for Workforce**

1. Safety issues while at work like injuries/accidents/ fatalities leading to even death, while at work;
2. Short terms effects due to exposure to dust and noise levels, while at work
3. Long term effects on life due to exposure to chemical /hazardous wastes
4. Inadequate accommodation facilities at work force camps, including inadequate sanitation and health facilities
5. Non-payment of wages
6. Discrimination in Employment (e.g. abrupt termination of the employment, working conditions, wages or benefits etc.)
7. Sexual harassment at work
8. Security of women work force
9. Absence or inadequate or inaccessible emergency response system for rescue of labour/workforce in situations of natural calamities.
10. Health risks of labour relating to HIV/AIDS and other sexually transmitted diseases

*In addition, other risks that would be applicable for all types of workers would be as follows:*

1. Unclear terms and conditions of employment
2. Discrimination and denial of equal opportunity in hiring and promotions/incentives/training opportunities
3. Denial for workers' rights to form worker's organizations, etc.
4. Absence of a grievance mechanism for labour to seek redressal of their grievances/issues

## **5.3 RESOURCE EFFICIENCY AND POLLUTION PREVENTION AND MANAGEMENT (ESS 3)**

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### **Impact on Physiography**

The dam is operational since 1981 and the present interventions involve only civil and electromechanical works to improve dam operation and safety. All the work will be carried out at one location i.e. at dam, therefore, physiography will not change due to any of the proposed interventions. Therefore, there will be no significant impact on physiography of the region due to the proposed interventions.

### **Impact on Land/Geology**

All project components are proposed to occur within existing dam with no land acquisition. Therefore, impact on land and geology will be limited to sourcing of construction material or related to disposal of construction waste only. The civil works will require different materials such as earth, aggregate, boulders, and sand. The requirement of such material is not large and will be sourced from already operational and approved mines/quarries. The construction waste generation is also likely to be minimal and will be either disposed off or

reused for land filling or levelling purposes. However, requisite mitigation measures will be taken to minimise impact further.

The various 'resource efficacy' options during design include optimize usage of material generated from excavation for wall foundation and generation of construction waste from repair activities and thereby reduce potential impact due to dumping etc., are considered to achieve minimum construction footprint

### **Impact on Soil**

Repair sites will impact soil due to repair and demolition works such as renovation of disturbed u/s riprap, spillage during repair works of steps on d/s face of dam, parapet walls, spillway crest/glacis, treatment of honey-combed U/S area, lift joints for concrete dam, operation of construction equipment and machinery and waste generation thereof, etc. There is also possibility of contamination of soil from leakage and spillage during handling and storage of fuels and chemicals.

### **Muck Disposal:**

The activities that generate construction debris and/or spoil are removal of damaged rip-raps, other repair activities such as repair works of steps on d/s face of dam, parapet walls, spillway crest/glacis, treatment of honey-combed U/S area, lift joints for concrete dam, etc. This being largely repair work, quantities have not been estimated and they are not expected to be significant to create disposal problem. Nevertheless, all the construction debris/muck generated needs to be disposed off in a planned manner to avoid adverse impacts on soil.

### **Impacts on Water Resources**

The proposed intervention activities are not expected to impact drainage pattern or water resources (ground or surface) in any way as the proposed improvement interventions are neither crossing, altering or disturbing drainages nor impacting ground water resource in any form. The water for construction will be sourced from dam and as such requirement will be limited. However, use of water resources will be optimised before start of work through application of Resource Efficiency and Pollution Prevention techniques which will include optimal use planning, recycle and reuse option.

WRD along with contractor will prepare project specific water use and water balance analysis based on detailed design and prepare an action plan for water conservation and management and submit to SPMU/CPMU/WB for approval.

### **Impacts on Water Quality**

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Construction related impacts and risks for water quality include:

- a) accidental release of fuel or chemicals and contamination from poor waste practices can affect surface and groundwater
- b) contamination from construction machinery working near water bodies
- c) discharges and disturbance of soil and sediment that drain into surface waters
- d) Generation of sanitary wastes from camp site and construction sites finding way to water bodies

### **Impact on Ambient Air Quality**

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As discussed in baseline, ambient air quality in the area is pristine and without any significant anthropogenic sources of pollution. Construction activities can give rise to dust emissions if not effectively managed and have the potential to affect receptors near to the main construction sites due to dust generated from demolition, excavation, operation of construction equipment and machinery, increased movement of vehicles, onto the local road network. Earth works will result in exposed areas of soil which will potentially generate dust when it is windy, with dust potentially being generated when winds blow at all times of day or night, not just during active periods of construction. The level and distribution of dust emissions will vary according to the duration and location of activity, weather conditions, and the effectiveness of suppression measures.

Gaseous emission during construction will be from machinery, equipment and vehicles used for material transportation. The operation of vehicles and equipment will result in emissions of carbon monoxide, sulphur dioxide, and oxides of nitrogen. In particular, all commercial vehicle driven with diesel fuel is often used in India. The greatest impact on air quality due to emissions from vehicles and plant will be in the areas immediately adjacent to work area. Generally, additional vehicle movements generated during the construction phase will have the potential to influence local air quality at sensitive receptors located at close proximity to road and pollutant concentration is likely to reduce with increase distance from road. The impacts will therefore apply mostly to the villages on route to dam.

As the project is presently operational and the interventions are not going to alter the project operation in any manner, no operational phase impacts are envisaged on ambient air quality.

### **Impact of Noise and Vibration**

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Sources of noise will be the vehicles and equipment for construction at the project site. Due to construction activity in the area, noise levels will increase during the period of construction, however, they will remain limited to the work area mainly where construction activity will progress. Additionally, noise levels will increase on approach roads due to increased traffic.

Impact of noise generation due to operation of construction machines and equipment is the exposure of workers operating these machines and other who are working in the surrounding. Such impacts can become significant if they are exposed to high noise for long hours continuously.

### **Impact of Waste Generation**

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Migratory population is expected to reside in the area during peak construction period. Proper sanitary and solid waste management facilities would be provided at the labour colonies. In the absence of proper solid waste management plan, there can be serious impacts of land and water pollution due to indiscriminate disposal. In addition, there will be odour issues and health impacts. There will be an influx of labourers and other service

providers into the project area. Sewage and solid waste will be generated from the colonies. It is essential that from the planning stage, sewage management and solid waste disposal facilities should be conceptualized to maintain the health of the people and the environment. Solid waste generated from the colonies during construction phase will be disposed off as per Solid Wastes Management Rules, 2016.

As most of the proposed activities involve repair and renovation, it is expected that construction and demolition waste in the form of debris will be generated. This being largely repair work, quantities have not been estimated and they are not expected to be significant to create disposal problem. Nevertheless, all the construction debris/muck generated needs to be disposed off in a planned manner to avoid adverse impacts on soil/land. All such wastes will be handled in compliance with Construction and Demolition Waste Rules, 2016.

Project interventions include substantial amount of electro-mechanical work such as repair of hoist, providing standby generator, providing and installing armored H.T. service line and L.T. armored cable for control room, gallery and gantry, epoxy thermal sealing & epoxy paint on vertical gate of dam etc. These activities will generate significant amount of waste in terms of replaced parts, packaging material, empty containers, use and disposal of oil & grease, iron scrap, etc. there will be a mix of hazardous and non-hazardous wastes. It is important to have a plan ready for disposal of such wastes before start of the activity.

Contractor is obliged to provide first-aid/basic medical facilities to labour at site especially during accident/emergency which is likely to generate bio-medical waste, although quantity is not expected to be significant, this needs to be managed to avoid indiscriminate dumping as impacts could be serious.

WRD along with contractor will prepare project specific muck / debris/Solid Waste disposal plan and provide sufficient site for such disposals.

#### **5.4 COMMUNITY HEALTH AND SAFETY (ESS 4)**

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Health safety and security risks and impacts on project affected communities especially on vulnerable people are not considered significant as communities are not directly involved or getting impacted. However, the project construction would involve engagement of labour, transportation and handling of material, civil construction and electromechanical works and such activities will impact the community and increase the risks.

Engagement of labour for project work and their stay at site for about 3 years' time, will increase the risks of crimes including gender based violence. Waste generation from labour camps/colony if not handled properly, will pollute the water resources used by community for drinking leading to health impacts. Migratory workforce may be bringing in new and infectious diseases not known to area.

Transportation of material will increase the traffic on village roads. There are 11 villages in vicinity of dam site where traffic will be impacted due to increased movement of traffic and thus impact the community by way of increased noise and air pollution. In addition, this will also increase the risk of accidents.

Similarly, civil construction and electromechanical works will lead to pollution generation in the form of air emissions and noise generation, which will remain local and are not expected to impact the community. Construction waste and electromechanical work waste, especially the hazardous waste if not disposed off properly have the potential of impacting the surrounding community.

As can be seen from the above discussion, the interventions proposed under Matrikundia sub-project are of the nature of civil and electromechanical work, besides Non-structural interventions such as early flood warning systems, Emergency action plans. In case of structural interventions, there is no additional land requirement – neither forest nor private, as all the interventions remain within the close proximity to dam body itself. Impacts/risks as assessed under ESIA study will remain limited to dam area except for procurement and transportation of material and labour habitation in the area, which have the potential of impacting community around the dam site.

### **6.1 ENVIRONMENT AND SOCIAL MANAGEMENT PLAN**

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E&S impacts/risks for this sub-project Dam is Low risk, as identified in the previous chapter. These risks and impacts can be mitigated by appropriately implementing management measures. Based on the ESIA following plans/procedures have been identified to effectively mitigate the environment and social impacts and risks of the proposed interventions:

- ***Labour Management Procedure including GRM***

The Procedure will set out the way in which project workers will be managed, in accordance with the requirements of national law and the bank's ESS Standards and will address the way in which this ESS will apply to different categories of project workers. It covers the terms and conditions of employment, non-discrimination and equal opportunity, worker's organization and welfare. Protecting the workforce, establishing minimum age for labour to prevent child labour will be defined in the procedure. The responsibility to manage any adverse impacts would be clearly reflected in the contractual obligations of the Contractor with appropriate mechanisms for addressing non-compliance.

A grievance mechanism will be provided for all direct workers and contracted to raise workplace concerns and workers will be informed of the grievance mechanism at the time of recruitment along with the measures put in place to protect them against any reprisal for its use. Mechanism should be easily accessible to all project workers. It should be designed to address concerns promptly, using an understandable and transparent process that provides timely feedback to those concerned in a language they understand, without any retribution, and will operate in an independent and objective manner.

The document shall be prepared by Rajasthan WRD with support from the E & S staff and shall be applicable for all dams taken under DRIP 2 in the state. It will be disclosed by Rajasthan WRD one month before mobilization of the Contractor.

- ***OHS Measures***

Measures relating to occupational health and safety applies to the project as it involves engagement of workers. The OHS measures will take into account the General Environment Health and Safety Guidelines and applicable legal requirements. The OHS measures will be designed and implemented to address:

- i. identification of potential hazards to project workers, particularly those that may be life threatening;
- ii. provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances;
- iii. training on occupational safety and health, and maintenance of training records
- iv. Provision of personal protective equipment without expense to the project workers.
- v. documentation and reporting of occupational accidents, diseases and incidents;
- vi. emergency prevention and preparedness and response arrangements to emergency situations;
- vii. remedies for adverse impacts such as occupational injuries, deaths, disability and disease
- viii. accident reporting and analysis procedure
- ix. system for regular review of OHS performance

The document shall be prepared by Rajasthan WRD with support from the E & S staff and shall be applicable for all dams taken under DRIP 2 in the state. It shall be disclosed by Rajasthan WRD one month before mobilization of the Contractor.

- ***GBV Risk Mitigation Guidelines***

The proposed structural interventions are extremely localized in nature and will be carried out in areas of restricted access – as normally all dams are. These structural interventions will not result in any project interface with local communities, the overall GBV rating for this dam intervention as per the Risk Assessment Tool is low. Hence, in accordance with the overall GBV Risk Mitigation Framework for the project, guidelines will be developed commensurate to the low risk category to address Gender Based Violence Risk before invitation of bids. The Plan will provide a set of measures such as orientation to all categories of labour including department staff/dam site personnel. The document shall be prepared by Rajasthan WRD with support from the E&S Staff of Rajasthan WRD.

- ***Resource Efficiency and Pollution Prevention Measures***

Keeping in view the risks and impacts of the proposed activities, WRD will prepare a set of measures to be implemented by the Contractors to ensure efficient use of resources and avoid/minimize the pollution from proposed interventions. The measures should address all possible impacts identified above, with respect to resource use and pollution generation from civil works including road repair, electromechanical and painting work and also from labour camps and colonies. It should focus on reuse/recycling; energy efficiency such as solar lights and cookers for colony/community kitchen for workers, where possible.

The project's demand for major raw material such as boulders, aggregate and sand for construction will be sourced through pre-existing authorized quarries, with valid environment clearance. To mitigate air and noise pollution from transportation, material storage and handling and construction activities, following measures should be included:

- To ensure trucks are loaded only up to permitted capacities to prevent high emission

- The ensure trucks used for transportation of material is covered by tarpaulin and provided tail board, so that en-route spillage and generation of fugitive dust are prevented.
- Vehicles in good condition with valid PUC (Pollution Under Control) certificate shall be deployed during construction
- Regular sprinkling of the water will be done on construction sites for dust suppression.
- Mobile DG sets shall be used for lighting only during construction phase and they should meet emission and noise standards as per guidelines/standards issued by CPCB.
- All the construction workers and other staff, who get directly exposed to dust, should necessarily be provided with dust masks. Workers in high noise area, will be provided with ear muffs and their use will be monitored. Workers exposure (time duration) to high noise will also be controlled.
- Minimize the use of noise producing equipment during night hours to avoid the disturbance to locals and wild animals of surrounding area.

To mitigate the risk of wastewater from construction site and colony finding its way to fresh water source without treatment, the following measures should be included:

- All toilets and wash areas in worker's colony have functional septic tanks and soak pit arrangements, of adequate capacity.
- No discharge from oil/lube storage areas shall be directly discharged in to any open surface water channel/ streams.
- Construction along the river bank/reservoir shall be done when surface water level is receded and clear construction area is available.
- Storage of material and construction equipment should be kept away from the drainages to avoid any spillage and pollution of surface water.

For solid and hazardous waste management, sites should be identified for disposal of construction waste, surplus excavated material, and other solid wastes; and appropriate permissions taken for dumping with restoration plan covering engineering and biological measures as appropriate. No dump site shall be located in forest area.

WRD will share identified locations of muck or debris disposal sites with the contractor. The contractor will develop a muck and debris disposal plan after incorporating longitudinal and cross section references to assess volume or capacity of the disposal site and will submit muck/ debris disposal plan before commencement of the work at site. This action needs to be included in the Bid Document as one of the key requirements

WRD needs to prepare a plan to identify and quantify all the waste generated from electro-mechanical work include replaced parts with estimated quantities and categorisation as hazardous and non-hazardous waste. The plan should also identify the temporary secured and covered storage location till the time it is removed, contractors/vendors who will pick these parts/wastes; authorisation status of contractors for hazardous wastes.

Measures should also cover cleanliness of the labour colony, provision of basic sold waste collection facilities and restrict dumping of solid waste on land or in water body. Contractor

should provide bins for dumping of domestic waste from colony and ensure timely pick up and dumping at authorised location.

The document shall be prepared by Rajasthan WRD with support from the E&S staff and shall be applicable for all dams taken under DRIP 2 in the state. It shall be disclosed by Rajasthan WRD one month before mobilization of the Contractor.

- ***Emergency Response Plan***

The plan will identify and implement measures to address emergency events, arising from both natural and man-made hazards, typically in the form of fire, explosions, leaks or spills or flooding of downstream area in case of dam break. The measures will be designed to address the emergency event in a coordinated and expeditious manner, to prevent it from injuring the health and safety of the community, and to minimize, mitigate and compensate for any impacts that may occur. ERP will cover emergency preparedness and response activities, resources, and responsibilities, and will disclose appropriate information to affected communities, relevant government agencies, or other relevant parties. The Borrower will assist and collaborate with affected communities, relevant government agencies and other relevant parties in their preparations to respond effectively to an emergency. The plan so prepared should be dovetailed with district disaster management plan and state disaster management plan.

The plan shall be prepared by Rajasthan WRD by engaging expert consultants and is part of DRIP 2 activities; it should be ready before the invitation of bids.

- ***Procedures for Stakeholder Engagement***

The Stakeholder Engagement Framework (SEF) will describe the timing, methods of engagement with stakeholders and range of information, distinguishing between project-affected parties and other interested parties, as well as the type of information to be sought from them. The procedures developed based on SEF will set out how stakeholders will be engaged throughout project preparation and implementation and describe the measures that will be used to remove obstacles to participation, and how the views of differently affected groups will be captured. Where applicable, the procedures will include differentiated measures to allow the effective participation of those identified as disadvantaged or vulnerable. The draft Framework will be prepared by CWC in discussion with Rajasthan WRD and will be disclosed. The Stakeholder Engagement Procedures will be developed specific to the proposed interventions at the site, prior to invitation of bids.

- ***Institutional Arrangement***

As part of institutional strengthening for implementation of sub-projects, Environmental and Social staff will be engaged by the department to enable preparation of management plans as well subsequent implementation of mitigation measures during implementation. IA will hire experts from outside department or seek deputation of staff with relevant experience. The IA should develop a mechanism to resolve pending submergence related issues and also to address any such issues that might arise in the future.

- ***Grievance Mechanism***

WRD shall establish and implement a grievance mechanism to receive and facilitate resolution of concerns and grievances, from the communities and other stakeholders including implementation partners. It shall be proportionate to the potential risks and impacts of the project and be accessible and inclusive. The department will establish three levels of Grievance Mechanism:

1. A cell at each of the dam site headed by respective Executive Engineer
  2. A cell at the SPMU headed by Chief Engineer (CE)/Project Director (PD)
  3. A committee at the state government level headed by Secretary to Government
- Details on the processes and procedures for the GRM will be provided in the Stakeholder Engagement Framework.

## **6.2 MONITORING REPORTING AND BUDGETING**

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SPMU will prepare a monitoring, reporting and budgeting requirement to implement above plans and measures, which will be approved by CPMU - CWC. This will form part of bid documents for contractors for carrying out the proposed activities. SPMU will prepare a quarterly monitoring report and submit to CPMU - CWC.

## **6.3 ENVIRONMENTAL AND SOCIAL COMMITMENT PLAN (ESCP) AND OTHER REQUIREMENTS**

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WRD, Rajasthan will agree on an Environmental and Social Commitment Plan (ESCP) with the Bank covering the material measures and actions that are required for the project to achieve compliance with the ESSs over a specified timeframe. It will take into account the findings of the environmental and social assessment, the Bank's environmental and social due diligence and the results of engagement with stakeholders. ESCP will clearly spell out the plans to be prepared with time frame and responsibility.

**Annexure I**  
**Socio-economic Profile of Proximity villages (Study Area)**

Study area is defined as proximity villages i.e. villages which fall within 5 km distance from dam on downstream side. These are Arni, Gandraf, Ganeshpura, Geggura, Jawasiya, Kiron Ka Khera, Matrikundiya, Somi, Teela Khera, Parmeshwar Pura and Gurjaniya.

**A. Demography of Study Area**

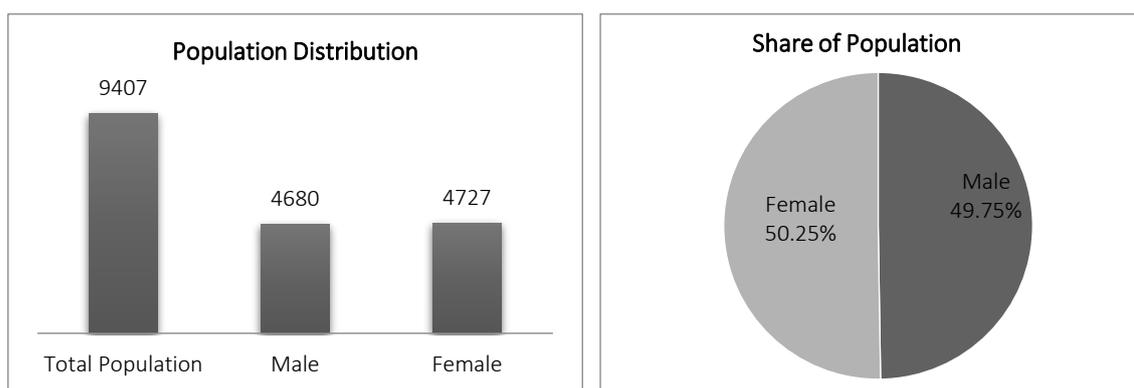
S. No.	Description	Number	Percentage to Respective Total
1	<b>Total Population</b>	<b>9407</b>	<b>100.0</b>
	Male	<b>4680</b>	49.75
	Female	<b>4727</b>	50.25
	Sex Ratio	<b>1010</b>	
2	<b>Population (0-6 age group)</b>	<b>1380</b>	<b>100.0</b>
	Male	<b>738</b>	53.48
	Female	642	46.52
	Child Sex Ratio	<b>870</b>	
3	<b>Scheduled Caste (SC) Population</b>	<b>1938</b>	<b>100.0</b>
	Male	<b>972</b>	50.15
	Female	<b>966</b>	49.85
	Sex Ratio	<b>994</b>	
4	<b>Scheduled Tribe (ST) Population</b>	<b>861</b>	<b>100.0</b>
	Male	446	51.80
	Female	415	48.20
	Sex Ratio	<b>930</b>	
5	<b>General Category (Including OBC)</b>	<b>6608</b>	<b>100.0</b>
	Male	<b>3262</b>	49.36
	Female	<b>3346</b>	50.64
	Sex Ratio	<b>1026</b>	
6	<b>Total No. of Households</b>	<b>2061</b>	
	Average Household Size	5	
7	<b>Total Literates</b>	<b>4145</b>	<b>100.0</b>
	Male	<b>2677</b>	64.58
	Female	1468	35.42
	<b>Overall Literacy Rate</b>	<b>51.64</b>	
	Male Literacy Rate	67.91	
	Female Literacy Rate	35.94	
	Gender Gap in Literacy Rate	31.97	
8	<b>Total Workers</b>	<b>5448</b>	<b>100.0</b>
	Male	<b>2784</b>	51.10
	Female	<b>2664</b>	48.90
	Gender Gap in Work Participation Rate	2.20	
9	<b>Main Workers</b>	<b>4143</b>	<b>100.0</b>
	Male	2292	55.32
	Female	1851	44.68
	Gender Gap in Work Participation Rate	10.64	
10	<b>Marginal Workers</b>	<b>1305</b>	<b>100.0</b>
	Male	492	37.70
	Female	813	62.30
	Gender Gap in Work Participation Rate	-24.60	
11	<b>Household Industrial Workers</b>	<b>114</b>	<b>100.0</b>
	Male	51	44.74
	Female	63	55.26
12	<b>Cultivators</b>	<b>3613</b>	<b>100.0</b>

	Male	1780	49.27
	Female	1833	50.73
13	<b>Agricultural Labour</b>	<b>547</b>	<b>100.0</b>
	Male	187	34.19
	Female	360	65.81
14	<b>'Other Workers'</b>	<b>1174</b>	<b>100.0</b>
	Male	766	65.25
	Female	408	34.75

Source: Census of India, 2011

## B. Population Composition

According to Census 2011, total population of the study area has been worked out to 9,407. The gender wise distribution of the above population is 4,680 (49.75%) male and 4,725 (50.25%) female. The overall sex ratio of the study area has been worked out to 1,010 females per 1,000 males. The entire population of the study area is distributed into approx. 2,061 households and the average household size is five.



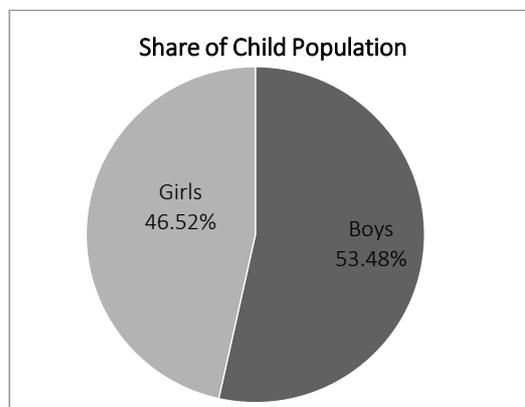
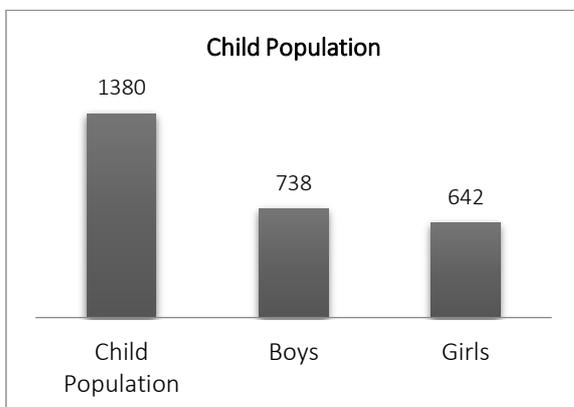
Village wise population distribution of the study area is given in the table below:

Village wise Population Distribution with Sex Ratio						
S. No.	Village	No. of HH	Population			Sex Ratio
			Total	Male	Female	
01	Arni	786	3599	1791	1808	1009
02	Gandraf	76	361	180	181	1006
03	Ganeshpura	50	235	121	114	942
04	Gegpura	119	642	315	327	1038
05	Jawasiya	163	747	360	387	1075
06	Kiron Ka Khera	135	535	265	270	1019
07	Matrikundiya	108	491	246	245	996
08	Somi	354	1528	763	765	1003
09	Teela Khera	93	406	206	200	971
10	Parmeshwar Pura	82	381	193	188	974
11	Gurjaniya	95	482	240	242	1008
<b>TOTAL</b>		<b>2061</b>	<b>9407</b>	<b>4680</b>	<b>4727</b>	<b>1010</b>

Source: Census of India, 2011

## C. Child Population Distribution

In the study area, the total child population of 0-6 age group has been worked out to 1,380 which represent 14.67% of the total population. Of the total child population, 53.48 % are boys and remaining 46.52% are girl child. The child sex ratio in this age group is 870 girls per 1,000 boys.



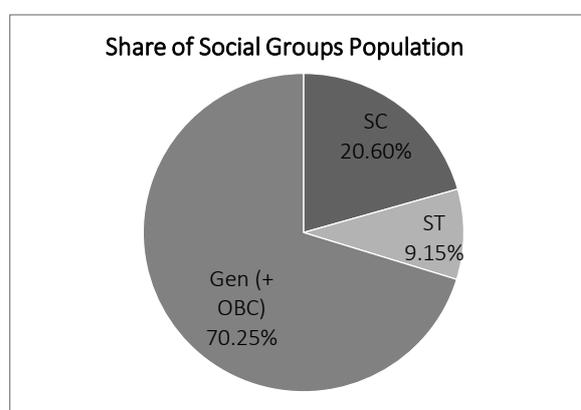
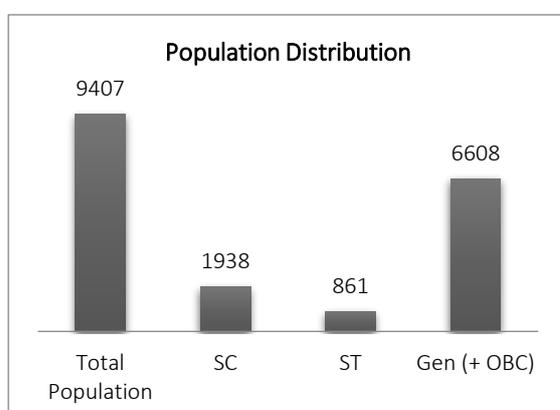
Village wise child population distribution of the study area is given in the table below:

S. No.	Village	Child Population (0-6) Age Group			Sex Ratio
		Total	Boys	Girls	
01	Arni	493	271	222	819
02	Gandraf	56	32	24	750
03	Ganeshpura	25	12	13	1083
04	Gegpura	107	48	59	1229
05	Jawasiya	103	57	46	807
06	Kiron Ka Khera	67	34	33	971
07	Matrikundiya	79	42	37	881
08	Somi	255	148	107	723
09	Teela Khera	67	38	29	763
10	Parmeshwar Pura	47	21	26	1238
11	Gurjaniya	81	35	46	1314
<b>TOTAL</b>		<b>1380</b>	<b>738</b>	<b>642</b>	<b>870</b>

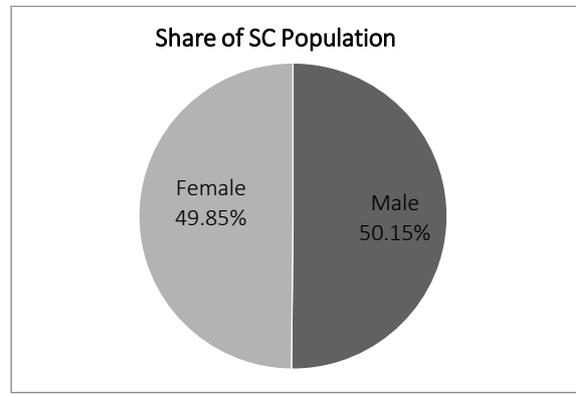
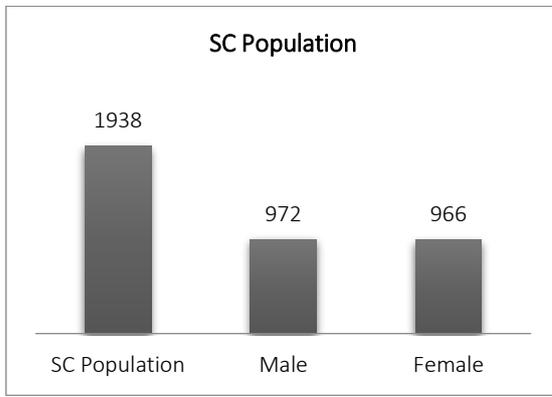
Source: Census of India, 2011

#### D. Social Group Population Distribution

Total population of the study area is distributed into different social groups like Scheduled Caste (SC), Scheduled Tribe (ST) and General Category (including OBC). The share of these social groups' population to the total population of the study area is 20.60%, 9.15% and 70.25% respectively.



- Scheduled Caste (SC) Population:** In the study area, Scheduled Caste population has been worked out to 1,938 which constitute about 20.60% of the total population. Of this, 50.15% is male and remaining 49.85% is female. The sex ratio among Scheduled Caste population has been worked out to 994 females per 1,000 males.

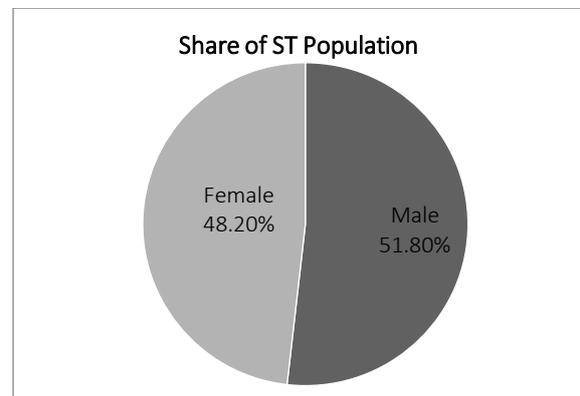
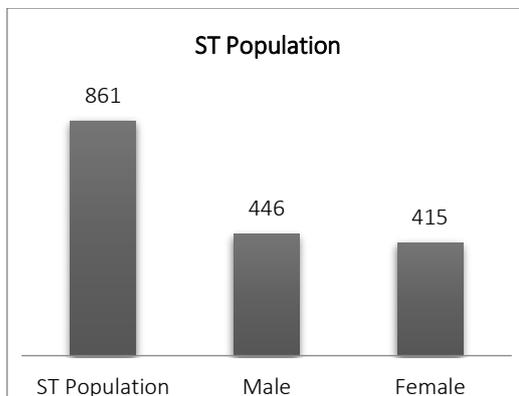


Village wise SC population distribution of the study area is given in the table below:

S. No.	Village	SC Population			Sex Ratio
		Total	Male	Female	
01	Arni	784	401	383	955
02	Gandraf	105	51	54	1059
03	Ganeshpura	0	0	0	000
04	Gegpura	74	38	36	947
05	Jawasiya	153	71	82	1155
06	Kiron Ka Khera	16	8	8	1000
07	Matrikundiya	121	58	63	1086
08	Somi	497	250	247	988
09	Teela Khera	54	25	29	1160
10	Parmeshwar Pura	93	50	43	860
11	Gurjaniya	41	20	21	1050
<b>TOTAL</b>		<b>1938</b>	<b>972</b>	<b>966</b>	<b>994</b>

Source: Census of India, 2011

- Scheduled Tribe Population:** The Scheduled Tribe population in the study area has been worked out to 861 which represent 9.15% of the total population. Of the total Scheduled Tribe population, 51.80% is male and 48.20% is female. The sex ratio among the Scheduled Tribe population has been worked out to 930 females per 1,000 males.

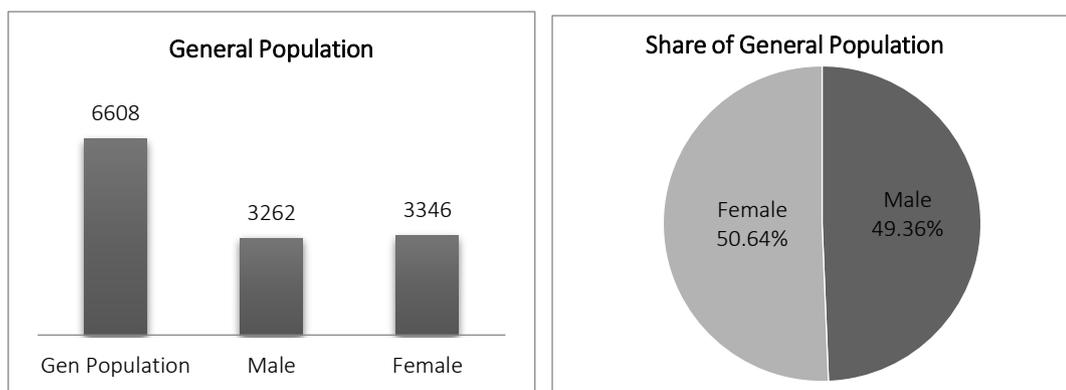


Village wise ST population distribution of the study area is given in the table below:

S. No.	Village	ST Population			Sex Ratio
		Total	Male	Female	
01	Arni	139	75	64	853
02	Gandraf	24	14	10	714
03	Ganeshpura	235	121	114	942
04	Gegpura	181	89	92	1034

05	Jawasiya	14	9	5	556
06	Kiron Ka Khera	15	10	5	500
07	Matrikundiya	0	0	0	000
08	Somi	4	2	2	1000
09	Teela Khera	121	63	58	921
10	Parmeshwar Pura	99	48	51	1063
11	Gurjaniya	29	15	14	933
<b>TOTAL</b>		<b>861</b>	<b>446</b>	<b>415</b>	<b>930</b>
<i>Source: Census of India, 2011</i>					

- **General Category (including OBC) Population:** The population of this group has been worked out to 6,608 which is 70.25% of the total population of the study area. Of the total population of this group, 49.36% is male and 50.64% is female. The sex ratio among this group of population has been worked out to 1,026 females per 1,000 males.

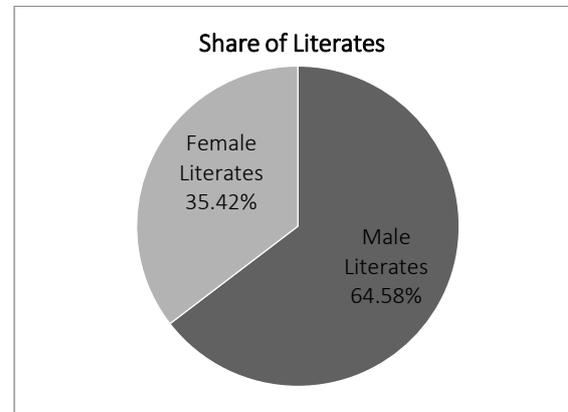
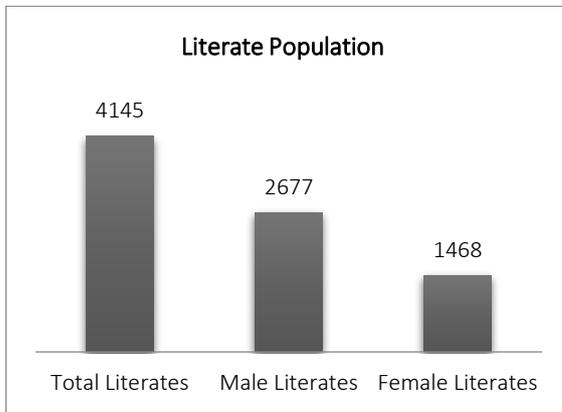


Village wise General Category (including OBC) population distribution of the study area is given in the table below:

S. No.	Village	GEN (including 'OBC') Population			Sex Ratio
		Total	Male	Female	
01	Arni	2676	1315	1361	1035
02	Gandraf	232	115	117	1017
03	Ganeshpura	0	0	0	000
04	Gegpura	387	188	199	1059
05	Jawasiya	580	280	300	1071
06	Kiron Ka Khera	504	247	257	1040
07	Matrikundiya	370	188	182	968
08	Somi	1027	511	516	1010
09	Teela Khera	231	118	113	958
10	Parmeshwar Pura	189	95	94	989
11	Gurjaniya	412	205	207	1010
<b>TOTAL</b>		<b>6608</b>	<b>3262</b>	<b>3346</b>	<b>1026</b>
<i>Source: Census of India, 2011</i>					

#### E. Literates, Literacy Rate and Gender Gap in Literacy Rate

In the study area, 44.06% of the population is literate in which male literates are 64.58% and that of females are 35.42%. The overall literacy rate in the study area has been worked out to 51.64%. The male literacy rate is 67.91% and female literacy rate is 35.94%, creating a gender gap in literacy rate of 31.97%.



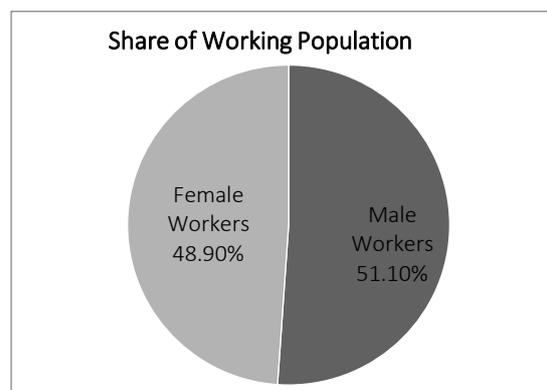
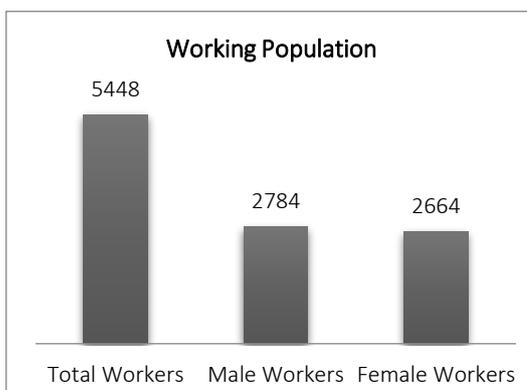
Village wise literate population and literacy rate is given in the table below:

S. No.	Village	Literate Population			Literacy Rate (%)		
		Total	Male	Female	Total	Male	Female
01	Arni	1772	1099	673	57.05	72.30	42.43
02	Gandraf	120	88	32	39.34	59.46	20.38
03	Ganeshpura	127	85	42	60.48	77.98	41.58
04	Gegpura	271	191	80	50.65	71.54	29.85
05	Jawasiya	364	217	147	56.52	71.62	43.11
06	Kiron Ka Khera	171	131	40	36.54	56.71	16.88
07	Matrikundiya	316	190	126	76.70	93.14	60.58
08	Somi	499	322	177	39.20	52.36	26.90
09	Teela Khera	170	114	56	50.15	67.86	32.75
10	Parmeshwar Pura	154	110	44	46.11	63.95	27.16
11	Gurjaniya	181	130	51	45.14	63.41	26.02
<b>TOTAL</b>		<b>4145</b>	<b>2677</b>	<b>1468</b>	<b>51.64</b>	<b>67.91</b>	<b>35.94</b>

Source: Census of India, 2011

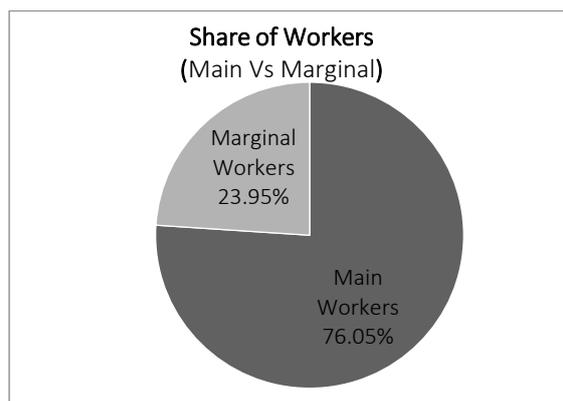
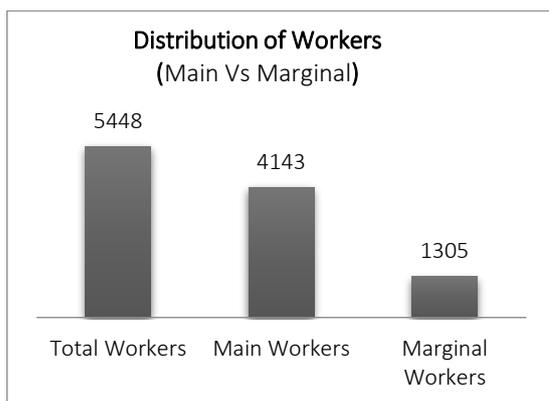
#### F. Workers and Work Participation Rate

The economic classification of workers as per Census 2011 is saying that total number of workers in the study area is 5,448 which constitute 57.91% of the total population. Of the total workers, 51.10% are males and remaining 48.90% are females. In absolute term, total number of male workers is 2,784 and that of female is 2,664. The gender gap in work participation rate is 2.20%.



Further of the total workers, 76.05% are main workers and remaining 23.95% are marginal workers. Of the total main workers, 55.32% are male and remaining 44.68% are female which creates a gender gap in work participation rate of 10.64%. In case of marginal workers,

37.70% are male and 62.30% are female that creates a gender gap of minus (-) 24.60% in this segment of work participation.

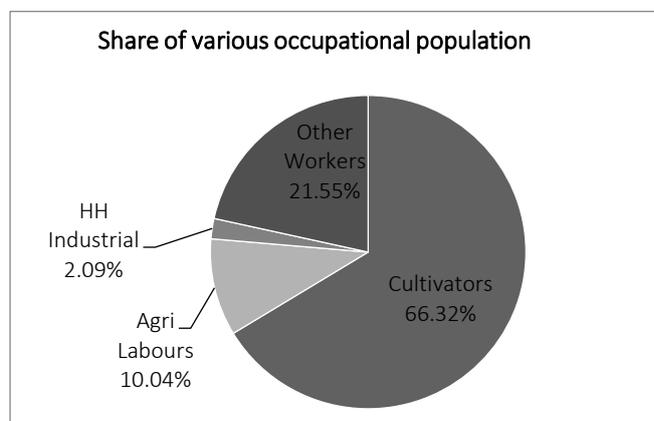
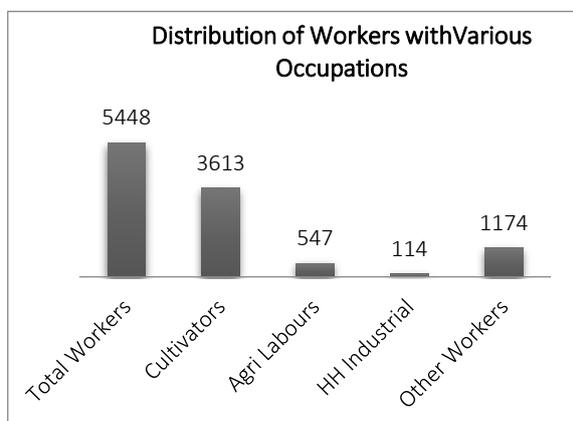


Village wise working population of the study area is given in the table below:

Village Name	Total Worker			Main Worker			Marginal Worker		
	T	M	F	T	M	F	T	M	F
Arni	1942	1003	939	1484	787	697	458	216	242
Gandraf	247	113	134	113	97	16	134	16	118
Ganeshpura	123	69	54	123	69	54	0	0	0
Gegpura	356	182	174	188	157	31	168	25	143
Jawasiya	470	229	241	453	218	235	17	11	6
Kiron Ka Khera	360	177	183	316	160	156	44	17	27
Matrikundiya	241	150	91	241	150	91	0	0	0
Somi	912	458	454	583	313	270	329	145	184
Teela Khera	258	135	123	244	126	118	14	9	5
Parmeshwar Pura	246	130	116	105	77	28	141	53	88
Gurjaniya	293	138	155	293	138	155	0	0	0
<b>TOTAL</b>	<b>5448</b>	<b>2784</b>	<b>2664</b>	<b>4143</b>	<b>2292</b>	<b>1851</b>	<b>1305</b>	<b>492</b>	<b>813</b>

Source: Census of India, 2011

The workers are further divided into Cultivators, Agricultural Labours, Household Industrial Workers and 'Other Workers'. Their shares in the total workers are 66.32%, 10.04%, 2.09% and 21.55% respectively.



Distribution of working population with various occupations is given in table below:

S. No.	Village	Total Workers	Cultivators	Agricultural Labour	Household Industrial Workers	Other Workers
01	Arni	1942	1032	307	34	569
02	Gandraf	247	131	29	66	21
03	Ganeshpura	123	100	2	0	21
04	Gegpura	356	266	31	1	58
05	Jawasiya	470	327	4	1	138
06	Kiron Ka Khera	360	325	2	2	31
07	Matrikundiya	241	29	10	0	202
08	Somi	912	796	68	2	46
09	Teela Khera	258	219	19	0	20
10	Parmeshwar Pura	246	103	74	2	67
11	Gurjaniya	293	285	1	6	1
<b>TOTAL</b>		<b>5448</b>	<b>3613</b>	<b>547</b>	<b>114</b>	<b>1174</b>

Source: Census of India, 2011

Agriculture and allied activities are the main occupation & sources of livelihood and income for most of the local people in the study area. Rabi and Kharif, both are the main crops. Maize, jowar, cotton, pulses, groundnut, wheat, barley, gram, oilseeds are the main crops from production point of view in the study area. Vegetable and fruits are also being produced in the study area. Apart from this, other people are engaged in household industries and ancillary works.

#### G. Basic Amenities

The basic amenities like education, health, drinking water, electricity, approach road, transportation and other facilities available in the study area are given in the following table:

Basic Amenities Available in the Study Area		
<b>EDUCATION</b>		
Educational Institutions	<b>Type of Institutes</b>	<b>Number</b>
	Pre-primary School (Pvt.)	01
	Primary School (Govt.)	06
	Primary School (Pvt.)	01
	Middle School (Govt.)	04
	Middle School (Pvt.)	01
Secondary School (Govt.)	02	
<b>HEALTH</b>		
Health Facilities	<b>Type of Facilities</b>	<b>Number</b>
	Primary Health Sub-Centre	03
	Maternity and Child Welfare Centre	01
	Hospital (Alternative Medicine)	01
	Dispensary	01
	Family Welfare Centre	01
	Non-Govt. Medical Facilities (For Out Patient)	03
	Non-Govt. Medical Facilities (For In & Out Patient)	01
	ASHA	11
	Anganwadi Centre (Nutritional Centre)	11
Nutritional Centre- ICDS	11	
<b>WATER</b>		
Drinking Water	<b>Means of Drinking Water</b>	<b>No. of Villages</b>
	Tap (Treated & Un-treated)	06
	Well (Covered & Un-covered)	02

	Hand Pump	11	
	Tube wells	05	
<b>ELECTRICITY</b>			
Electricity Supply	<b>Types of Electricity Available</b>		<b>No. of Villages</b>
	Power for Domestic Uses		11
	Power for Agriculture Uses		11
	Power for Commercial or Industrial Uses		10
<b>ROAD</b>			
Approach Road	<b>Types of Approach Roads</b>		<b>No. of Villages</b>
	Black Topped (Paved/Pucca) Road		02
	Gravel (Mud/Kachcha) Road		11
	Footpath Road		11
<b>TRANSPORTATION</b>			
Road Transportation	<b>Types of Road Transportation Available</b>		<b>No. of Villages</b>
	Public Bus Services		03
	Private Bus Services		02
	Auto/Modified Autos		02
<b>OTHER AMENITIES</b>			
	Public Distribution System Shop		03
	Sub-post Office		03
	Open Drainage		10
	Closed Drainage		04
<i>Source: Census of India, 2011</i>			

Basic amenities like water supply for drinking and other uses is available with various sources such as Tap (Treated & Un-treated), Well (Covered & Un-covered), Hand Pump, Tube wells etc. Electricity is available for domestic, agriculture and commercial or industrial uses in almost all over the study area.

## List of people met

Village Name	Name	Designation
Hathal	Prakash Chandra	Executive Engineer, WR Sub-division
	Narayan Lal	Asst. Engineer, WR Sub-division
	Prabhuram Mali	Community member
	Bharat Kumar	Community member
	Kathuram	Community member
	Lalit Kumar	Community member
	Chagan Laal	Community member
	Agara Ram	Community member
	Mahendra Kumar	Community member
	Ashish Kumar	Community member
	Baba Ram	Community member
	Harja Ram	Community member
	Bhanwar laal	Community member
	Kaluram	Community member
	Bikesh Kumar	Community member
Marol	Babu Laal Saini	Jr. Engineer, WR Sub-division
	Bhuraram kalbi	Community member
	Digendra Vaishnav	Community member
	Thanaram Parmar	Community member
	Tara Ram	Community member
	Prabhu Ram	Community member
	Tola Ram	Community member
	Hemram Kumhar	Community member
	Chhogaram	Community member
	Kalaram	Community member
	Jagmalram	Community member
	Lakhram	Community member
	Obaram	Community member
	Lagharam	Community member
	Dinesh Kumar	Community member
	Ashok	Community member
	Makna Ram	Community member
Surjamal	Community member	
Babulaal Lohar	Community member	
Selwara GP	Dungar Singh	GP Sarpanch
	Padma Ram	Village Sarpanch, Selwara
	Vaja Ram	Ward Panch
	Rangaram	Community member
	Mukesh Kumar	Community member
	Mala Ram	Community member
	Bhagwan Bhai Rajpurohit	Community member
	Soma Ram	Community member
	Shubha Ram	Community member
	Shankar Laal	Community member
	Govind Singh Dewra	Community member
	Prahlad Singh	Community member
	Hiraram Dewsi	Community member
	Khemaram Koli	Community member
Matrikundiya	C L Koli	EE, WR Sub-division
	Kishan Lal Bhawani	AE
	Dheeraj Kumar Beniwal	JE
	Gopal Singh	Sarpanch, Matrikundiya
	Ramesh	Community member
	Balji Kachhawa	Community member
	Punam Mali	Community member

	Babulal Surana	Community member
	Girdhari Lal	Community member
	Mangi Devi	Community member
	Narayani Devi	Community member
	Chandi Devi	Community member
	Dinesh Vishnoi	Community member
	Barohi Jat	Community member
	Ramlal Bairwa	Community member