

DAM REHABILITATION AND IMPROVEMENT PROJECT (DRIP) II

(Funded by World Bank)

GAMBHIRI DAM

ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT



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(Draft Report)

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ABBREVIATIONS AND ACRONYMS

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	:	Environment and Social Framework
ESIA	:	Environment 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
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 Safety Origination
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 Tribe
TMC	:	Thousand Million Cubic Feet
WLS	:	Wildlife Sanctuary
WRD	:	Water Resource Department

1.1 PROJECT OVERVIEW

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 Emergency Action Plans (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 – GAMBHIRI DAM

The Gambhiri Medium Irrigation Project across Gambhiri river, a tributary of Banas river was constructed the year 1957 to create irrigation and drinking water supply capacity. The dam is located in Tehsil Nimbahera in Chittorgarh District of Rajasthan. The dam supplies industrial/domestic water to the tune of 0.51 MCM (industrial)/2.12 MCM (domestic) to J K Cement Ltd/Nimbahera besides Irrigation supplies to 10,000 ha Gross Command Area (7,575 ha CCA) through two main canals RMC and LMC. RMC is 34.80 km long with discharging capacity of 2.46 cumec and LMC is 40.20 km long with discharging capacity of 4.50 cumec. The Project site is 30 km from Chittorgarh and nearest Highway to Project is National Highway (NH 56). Salient features of the project area as reported below:

Project	Gambhiri Medium Irrigation Project
River	Gambhiri river, a tributary of Banas river
Lat/Long	24° 41' 58"/ 74° 42' 52"
GCA	10000 ha
CCA	7575 ha
Annual industrial/domestic water supply	0.51 MCM (industrial)/2.12 MCM (domestic)
Catchment Area	1036 sq km
Main Dam	
Type	Earthen Dam
Length	3792 m
Top elevation	434.90 m
Height of dam above lowest river bed level	18.34 m
Lowest river bed level	416.56 m
Spillway	
Type of spillway gates	Vertical and radial
Length	642.4 m
Location of spillway	RD 3150 to RD 3792.40 m on Right flank
Crest level	424.90 m
Number of bays	52
Discharge capacity at MWL	3890 cumec
Size of spillway gate	3.05 m wide and 2.05 m high
Reservoir	
Maximum water level	433.40 m
Full Reservoir Level	431.90 m
MDDL	424.90 m

Live storage	53.48 MCM
Gross storage	55.01 MCM
Reservoir spread area	26 sq km
Year of start of construction	1952
Date of completion	1957
Year of first impoundment	1957



View of the Dam

Proposed Interventions/ Activities at Gambhiri 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. Re-sectioning / Raising of Dam
2. Placing of Rip-rap
3. Turfing on Down Stream face
4. Repair of Energy Dissipating Arrangement
5. Measures for seepage reduction
6. Repair of spillway glacis, piers, block joints etc.
7. Improvement in foundation drainage
8. De-silting of dams & Catchment Area Treatment Plans CAT plans etc.
9. Others, if any (Survey work)

Electromechanical Work

10. Repair of spillway gates & under sluice gates, hoisting parts.
11. Electrical works

Basic Facilities Enhancement

12. Improvement existing access roads
13. Repair/modification of Building at dam site
14. Control room / Security rooms
15. Safety measures like siren, lightning arrestors etc.

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 24 months.



Damaged Sluice room



Cracks in piers



Seepage through piers



Disturbed Rip Rap



Disturbed D/S EW profile



Disturbed U/S EW profile



Longitudinal crack



Cracks in Abutment

Figure 1.1: Selected Photographs of Improvement/Intervention area

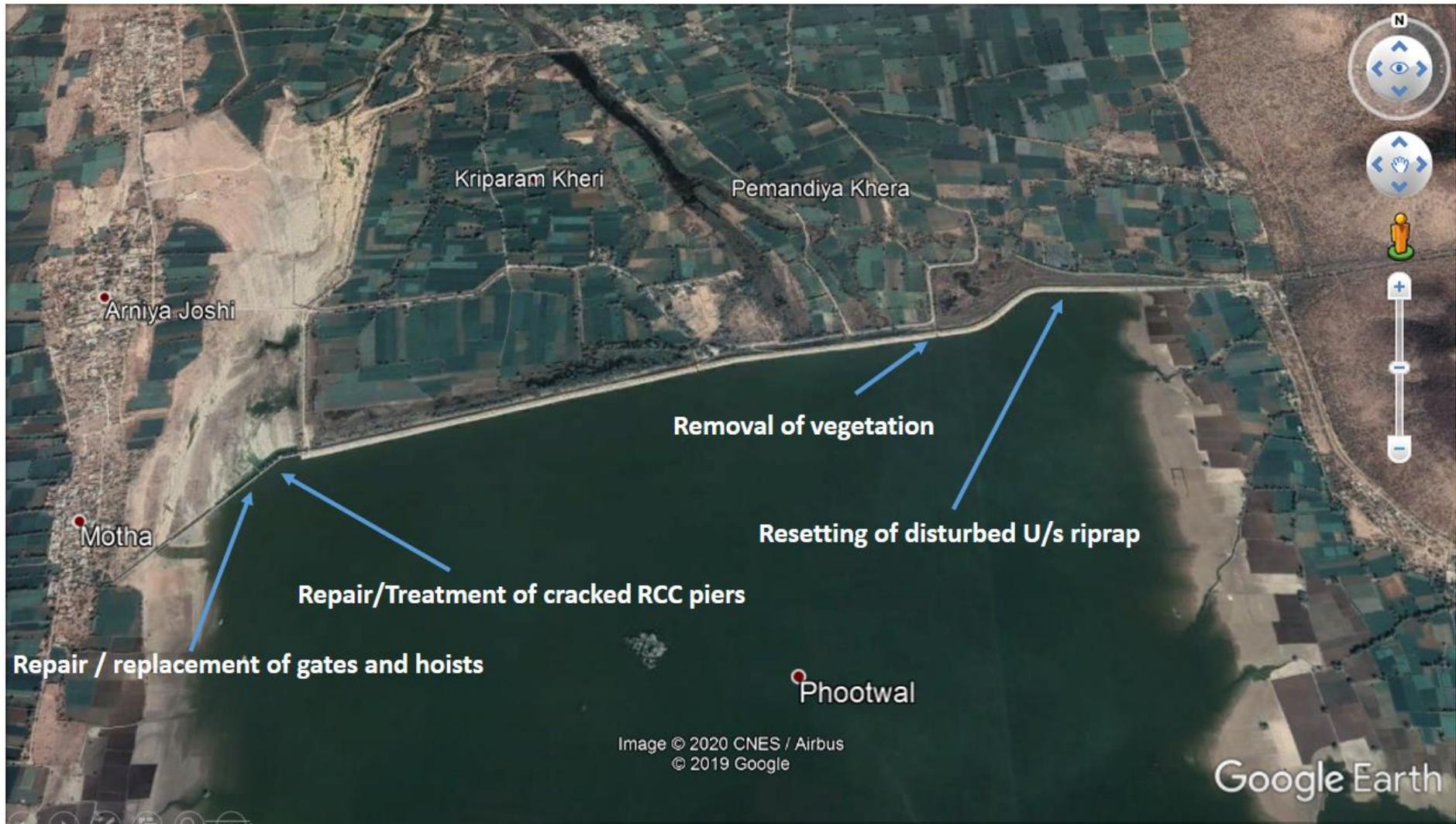


Figure 1.2: Project Area showing major intervention locations

1.3 PURPOSE OF ESIA

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 Environment & Social (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

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 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 (scheduled 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

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
7	Noise Pollution (Regulation and Control Act) 2000 and	Ambient Noise Standards for different areas and zones	Yes	Noise emission from proposed activities	None	CPCB & SPCB

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
	amendment till date			during construction stage like operation of DG sets		
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)
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	None	PESO

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
				electromechanical work. Storage within threshold quantity and as per capability analysis. Handling with define safe practices		
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 Acquisition, Rehabilitation and Resettlement Act, 2013	Regulates land acquisition and lays down the procedure and rules for granting compensation, rehabilitation and resettlement to the affected persons	No	Land Acquisition is not involved	None	Revenue Department/District Administration
21	Rights of Persons with	Ensures that the Persons with Disability	Yes	Persons with	None	

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
	Disabilities Act, 2016	(PWD) enjoy the right to equality, life with dignity, and respect for his or her own integrity equally with others.		disability		
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"> • Indications of primitive traits; • Distinctive culture; • Shyness of contact with the community at large; • Geographical isolation; and • Backwardness. <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 rights could not be recorded. Its objective is to facilitate the overall development and welfare of the tribal people by empowering them socially,	No	No such activities are proposed	None	Ministry of Tribal Affairs

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
		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	Major Labour Laws Applicable To Establishments Engaged In Building And Other Construction Work					
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 (since amended)	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
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	This Act defines sexual harassment in	Yes	Contractor/Labour	None	District Officer

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
	Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013	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		engagement		(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 employees in the matters of transfers, training and promotions etc.	Yes	Contractor/Labour engagement	None	Chief labour Commissioner
10	Payment of Bonus Act 1965	The Act is applicable to all establishments employing 20 or more	Yes	Contractor/Labour engagement		Chief labour Commissioner

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
		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.				
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 for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in the Building and	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
		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
16	Factories Act 1948	the Act lays down the procedure for approval of plans before setting up a factory engaged in manufacturing	Yes	Contractor/Labour engagement	None	Chief Inspector of Factories

S. No.	Legislation	Purpose	Applicability	Reason	Type of permit/specific action and stage of applicability	Administrative Authority
		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.				
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 setting up of an Employees' State Insurance Fund, which is to be administered by the Employees State	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
		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 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	All projects, sub-projects and associated facilities	Applicable (a) Conduct an environmental and social assessment of the proposed project, including stake- holder engagement;

ESF Policy, Standards and Directives & Guidelines	Applicable Activities	Applicability / Requirements
Social Risks and Impacts		(b) Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10; (c) Develop an ESCP, and implement all measures and actions set out in the legal agreement including the ESCP; and (d) Conduct monitoring and reporting on the environmental and social performance of the project against the ESSs
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).	Applicable Preparation of Labour Management Procedures applicable to the project. Preparation of Grievance Mechanism and sharing with all the workers Design and Implement OHS measures
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	Applicable To 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. 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.
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.	Applicable Pollution prevention from project activities and labour colony Managing traffic and road safety on village roads during transportation of material Preparation of Emergency Response Procedure (ERP) to prevent injuries to health and 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
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. None of the proposed structural 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

ESF Policy, Standards and Directives & Guidelines	Applicable Activities	Applicability / Requirements
		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. There is no national park/wildlife sanctuary within 10 Km of the project.
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 involved in 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 - Project is not directly or indirectly impacting any cultural heritage.
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 resources to a range of economic activities across industry sectors.	Not Applicable - Project does not have any FIs
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 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	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,	Applies to Bank in addressing E&S risks and impacts on disadvantaged and vulnerable persons or groups that are identified in this project.

ESF Policy, Standards and Directives & Guidelines	Applicable Activities	Applicability / Requirements
Vulnerable Individuals or Groups	because of their particular circumstances, may be disadvantaged or vulnerable	
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, 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

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), on downstream side along both the banks there is agricultural area. However, as discussed under Chapter 1 about project description, the project activities will be confined to dam body only and no structural interventions are proposed beyond existing dam boundaries. Villages in proximity i.e. within 5 km distance from dam on downstream side have been identified as Kriparam Kheri, Pemandiya Khera, Motha, Arniya, Arnoda, Mohammadpura, Bhoojiya Kheri, Tai and Baroli Ghata of Chittorgarh District.

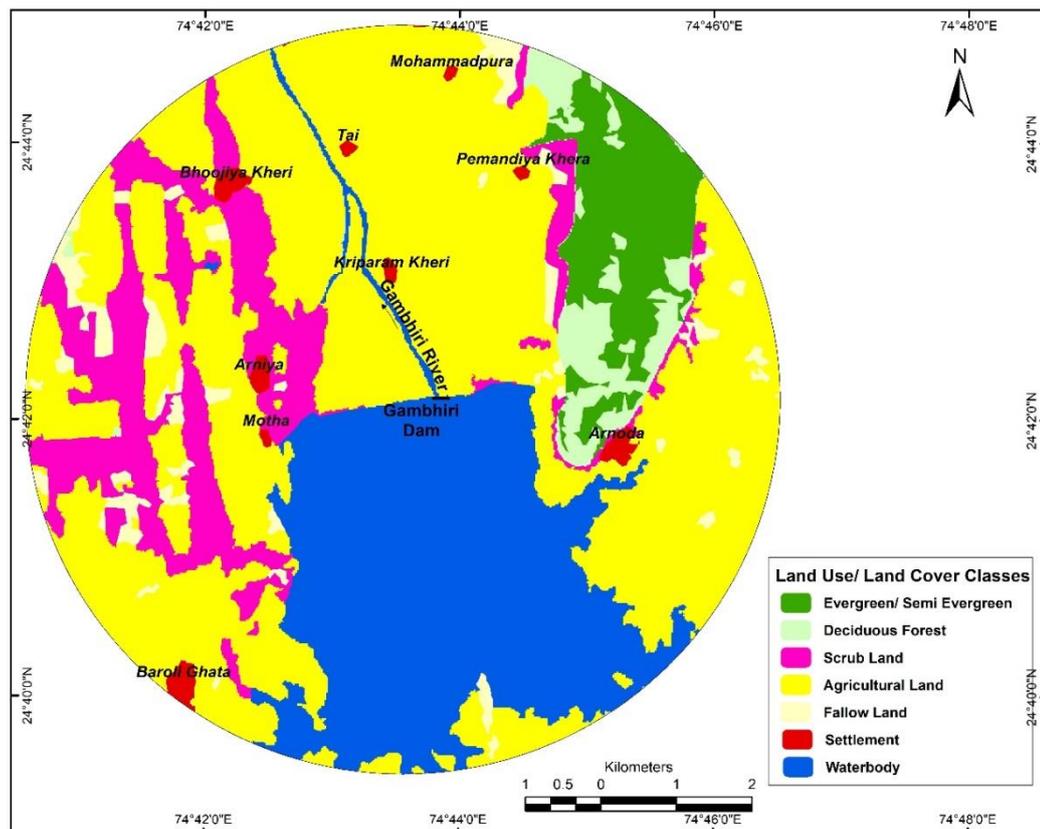


Figure 3.1: Land Use and Land Cover Map around Dam site

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

Water quality has been given in PST based on test results carried out on 16/08/2018. Same has been described below for main parameters:

S. No.	Parameter	Water Quality of Gambhiri River	Desirable limits(as per IS-10,500:2012)
1.	pH	7.6	6.5-8.5
2.	TDS	390	500
3.	Turbidity (NTU)	4	1
4.	Total Alkalinity (CaCO ₃)	110	200
5.	Total Hardness	70	200
6	Chlorides as Cl	90	250
7	Nitrates as NO ₃	3	45
8	Fluorides	0.4	1.5
9	BOD	3	

As can be seen from the data, the water quality is reasonably good. This water after treatment is used for drinking water supply. All parameters are within permissible limits as per Drinking Water Quality Standards (as per IS-10,500:2012)

Natural Hazards

Potential of natural hazards such as flooding and earthquake is not significant. Spillway capacity of the project at MWL is 3890 cumec while the revised design flood has been worked as 3989 cumec which is not much different. 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

Flora

The district situated in the junction of the Aravali mountain ranges and the Malwa Plateau area. The forest found in the area is classified as Dry tropical forests, which is further

diversified into group 5- Tropical dry deciduous forest with 5A- Southern tropical dry deciduous forest (including C1-dry teak bearing forest) and 5B- Northern tropical dry deciduous forest (including C2 –northern dry mixed deciduous forest) (Champion and Seth 1968). Vegetation in the area mainly represented by *Acacia leucophloea*, *Acacia nilotica*, *Anogeissus latifolia*, *Anogeissus pendula*, *Balanites aegyptiaca*, *Boswellia*, *Diospyros melanoxylon*, *Madhuca indica*, *Tectona grandis*, *Dendrocalamus strictus*, *Feronia lemonia*, *Butea superba*, *Calotropis acia*, *Carvia callosa*, *Cordia crenata*. etc. (Shetty and Singh, 1987; Meena, 2014; Meena, 2012).

Fauna

Forests in the area support to birds and wild animals like Blue bull (*Boselaphus tragocamelus*), Langur (*Presbytis entellus*), Bonnet Macaque (*Macaca radiata*), Stripped Hyena (*Hyaena hyaena*), Wild Boar (*Sus scrofa*), Jackal (*Canis aureus*), Indian fox (*Vulpes bengalensis*), Porcupine (*Hystrix indica*), Indian Hare (*Lepus nigricolis*), Rat (*Rattus rattus*), Grey musk shrew (*Suncus murinus*) and Common Mongoose (*Herpestes edwardsii*) along with Baya weaver (*Ploceus philippinus*), Cattle egret (*Bubulcus ibis*), Black drongo (*Dicrurus macrocerus*), Greater coucal (*Centropus sinensis*), Grey francolin (*Francolinus pondicerianus*), Common crow (*Corvus splendens*) etc. Raptors diversity is good in the forest area. Fruits bats presence was also noticed in buffer zone.

Apart from this, some snake species like Rat Snake (*Ptyas mucosa*), Common boa (*Boa constricta*) and Indian Cobra (*Naja naja*) were noticed. In Lizards, Brahminy Skink (*Mabuya carinata*), Rock gecko (*Hemidactylus maculatus*), House lizard (*Hemidactylus flaviviridis*) were also reported from the area.

Fish & Fisheries

Gambhir is a perennial river harbour good diversity of freshwater fisheries. Gambhir Dam (reservoir) support commercial fishing in the area. Some common fish species reported from the gambhir river in the area are *Channa punctatus* (Snake head fish), *Catla catla* (Indian Carp), *Labeo rohita* (Rohu), *Cyprinus carpio* (Common carp), *Gambusia affinis* (Mosquito fish), *Cirrhinus reba* (Reba Carp) and *Wallago attu* (Lanchi).

3.3 PROTECTED AREA

Nearest Protected Area

Bassi Wildlife Sanctuary is about 27.70 km from the Gambhiri dam location of the Project. The location of Bassi Wildlife Sanctuary in relation to Gambhiri dam Project is shown below.

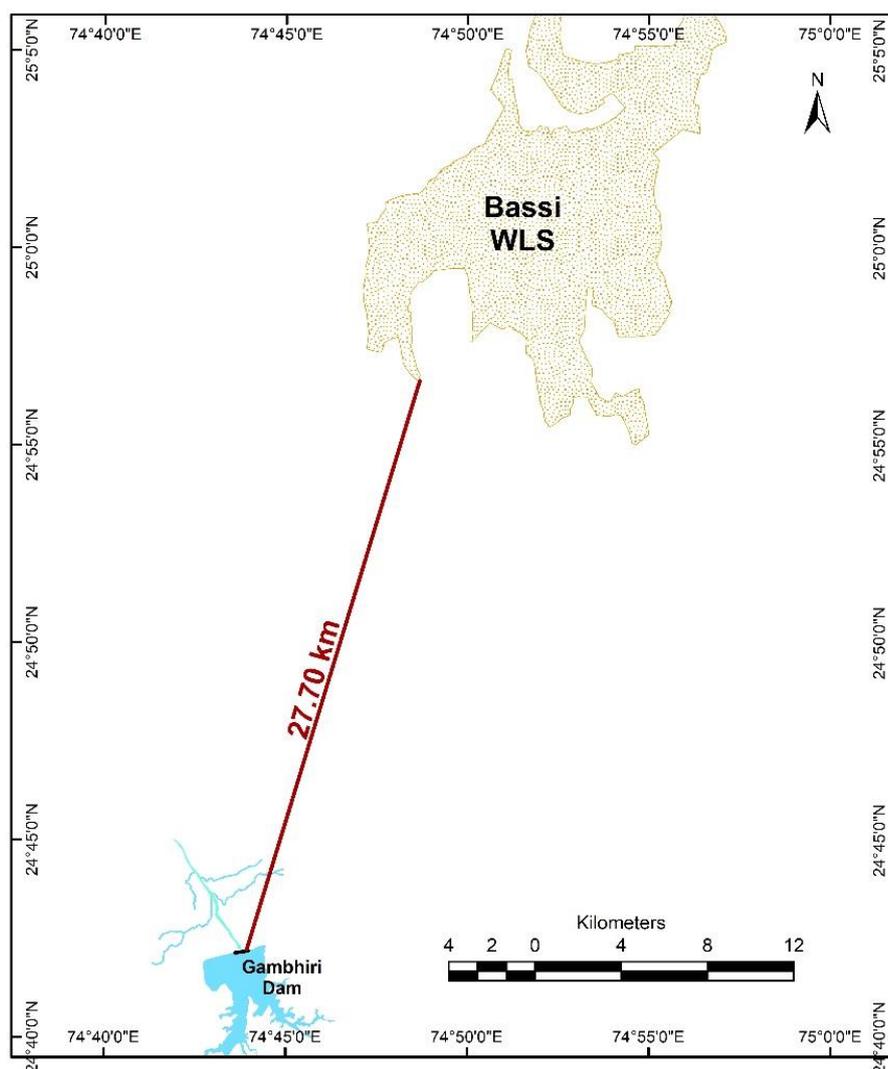


Figure 3.2: Map showing distance of Bassi Wildlife Sanctuary from Gambhiri Dam

3.4 SOCIAL ENVIRONMENT

The dam is located in the district Chittorgarh. Nine villages namely Kriparam Kheri, Pemandiya Khera, Motha, Arniya, Arnoda, Mohammadpura, Bhoojiya Kheri, Tai and Baroli Ghata 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 V¹’ areas of the area. Pratapgarh tehsil in Chittorgarh district is in Schedule V area while the project is in Nimbaheda 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:

No. of Households	3,29,119	Household Size	5
Total Population	15,44,338	Population (0-6 age)	2,12,507
Male	7,83,171	Boys (0-6 age)	1,11,120
Female	7,61,167	Girls (0-6 age)	1,01,387

¹ **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**.

Sex Ratio	972	Sex Ratio (0-6)	912
Population (SC)	2,50,224	Population (ST)	2,01,546
Male	1,26,748	Male	1,01,893
Female	1,23,476	Female	99,653
Literates	8,21,825	Literacy Rate	61.7
Male	5,14,851	Male	76.6
Female	3,06,974	Female	46.5
No. of Workers	8,02,755	Cultivators	4,53,201 (56.5%)
Male	4,56,632	Agricultural Labours	1,23,469 (15.4%)
Female	3,46,123	Household Industrial Workers	15,435 (1.9%)
No. of Main Workers	6,56,904	Other Workers	2,10,650 (26.2%)
No. of Marginal Workers	1,45,851		
<i>Source: Census of India, 2011 (District Handbook)</i>			

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

According to Census 2011, total population of the study area has been worked out to 6,043. The gender wise distribution of the above population is 3,088 (51.10%) male and 2,955 (48.90%) female. The overall sex ratio of the study area has been worked out to 957 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 19.89%, 17.39% and 62.72% respectively.

In the study area, 55.67% of the population is literate in which male literates are 64.00% and that of females are 36.00%. The overall literacy rate in the study area has been worked out to 63.86%. The male literacy rate is 80.43% and female literacy rate is 46.74%, creating a gender gap in literacy rate of 33.69%.

The economic classification of workers as per Census 2011 is saying that total number of workers in the study area is 3,603 which constitute 59.62% of the total population. Of the total workers, 50.21% are males and remaining 49.79% are females. In absolute term, total number of male workers is 1,809 and that of female is 1,794. The gender gap in work participation rate is only 0.42%.

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. Wheat, gram, bajra, barley, jowar, guar, moong, moth, methi, isabgol 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.

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 and Tank etc. Electricity is available for domestic, agriculture and commercial or industrial uses in almost all over the study area.

3.5 CULTURAL ENVIRONMENT

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.

4.1 STAKEHOLDERS CONSULTATION

Stakeholder consultations were 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, particularly the non-structural interventions;
- b) help identify potential stakeholders who are involved at this stage and will be involved at a later stage with specific focus on women, differently abled and other marginalised sections of the community;
- c) ascertain if there are any pending 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, particularly communities living downstream



A stakeholder consultation meeting was conducted at dam site on 18/01/2020. It was attended by permanent staff of the borrower (WRD) working at dam, workers from nearby villages; persons whose families were displaced at the time of construction of the dam and now are resettled in the nearby areas.

Following is the outcome of the stakeholder consultation meeting:

1. The participants informed that the dam is one of the oldest and requires immediate repairs. They are for long have been informed about the proposals of repair work but are unhappy that it is not attended to yet.
2. The participants mentioned about recent season where the dam gates operation was critically executed as 3 gates turned into inoperable condition. This may put the dam at risk and downstream habitations may face possibility of flooding. The interventions 'on' the Dam body and connected facilities are stated to be essential for enhanced safety of the dam.
3. No separate grievance redressal, complaints mechanism etc are available at site. The staff opined that SPMU provides necessary support in this regard.
4. Dam is visited by around 8000-10000 tourists annually, the maximum tourist density being during the monsoon season. The participants expressed that, a few essential amenities including security arrangements would be helpful to the visitors from the nearby areas.
5. The dam team is fully conversant with the interventions proposed in the PST and the execution plan. Staff may be provided with awareness/operational training on ESF and related compliances prior to procurement process.
6. The participants at location affirmatively communicated that they are aware of the proposed works being taken up with WB support and they do not expect any impact on workers/surrounding population.
7. Seepage from the bund is highlighted in the discussions for immediate attention.
8. Administration opined that the fishing revenue is provided to dam to attend to maintained and operational requirements.

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 communities; 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.

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.

Based on the relevance of each standard, as identified in the Chapter on Legal 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)

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 50. These will be skilled and semi-skilled workforce of contractors and expected to stay on site for a period of 2 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 2 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.
3. **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.
4. **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 contracted by Rajasthan WRD.
5. **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. Absence or inadequate or inaccessible emergency response system for rescue of labour/workforce in situations of natural calamities.
9. 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)

Impact on Physiography

The dam is operational since 1957 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 resetting of disturbed u/s riprap, spillage during repair works of cracked RCC piers, roads, parapet walls, blocked toe filter, filter drains, drainage system, 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 cracked RCC piers, roads, parapet walls, blocked toe filter, filter drains, drainage system, 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.

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

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 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

Construction related impacts and risks for water quality include:

- a) accidental release of fuel or chemicals and contamination from poor or uncontrolled disposal of waste which can affect both 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

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. However, this impact is expected to be localised and temporary. 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

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 due to Waste Generation/Disposal

About 170 labour are expected to reside in the area during peak construction period. Proper sanitary and solid waste management facilities would be provided at the labour camps/colonies. In the absence of proper solid waste management plan, there can be serious impacts of land and water pollution due to indiscriminate disposal of domestic waste. In addition, there will be odour issues and health impacts. It is essential that from

the planning stage, sewage management (Septic tank/Soak pit) and solid waste disposal (segregated collection and disposal of waste) facilities should be provided to maintain the health of the people and the environment.

Project interventions include substantial amount of electro-mechanical work such as Repair/Maintenance of hydraulic and electrical system of radial gates, Replacement of rubber seal and repair of rollers of gates, Repair / replacement of gates and hoists and Repair of gantry crane and rails. 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 shall provide first-aid/basic medical facilities to labour at site. Bio-medical waste may get generated from such facilities which can spread infections if disposed off in an uncontrolled manner. It will need to be disposed off as per Bio Medical Waste Management Handling Rules.

5.4 COMMUNITY HEALTH AND SAFETY (ESS 4)

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 2 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 8-9 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 Gambhiri sub-project are of the nature of civil and electro-mechanical 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

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:

- ***Muck and Debris Disposal Plans***

The 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.

- ***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 consultants and shall be applicable for all dams taken under DRIP 2 in the state. It shall be sent for review to the Bank before finalizing and it would be disclosed on 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 consultants and shall be applicable for all dams taken under DRIP 2 in the state. It shall be sent for review to the Bank before finalizing and it would 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 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 solid 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 consultants and shall be applicable for all dams taken under DRIP 2 in the state. It shall be sent for review to the Bank before finalizing and it would 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

- ***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 CE/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

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

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 Kriparam Kheri, Pemandiya Khera, Motha, Arniya, Arnoda, Mohammadpura, Bhoojiya Kheri, Tai and Baroli Ghata in district Chittorgarh, Rajasthan.

A. Demography of Study Area

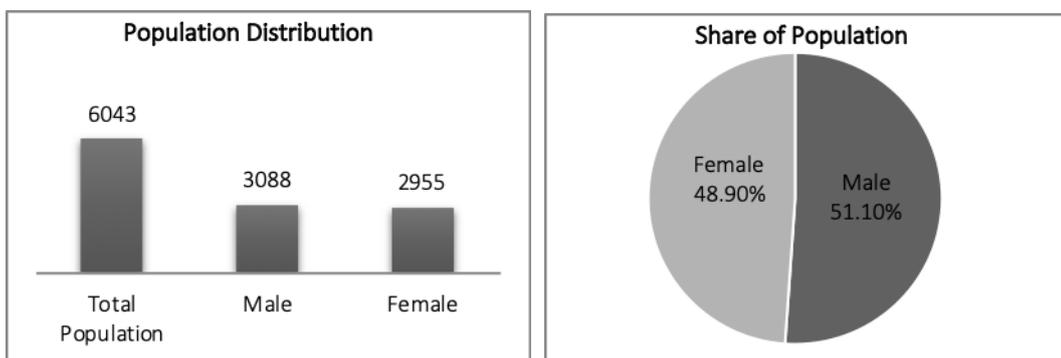
S. No.	Description	Number	Percentage to Respective Total
1	Total Population	6,043	100.0
	Male	3,088	51.10
	Female	2,955	48.90
	Sex Ratio	957	
2	Population (0-6 age group)	775	100.0
	Male	411	53.03
	Female	364	46.97
	Child Sex Ratio	886	
3	Scheduled Caste (SC) Population	1,202	100.0
	Male	619	51.50
	Female	583	48.50
	Sex Ratio	942	
4	Scheduled Tribe (ST) Population	1,051	100.0
	Male	540	51.38
	Female	511	48.62
	Sex Ratio	946	
5	General Category (Including OBC)	3,790	100.0
	Male	1,929	50.90
	Female	1,861	49.10
	Sex Ratio	965	
6	Total No. of Households	1295	
	Average Household Size	5	
7	Total Literates	3,364	100.0
	Male	2,153	64.00
	Female	1,211	36.00
	Overall Literacy Rate	63.86	
	Male Literacy Rate	80.43	
	Female Literacy Rate	46.74	
	Gender Gap in Literacy Rate	33.69	
8	Total Workers	3,603	100.0
	Male	1,809	50.21
	Female	1,794	49.79
	Gender Gap in Work Participation Rate	0.42	
9	Main Workers	3,469	100.0
	Male	1,771	51.05
	Female	1,698	48.95
	Gender Gap in Work Participation Rate	2.1	
10	Marginal Workers	134	100.0
	Male	38	28.36
	Female	96	71.64
	Gender Gap in Work Participation Rate	-43.28	
11	Household Industrial Workers	111	100.0
	Male	65	58.56

	Female	46	41.44
12	Cultivators	2,590	100.0
	Male	1,253	48.38
13	Female	1,337	51.62
	Agricultural Labour	676	100.0
	Male	306	45.27
14	Female	370	54.73
	'Other Workers'	226	100.0
	Male	185	81.86
	Female	41	18.14

Source: Census of India, 2011

B. Population Composition

According to Census 2011, total population of the study area has been worked out to 6,043. The gender wise distribution of the above population is 3,088 (51.10%) male and 2,955 (48.90%) female. The overall sex ratio of the study area has been worked out to 957 females per 1,000 males. The entire population of the study area is distributed into approx. 1,295 households and the average household size is five.



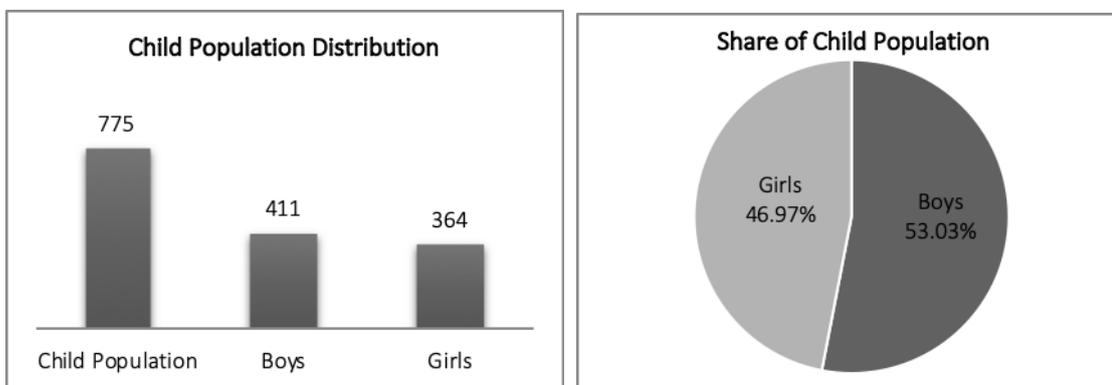
Village wise population distribution of the study area is given in the table below:

Village wise Population Distribution with Sex Ratio						
S. No.	Village	No. of HH	Population			Sex Ratio
			Total	Male	Female	
01	Kriparam Kheri	136	666	333	333	1000
02	Pemandiya Khera	75	317	175	142	811
03	Motha	207	998	511	487	953
04	Arniya	9	52	31	21	677
05	Arnoda	5	32	15	17	1133
06	Mohammadpura	96	501	255	246	965
07	Bhoojiya Kheri	170	830	430	400	930
08	Tai	257	1148	580	568	979
09	Baroli Ghata	340	1499	758	741	978
TOTAL		1,295	6,043	3,088	2,955	957

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 755 which represent 12.82% of the total population. Of the total child population, 53.03 % are boys and remaining 46.97% are girl child. The child sex ratio in this age group is 886 girls per 1,000 boys.



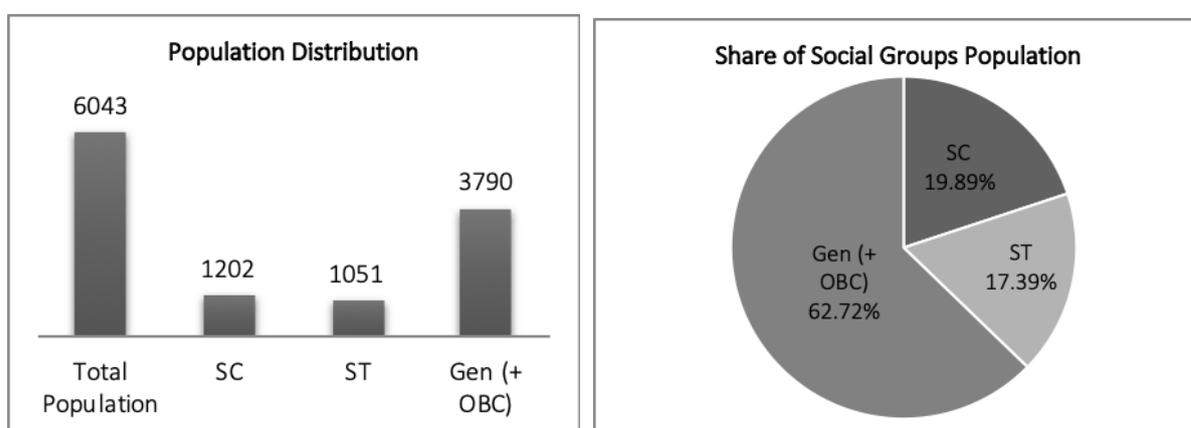
Village wise child population distribution of the study area is given in the table below:

S. No.	Village	Child Population (0-6) Age Group			Sex Ratio
		Total	Boys	Girls	
01	Kriparam Kheri	84	42	42	1,000
02	Pemandiya Khera	36	19	17	895
03	Motha	163	88	75	852
04	Arniya	8	6	2	333
05	Arnoda	06	01	05	5,000
06	Mohammadpura	51	27	24	889
07	Bhoojiya Kheri	119	70	49	700
08	Tai	126	62	64	1,032
09	Baroli Ghata	182	96	86	896
TOTAL		775	411	364	886

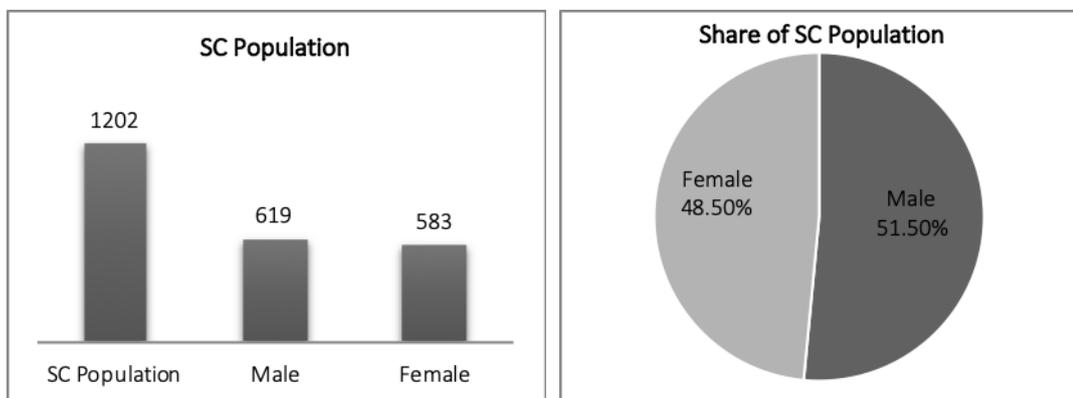
Source: Census of India, 2011

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 19.89%, 17.39% and 62.72% respectively.



- Scheduled Caste (SC) Population:** In the study area, Scheduled Caste population has been worked out to 1202 which constitute about 19.89% of the total population. Of this, 51.50% is male and remaining 48.50% is female. The sex ratio among Scheduled Caste population has been worked out to 942 females per 1,000 males.

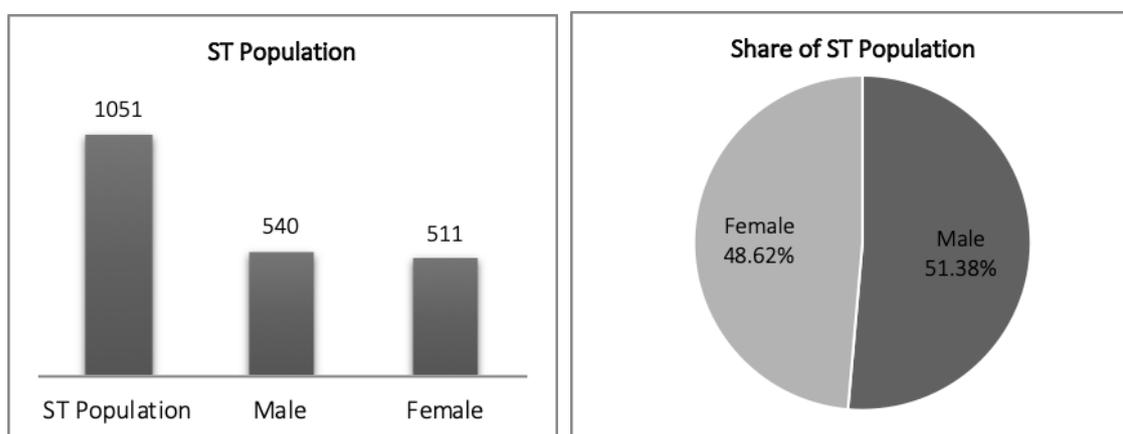


Village wise SC population distribution of the study area is given in the table below:

S. No.	Village	SC Population			Sex Ratio
		Total	Male	Female	
01	Kriparam Kheri	205	105	100	952
02	Pemandiya Khera	69	38	31	816
03	Motha	340	174	166	954
04	Arniya	6	4	2	500
05	Arnoda	0	0	0	000
06	Mohammadpura	46	26	20	769
07	Bhoojiya Kheri	89	43	46	1070
08	Tai	158	74	84	1135
09	Baroli Ghata	289	155	134	865
TOTAL		1202	619	583	942

Source: Census of India, 2011

- Scheduled Tribe Population:** The Scheduled Tribe population in the study area has been worked out to 1,051 which represent 17.39% of the total population. Of the total Scheduled Tribe population, 51.38% is male and 48.62% is female. The sex ratio among the Scheduled Tribe population has been worked out to 946 females per 1,000 males.

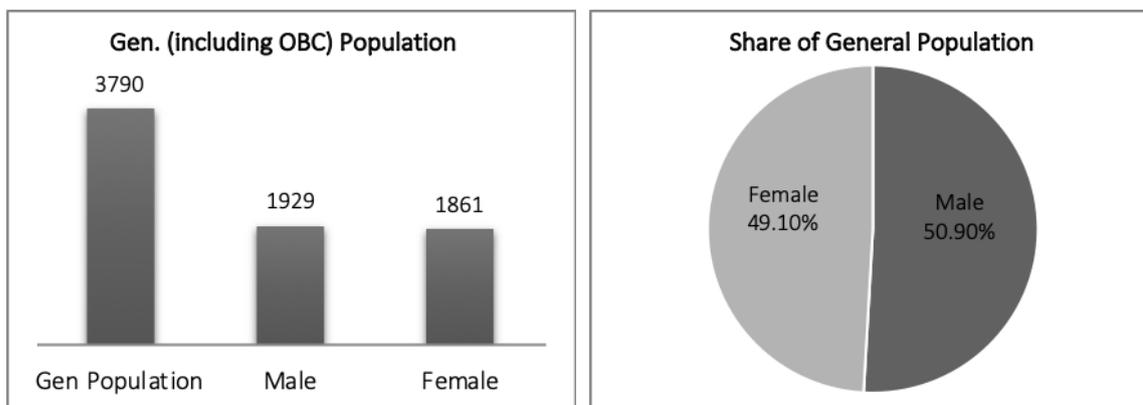


Village wise ST population distribution of the study area is given in the table below:

S. No.	Village	ST Population			Sex Ratio
		Total	Male	Female	
01	Kriparam Kheri	153	76	77	1,013
02	Pemandiya Khera	0	0	0	000
03	Motha	217	111	106	955
04	Arniya	12	6	6	1,000

05	Arnoda	0	0	0	000
06	Mohammadpura	56	28	28	1,000
07	Bhoojiya Kheri	155	79	76	962
08	Tai	255	135	120	889
09	Baroli Ghata	203	105	98	933
TOTAL		1,051	540	511	946
<i>Source: Census of India, 2011</i>					

- **General Category (including OBC) Population:** The population of this group has been worked out to 3,790 which is 62.72% of the total population of the study area. Of the total population of this group, 50.90% is male and 49.10% is female. The sex ratio among this group of population has been worked out to 965 females per 1,000 males.

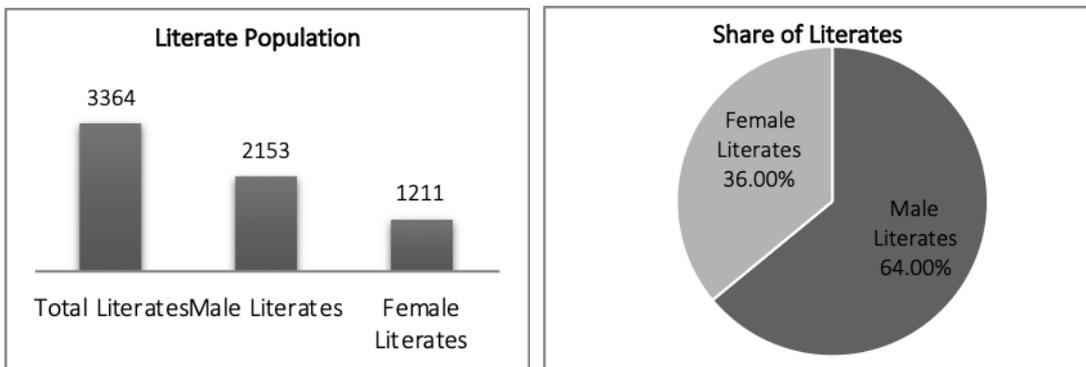


Village wise General Category (including OBC) population distribution of the study area is given in the table below:

S. No.	Village	GEN (including 'OBC') Population			Sex Ratio
		Total	Male	Female	
01	Kriparam Kheri	308	152	156	1026
02	Pemandiya Khera	248	137	111	810
03	Motha	441	226	215	951
04	Arniya	34	21	13	619
05	Arnoda	32	15	17	1133
06	Mohammadpura	399	201	198	985
07	Bhoojiya Kheri	586	308	278	903
08	Tai	735	371	364	981
09	Baroli Ghata	1007	498	509	1022
TOTAL		3,790	1,929	1,861	965
<i>Source: Census of India, 2011</i>					

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

In the study area, 55.67% of the population is literate in which male literates are 64.00% and that of females are 36.00%. The overall literacy rate in the study area has been worked out to 63.86%. The male literacy rate is 80.43% and female literacy rate is 46.74%, creating a gender gap in literacy rate of 33.69%.



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	Kriparam Kheri	378	246	132	64.95	84.54	45.36
02	Pemandiya Khera	171	125	46	60.85	80.13	36.80
03	Motha	541	334	207	64.79	78.96	50.24
04	Arniya	27	16	11	61.36	64.00	57.89
05	Arnoda	20	12	8	76.92	85.71	66.67
06	Mohammadpura	293	185	108	65.11	81.14	48.65
07	Bhoojiya Kheri	411	260	151	57.81	72.22	43.02
08	Tai	691	427	264	67.61	82.43	52.38
09	Baroli Ghata	832	548	284	63.17	82.78	43.36
TOTAL		3,364	2,153	1,211	63.86	80.43	46.74

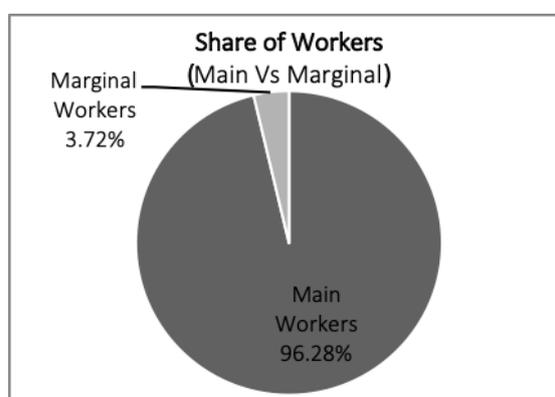
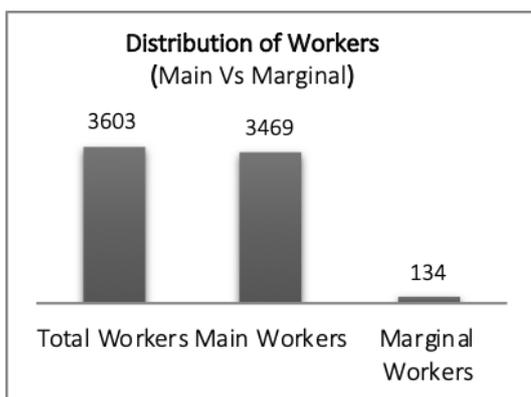
Source: Census of India, 2011

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 3,603 which constitute 59.62% of the total population. Of the total workers, 50.21% are males and remaining 49.79% are females. In absolute term, total number of male workers is 1,809 and that of female is 1,794. The gender gap in work participation rate is only 0.42%.



Further of the total workers, 96.28% are main workers and remaining 3.72% are marginal workers. Of the total main workers, 51.05% are male and remaining 48.95% are female which creates a gender gap in work participation rate of 2.10%. In case of marginal workers, 28.36% are male and 71.64% are female that creates a gender gap of minus (-) 43.28% in this segment of work participation.

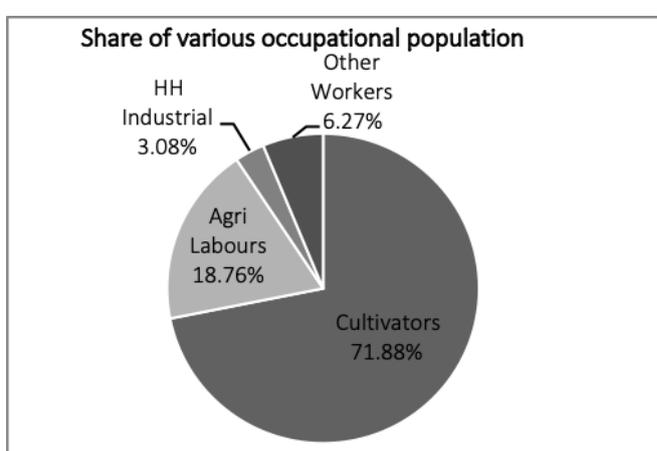
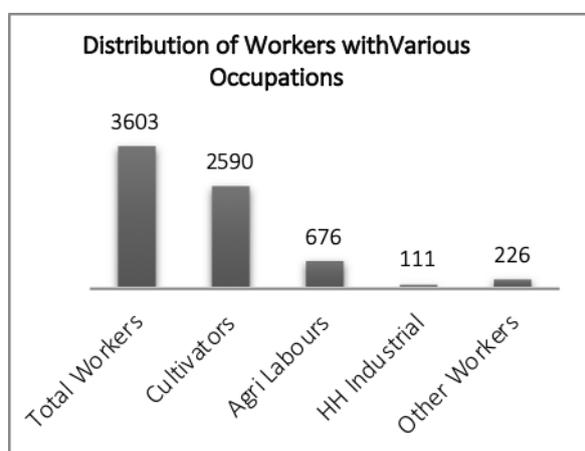


Village wise working population of the study area is given in the table below:

Village Name	Total Worker			Main Worker			Marginal Worker		
	T	M	F	T	M	F	T	M	F
Kriparam Kheri	406	196	210	389	188	201	17	8	9
Pemandiya Khera	185	112	73	179	109	70	6	3	3
Motha	475	252	223	440	245	195	35	7	28
Arniya	22	15	7	22	15	7	0	0	0
Arnoda	19	11	8	19	11	8	0	0	0
Mohammadpura	330	156	174	288	144	144	42	12	30
Bhoojiya Kheri	474	243	231	448	238	210	26	5	21
Tai	741	363	378	734	360	374	7	3	4
Baroli Ghata	951	461	490	950	461	489	1	0	1
TOTAL	3,603	1,809	1,794	3,469	1,771	1,698	134	38	96

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 71.88%, 18.76%, 3.08% and 6.27% 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	Kriparam Kheri	406	204	165	9	28
02	Pemandiya Khera	185	126	38	0	21
03	Motha	475	216	147	31	81
04	Arniya	22	22	0	0	0
05	Arnoda	19	17	0	0	2
06	Mohammadpura	330	290	18	3	19
07	Bhoojiya Kheri	474	279	119	55	21
08	Tai	741	630	88	7	16
09	Baroli Ghata	951	806	101	6	38
TOTAL		3,603	2,590	676	111	226

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. Wheat, gram, bajra, barley, jowar, guar, moong, moth, methi, isabgol are the main crops from production point of view in the study area. Vegetable and fruits are also being produced in the study area. Canals and Tube wells are main sources of irrigation in most of the part of the study area whereas most of the farmers belonging from the district Ajmer are mostly dependent on rain crops/kharif crops. In this part of the study area, most of the land is being irrigated by wells. 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		
EDUCATION		
Educational Institutions	Type of Institutes	Number
	Pre-primary School (Pvt.)	04
	Primary School (Govt.)	06
	Primary School (Pvt.)	04
	Middle School (Govt.)	02
	Middle School (Pvt.)	04
	Secondary School (Govt.)	01
	Secondary School (Pvt.)	02
HEALTH		
Health Facilities	Type of Facilities	Number
	Primary Health Centre	01
	Primary Health Sub-Centre	03
	Non-Govt. Medical Facilities (For Out Patient)	04
	ASHA	07
	Anganwadi Centre (Nutritional Centre)	07
Nutritional Centre- ICDS	07	
WATER		
Drinking Water	Means of Drinking Water	No. of Villages

	Tap (Treated & Un-treated)	04
	Well (Covered & Un-covered)	02
	Hand Pump	04
	Tube wells	08
	Tank	02
ELECTRICITY		
Electricity Supply	Types of Electricity Available	No. of Villages
	Power for Domestic Uses	09
	Power for Agriculture Uses	08
	Power for Commercial or Industrial Uses	03
ROAD		
Approach Road	Types of Approach Roads	No. of Villages
	Black Topped (Paved/Pucca) Road	02
	Gravel (Mud/Kachcha) Road	09
	Footpath Road	09
TRANSPORTATION		
Road Transportation	Types of Road Transportation Available	No. of Villages
	Public Bus Services	02
	Private Bus Services	03
	Taxi Services	01
OTHER AMENITIES		
Other Amenities	Agricultural Credit Society	01
	Public Distribution System Shop	03
	Sub-post Office	02
	Open Drainage	08
	Closed Drainage	04

Source: Census of India, 2011

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 and Tank 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.