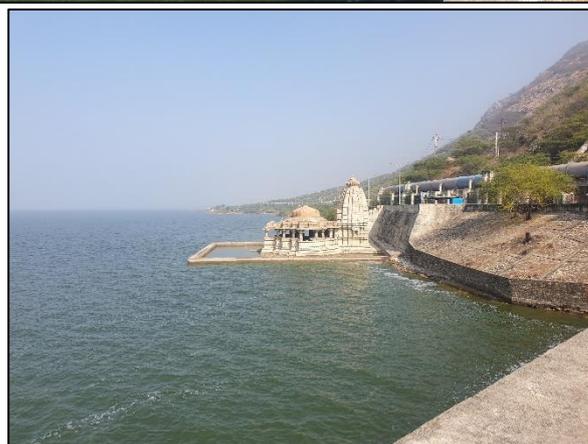


**DAM REHABILITATION AND IMPROVEMENT PROJECT (DRIP) II**  
(Funded by World Bank)

**BISALPUR DAM**

**ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT**



February 2020

(Draft Report)

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## ABBREVIATIONS AND ACRONYMS

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

|       |   |   |
|-------|---|---|
| PMKSY | : | Pradhan Mantri Krishi Sinchayee Yojana        |
| PMU   | : | Project Management Unit                       |
| PPE   | : | Personal Protective Equipment                 |
| PST   | : | Project Screening Template                    |
| PUC   | : | Pollution Under Control                       |
| PWD   | : | Public Works Department                       |
| RCC   | : | Reinforced Cement Concrete                    |
| SC    | : | Scheduled Castes                              |
| SCADA | : | Supervisory Control and Data Acquisition      |
| SEF   | : | Stakeholder Engagement Framework              |
| SEIAA | : | State Environment Impact Assessment Authority |
| SH    | : | State Highway                                 |
| SHG   | : | Self-Help Group                               |
| SPCB  | : | State Pollution Control Board                 |
| SPMU  | : | State Project Management Unit                 |
| ST    | : | Scheduled Tribes                              |
| TMC   | : | Thousand Million Cubic Feet                   |
| WLS   | : | Wildlife Sanctuary                            |
| WRD   | : | Water Resources Department                    |

## 1.1 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, geomembranes), hydrological and structural safety measures (e.g., additional spillways, fuse plugs), enhancing the reliability of operational facilities (e.g., gates), rehabilitating foundation deficiencies, strengthening dam concrete/embankment structures, and improving basic dam facilities (e.g., access roads). Non-structural measures could include standardized dam safety instrumentation, monitoring, assessment and reporting protocols for dam health; flood forecasting and early warning systems; integrated reservoir operations including streamflow forecasting for climate resilient dam management; preparation and implementation of EAPs; preparation and implementation of sediment management plans; and revised operational rule curves to account for climate change.

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

## 1.2 SUB-PROJECT DESCRIPTION – BISALPUR DAM

The Bisalpur Dam across Banas river, a tributary of Chambal river was constructed in the year 1999 to create irrigation and drinking water supply capacity. The dam is located in Tehsil Toda Raisingh, near Bisalpur in Tonk district of Rajasthan. The dam supplies drinking water to the tune of 11.1 TMC to Jaipur and en-route villages and 5.1 TMC to Ajmer and en-route villages. Besides, irrigation supplies from the dam is of the order of 8 TMC to 81000 ha command area in Tonk, Todaraisingh, Uniyara and Deoli tehsils through 51 Km long right main canal and 18.65 km long left main canal. The nearest town is Deoli which is situated on Jaipur- Kota NH-12. Nearest airport is Jaipur, which is 185 km away from Dam and nearest Railway station is Bundi, which is 85 km from Dam. Distance of Bisalpur Dam from district Headquarter Tonk is about 72 km. Nearest Highway to Project is Jaipur-Kota State Highway (SH 52). The Project site is 19 km from Santhali village on SH 52 and 25 km from Deoli Tehsil. Salient features of the project area are reported below:

| <b>Project</b>             | <b>Bisalpur Drinking cum irrigation Project</b> |
|----------------------------|---|
| River                      | Banas   |
| Lat/Long                   | 25° 55' 22.14"/ 75° 27' 21.16"                  |
| GCA                        | 113723 ha                                       |
| CCA                        | 81800 ha  |
| Annual water supply        | 458.72 MCM                                      |
| Catchment Area             | 27726 sq km                                     |
| <b>Main Dam</b>            |   |
| Type                       | Masonry Gravity Dam                             |
| Length                     | 574 m   |
| Top elevation              | 322.50 m  |
| Lowest river bed elevation | 295 m   |
| Deepest foundation level   | 283 m   |
| <b>Spillway</b>            |   |
| Type                       | Ogee spillway                                   |
| Length                     | 338 m   |
| Location of spillway       | Central spillway                                |
| Crest level                | 302.3 m   |
| Number of bays             | 18  |
| Discharge capacity at MWL  | 29046 cumec                                     |
| Size of spillway gate      | 15 m wide and 14 m high                         |
| <b>Reservoir</b>           |   |
| Maximum water level        | 316.345 m                                       |
| Full Reservoir Level       | 315.5 m   |
| MDDL                       | 295 m   |

|                               |             |
|-------------------------------|-------------|
| Live storage                  | 938.62 MCM  |
| Gross storage                 | 1095.84 MCM |
| Reservoir spread area         | 212.3 sq km |
| Date of start of construction | 25-01-1985  |
| Date of completion            | 11-06-1996  |
| Date of first impoundment     | 11-08-2004  |



**View from Downstream of the Dam**



**Reservoir**

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

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

### **1. Structural Rehabilitation Works**

- i Resetting of disturbed Rip-Rap
- ii Cleaning/Reaming of Drainage holes (In Dam Body and foundation)
- iii Repairs to Parapet walls of Bisalpur Dam.
- iv Treatment of Honeycombed area in upstream NOF of Bisalpur Dam.
- v Repair of damage to spillway crest/Glacis and energy dissipation arrangement.
- vi Repair to Downstream Right side Training wall at Bisalpur Dam
- vii Construction of Reinforced cement concrete (RCC) Retaining wall in downstream, both sides, to improve flow condition at Bisalpur Dam
- viii Repairs of hoist of Bisalpur Dam
- ix Repairs to steps on downstream face of Bisalpur Dam
- x General Maintenance and upkeeping of 18 Nos radial gates and Hoist Bridge of Bisalpur dam
- xi Providing and installing 500 KVA generator on Bisalpur Dam.
- xii Providing lighting over Bisalpur Dam and surrounding areas.
- xiii Providing Epoxy thermal sealing on Dam.
- xiv Providing & Fixing of Armored H.T. Service line and L.T. armored cable for Control room, Gallery and Gantry Crane of Bisalpur Dam electrical work

### **2 Basic Facilities Improvement**

- i Construction of Cement Concrete (CC) Access road to Gallery on downstream of Bisalpur dam
- ii Renovation of view point and office
- iii Providing Lightening arrester at Dam
- iv Providing lightening in Drainage Gallery

### **3 Instrumentation, SCADA, Surveillance system, etc.**

- i Dam Instrumentation (Geo-technical, hydro-meteorological, Seismic, Geodetic, data collection, storage, data transfer, analysis, retrieval, Operation & Maintenance etc.).

### **4 Tourism/Fisheries/Hydropower Development**

- i Providing floating pontoons, jetties, pedal boat, speed boat, light house and other non-permanent structures at island.

The above tourism components are not considered as part of present ESIA study as feasibility studies including various options and their possible impacts on environment and social are yet to be carried out. Conducting of ESIA on these sub-components will be made a pre-requisite in the Environmental and Social Commitment Plan (ESCP) before issuance of bids.

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

### Implementation Schedule

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



**Damaged Rip-Rap on U/S face Left Flank**



**Damaged Gambian Structure d/s Right Bank**



**Honeycombing on Upstream surface**



**Weathered battered face on downstream side**

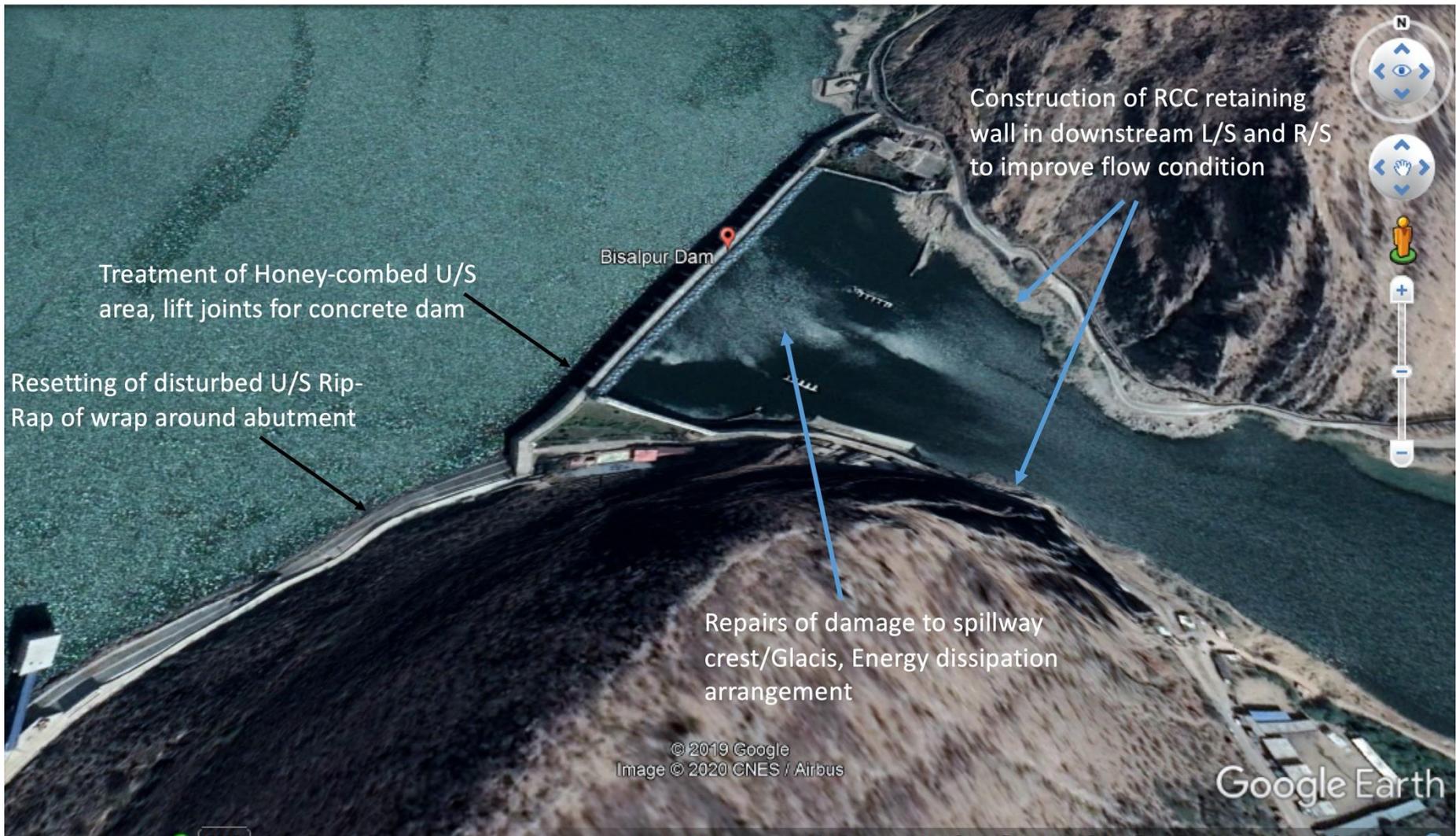


**Broken Wire rope of Radial Gate of Dam**



**Damaged bottom rubber seals of radial gates**

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



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

### **1.3 PURPOSE OF ESIA**

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

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

Formats used for collection of the above information, checklists used for consultations and photographs towards preparation of the Draft ESIA report are available 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 (**Table 2.1**).

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 **Table 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**

| <b>S. No.</b> | <b>Legislation</b>   | <b>Purpose</b>  | <b>Applicability</b> | <b>Reason</b>  | <b>Type of permit/specific action and stage of applicability</b>   | <b>Administrative Authority</b> |
|---------------|--|---|----------------------|--|--|---------------------------------|
| <b>1</b>      | Environment Protection Act/Rules-1986  | To protect and improve overall environment  | <b>Yes</b>           | Applicable to all activities in general                            | None   | MoEF&CC                         |
| <b>2</b>      | 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               |
| <b>3</b>      | Rajasthan Forest Act, 1953   | Conservation of forest and control felling of trees   | No                   | No tree will be felled for proposed intervention                   | None   | Forest Department               |
| <b>4</b>      | 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,                          |
| <b>5</b>      | 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                            |
| <b>6</b>      | 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   | SPCB                            |

| S. No. | Legislation   | Purpose  | Applicability | Reason  | Type of permit/specific action and stage of applicability                       | Administrative Authority     |
|--------|---|--|---------------|---|---|------------------------------|
|        |   |  |               |   | setting up construction camp/labour camp  |                              |
| 7      | Noise Pollution (Regulation and Control Act) 2000 and amendment till date                     | Ambient Noise Standards for different areas and zones  | Yes           | Noise emission from proposed activities during construction stage like operation of DG sets                         | None  | CPCB & SPCB                  |
| 8      | Hazardous & Other Waste (Management and Trans-boundary Movement) Rules, 2016                  | Protection to general public against improper handling storage and disposal of hazardous wastes. 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, used oil/waste oil             | Authorisation for handling and disposal of hazardous wastes                     | SPCB                         |
| 9      | Manufacture Storage, & import 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 fall 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  | Contractor needs to submit plants for its safe disposal/burial                  | Local bodies of the area     |

| S. No. | Legislation  | Purpose  | Applicability | Reason  | Type of permit/specific action and stage of applicability | Administrative Authority   |
|--------|--|--|---------------|---|---|--|
|        |  |  |               | due to influx of labour   |   |  |
| 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 electromechanical work. Storage within threshold quantity and as per capability analysis. Handling with define safe practices | None  | PESO   |
| 15     | Ancient Monuments and Archaeological Sites and Remains Act, 1958                                       | Conservation of cultural and historical remains found in India.  | Yes           | Presence of historical sites of archaeological importance   | None  | Archaeological Dept. Gol   |
| 16     | Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 | To regulate the employment and conditions of service of buildings and other construction workers and to provide for their safety, health and welfare measures and for other matters connected therewith or incidental thereto. | Yes           | Involvement of workforce/labour   | None  | Labour Commissioner  |
| 17     | Plastic waste management Rules, 2016   | To manage the plastic waste generated so as it does not affect the water   | Yes           | Plastic waste generation from   | None  | Local bodies of the area   |

| S. No. | Legislation   | Purpose   | Applicability | Reason   | Type of permit/specific action and stage of applicability | Administrative Authority                   |
|--------|---|---|---------------|--|---|--|
|        |   | pipeline, animals and other environmental components  |               | proposed activities. Safe disposal as per Rules                                    |   |  |
| 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 Disabilities Act, 2016   | Ensures that the Persons with Disability (PWD) enjoy the right to equality, life with dignity, and respect for his or her own integrity equally with others.  | Yes           | Persons with disability  | None  |  |
| 22     | Right To Information Act, 2005  | Mandates timely response to citizen requests for government information   | Yes           | Borrower is government organization  | None  | Any Government Department                  |
| 23     | Article 366 (25) of the Constitution of India<br>Article 244(1) of Constitution of India - The Fifth Schedule under Article 244(1) of a subsequent Act of | Defines following essential characteristics, for a community to be identified as Scheduled Tribes are; <ul style="list-style-type: none"> <li>• Indications of primitive traits;</li> <li>• Distinctive culture;</li> </ul> | No            | Dam is not located in Scheduled Area   | None  | Government of India                        |

| S. No. | Legislation   | Purpose  | Applicability | Reason  | Type of permit/specific action and stage of applicability | Administrative Authority   |
|--------|---|--|---------------|---|---|----------------------------|
|        | Constitution<br>“Scheduled Areas” as such areas as the President may by order declare to be Scheduled Areas after consultation with Governor of that State. | <ul style="list-style-type: none"> <li>• Shyness of contact with the community at large;</li> <li>• Geographical isolation; and</li> <li>• Backwardness.</li> </ul> <p>The criteria for declaring any area as a “Scheduled Area” under the Fifth Schedule are; (a) preponderance of tribal population, (b) compactness and reasonable size of the area, (c) a viable administrative entity such as a district, block or Taluka, and (d) economic backwardness of the area as compared to the neighbouring areas.</p> |               |   |   |                            |
| 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, economically, politically without any impact on their culture, habitation and tradition and in terms of their age old rights and privileges.                        | No            | No such activities impacting tribes and their rights are proposed | None  | Ministry of Tribal Affairs |

| S. No. | Legislation   | Purpose  | Applicability | Reason  | Type of permit/specific action and stage of applicability | Administrative Authority                                 |
|--------|---|--|---------------|---|---|--|
| 25     | Panchayats (Extension to the Scheduled Areas) Act, 1996   | The Gram Sabha or the Panchayats at the appropriate level shall be consulted before making the acquisition of land in the Scheduled Areas for development projects and before re-settling or rehabilitating persons affected by such projects in the Scheduled Areas.  | No            | No structural intervention is planned. Only awareness generation on EAP preparation and implementation shall take place in these areas. | None  | Concerned State Government and Tribal Welfare Department |
| 26     | <b>Major Labour Laws Applicable To Establishments Engaged In Building And Other Construction Work</b> |  |               |   |   |  |
| 1      | Employees Compensation Act 1923   | The Act provides for compensation in case of injury, disease or death arising out of and during the course of employment.  | Yes           | Contractor/Labour engagement  | None  | Commissioner for Workmen's Compensation                  |
| 2      | Payment of Gratuity Act 1972  | Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death at the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees. | Yes           | Contractor/Labour engagement  | None  | Chief Labour Commissioner                                |
| 3      | Employees P.F. and Miscellaneous Provision Act 1952 ( <i>since amended</i> )                          | The Act provides for monthly contribution by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are:   | Yes           | Contractor/Labour engagement  | None  | Ministry of Labour                                       |
| 4      | Maternity Benefit Act 1961  | The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.   | Yes           | Contractor/Labour engagement  | None  | Chief Labour Commissioner                                |
| 5      | Sexual Harassment of Women at the Workplace   | This Act defines sexual harassment in the workplace, provides for an enquiry   | Yes           | Contractor/Labour engagement  | None  | District Officer (District Magistrate                    |

| S. No. | Legislation                                       | Purpose  | Applicability | Reason                       | Type of permit/specific action and stage of applicability | Administrative Authority  |
|--------|---|--|---------------|------------------------------|---|---|
|        | (Prevention, Prohibition and Redressal) Act, 2013 | procedure in case of complaints and mandates the setting up of an Internal Complaints Committee or a Local Complaints Committee  |               |                              |   | 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   | 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          |
|--------|------------------------------|--|---------------|------------------------------|---|-----------------------------------|
|        |                              | discrimination against Female employees in the matters of transfers, training and promotions etc.  |               |                              |   |                                   |
| 10     | Payment of Bonus Act 1965    | The Act is applicable to all establishments employing 20 or more employees. Some of the State Governments have reduced this requirement from 20 to 10. The Act provides for payments of annual bonus subject to a minimum of 8.33% of the wages drawn in the relevant year. It applies to skilled or unskilled manual, supervisory, managerial, administrative, technical or clerical work for hire or reward to employees who draw a salary of Rs. 10,000/- per month or less. To be eligible for bonus, the employee should have worked in the establishment for not less than 30 working days in the relevant year. The Act does not apply to certain establishments. | Yes           | Contractor/Labour engagement |   | Chief labour Commissioner         |
| 11     | Industrial Disputes Act 1947 | the Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations, a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.   | Yes           | Contractor/Labour engagement | None  | Ministry of Labour and Employment |
| 12     | Trade Unions Act 1926        | The Act lays down the procedure for registration of trade unions of workmen  | Yes           | Contractor/Labour engagement | None  | Ministry of Labour and Employment |

| S. No. | Legislation   | Purpose   | Applicability | Reason                       | Type of permit/specific action and stage of applicability | Administrative Authority  |
|--------|---|---|---------------|------------------------------|---|---------------------------|
|        |   | and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.  |               |                              |   |                           |
| 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 Construction Industry.   | Yes           | Contractor/Labour engagement | None  | Chief labour Commissioner |
| 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 | 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   | 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     |
|--------|---|--|---------------|------------------------------|---|------------------------------|
|        | Workers Welfare Cess Act, 1996 (BOCWW Cess Act) | 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. |               |                              |   |                              |
| 16     | Factories Act 1948                              | the Act lays down the procedure for approval of plans before setting up a factory engaged in manufacturing processes, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power.                 | Yes           | Contractor/Labour engagement | None  | Chief Inspector of Factories |
| 17     | Bonded Labour System (Abolition) Act, 1976      | The Act provides for the abolition of bonded labour system with a view to preventing the economic and physical exploitation of weaker sections of society. Bonded labour covers all forms  | 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  |
|--------|------------------------------------|---|---------------|------------------------------|---|---------------------------|
|        |                                    | of forced labour, including that arising out of a loan, debt or advance.  |               |                              |   |                           |
| 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 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. | 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  |
|--------|--|---|---------------|------------------------------|---|---------------------------|
| 20     | The Personal Injuries (Compensation Insurance) Act, 1963 | This Act provides for the employer's liability and responsibility to pay compensation to employees where workmen sustain personal injuries in the course of employment.   | Yes           | Contractor/Labour engagement | None  | Chief labour Commissioner |
| 21     | Industrial Employment (Standing Order) Act 1946          | It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority. | Yes           | Contractor/Labour engagement | None  | Chief labour Commissioner |

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

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

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

| ESF Policy, Standards and Directives & Guidelines                             | Applicable Activities                                | Applicability / Requirements   |
|---|--|--|
| ESS1: Assessment and Management of Environmental and Social Risks and Impacts | All projects, sub-projects and associated facilities | Applicable<br>(a) Conduct an environmental and social assessment of the proposed project, including stake- holder engagement;<br>(b) Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10; |

| ESF Policy, Standards and Directives & Guidelines                              | Applicable Activities  | Applicability / Requirements  |
|--|--|---|
|  |  | <ul style="list-style-type: none"> <li>(c) Develop an ESCP, and implement all measures and actions set out in the legal agreement including the ESCP; and</li> <li>(d) Conduct monitoring and reporting on the environmental and social performance of the project against the ESSs</li> </ul>  |
| ESS2: Labour and Working Conditions  | Engagement of labour for various civil, paint and electro-mechanical or any other activities as part of rehabilitation proposal. It applies to project workers including full- time, part-time, temporary, seasonal and migrant workers. It covers working conditions, protecting workforce, Grievance Mechanism and Occupational Health and Safety (OHS). | <p>Applicable</p> <ul style="list-style-type: none"> <li>a) Preparation of Labour Management Procedures applicable to the project.</li> <li>b) Preparation of Grievance Mechanism and sharing with all the workers</li> <li>c) Design and Implement OHS measures</li> </ul>   |
| ESS3: Resource Efficiency, Pollution Prevention and Management                 | Resource consumption and pollution generation from proposed activities (civil, electromechanical and paint work). This includes both hazardous and non-hazardous chemical pollutants in the solid, liquid, or gaseous phases   | <p>Applicable</p> <ul style="list-style-type: none"> <li>a) 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.</li> <li>b) Preparation of Resource Efficiency and Pollution Prevention Plan to assess and minimize/control the concentration of release of pollutants to air, water and land due to routine, non-routine, and accidental circumstances, and with the potential for local, regional, and transboundary impacts.</li> </ul> |
| ESS 4: Community Health and Safety   | Applies to potential risks and impacts on communities that may be affected by project activities such as transportation of material to project site through village roads, labour colony housing migrant workers near the project site, pollution generation from civil and electro-mechanical work.   | <p>Applicable</p> <ul style="list-style-type: none"> <li>a) Pollution from project activities and labour colony and increased traffic causing pollution and road safety risks on village roads during transportation of material.</li> <li>b) Preparation of Emergency Response Procedure (ERP) to prevent injuries to health and safety of the community during an emergency event arising from both natural and man-made hazards, typically in the form of fire, explosions, leaks or spills, flooding, etc.</li> </ul>   |
| 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.  | <p>Not Applicable</p> <p>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 activities/interventions, does not involve acquisition of private land and/or private assets. These activities in no way cause restriction on access to land or use of resources by local communities and there is no economic displacement envisaged due to the sub-project.</p>   |

| ESF Policy, Standards and Directives & Guidelines  | Applicable Activities   | Applicability / Requirements  |
|--|---|---|
| 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.  | 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, however, Bisalpur Conservation Reserve is in close proximity. No direct impact on biodiversity are envisaged due to proposed interventions, however, there could be indirect impacts, which needs to be mitigated by a Biodiversity Management Plan.  |
| 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 and implementation 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<br>Project is not directly or indirectly impacting any cultural heritage. Bisaldeo temple, a monument of National Importance as designated by Archaeological Survey of India (ASI) is located besides the Bisalpur dam on the left u/s section of the dam. Presently the temple is partially submerged in the reservoir behind the dam and is not visited/used by devotees. No interventions/activities are planned in that area. There is no access for labour or any outsider to visit the area. ASI has renovated and maintains the temple. |
| 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.<br>Preparation of Stakeholder Engagement Procedure<br>Establishment of a project level GRM   |

| <b>ESF Policy, Standards and Directives &amp; Guidelines</b>   | <b>Applicable Activities</b>   | <b>Applicability / Requirements</b>  |
|--|--|--|
| Environmental and Social Directive for Investment Project Financing  | This Directive applies to the Bank and sets out the mandatory requirements for the implementation of the Environmental and Social Policy for Investment Project Financing (IPF).   | Applies to Bank in addressing E&S aspects of this project  |
| Bank Directive Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups                                     | This Directive establishes directions for Bank staff regarding due diligence obligations relating to the identification of, and mitigation of risks and impacts on, individuals or groups who, because of their particular circumstances, may be disadvantaged or vulnerable | Applies to Bank in addressing E&S risks and impacts on disadvantaged and vulnerable persons or groups that are identified in this project  |
| World Bank's Guidance note on managing the risks of adverse impacts on communities from temporary project induced labor influx, 2016 | The document provides guidelines to address issues and risks arising from influx of migrant labour leading to gender-based violence, etc.  | Not applicable as even though influx of skilled migrant labour in construction works is likely, these labor will operate within the dam premises which is a restricted access zone and distant from habitations. However, GBV related clauses would be included in the bid documents and sensitization/awareness trainings would be provided to all dam personnel, contractors, etc. during implementation |

## **2.3 INSTITUTIONAL FRAMEWORK**

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

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

Specifically, in respect of capacity to address E&S issues, WRD Rajasthan do not have inhouse 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 analyzed 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 analyzed using GIS techniques. Land use/ land cover map within 5 Km radius of dam is 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 forest area and rest is agriculture/fallow land and settlements i.e. habitation. However, as discussed under chapter 2 on project description the project activities will be confined to dam body only and no structural interventions are proposed beyond existing dam boundaries. Four villages are falling in 5 Km radius on downstream of dam namely - Tharoli, Rampura, Botunda and Rajmahal.

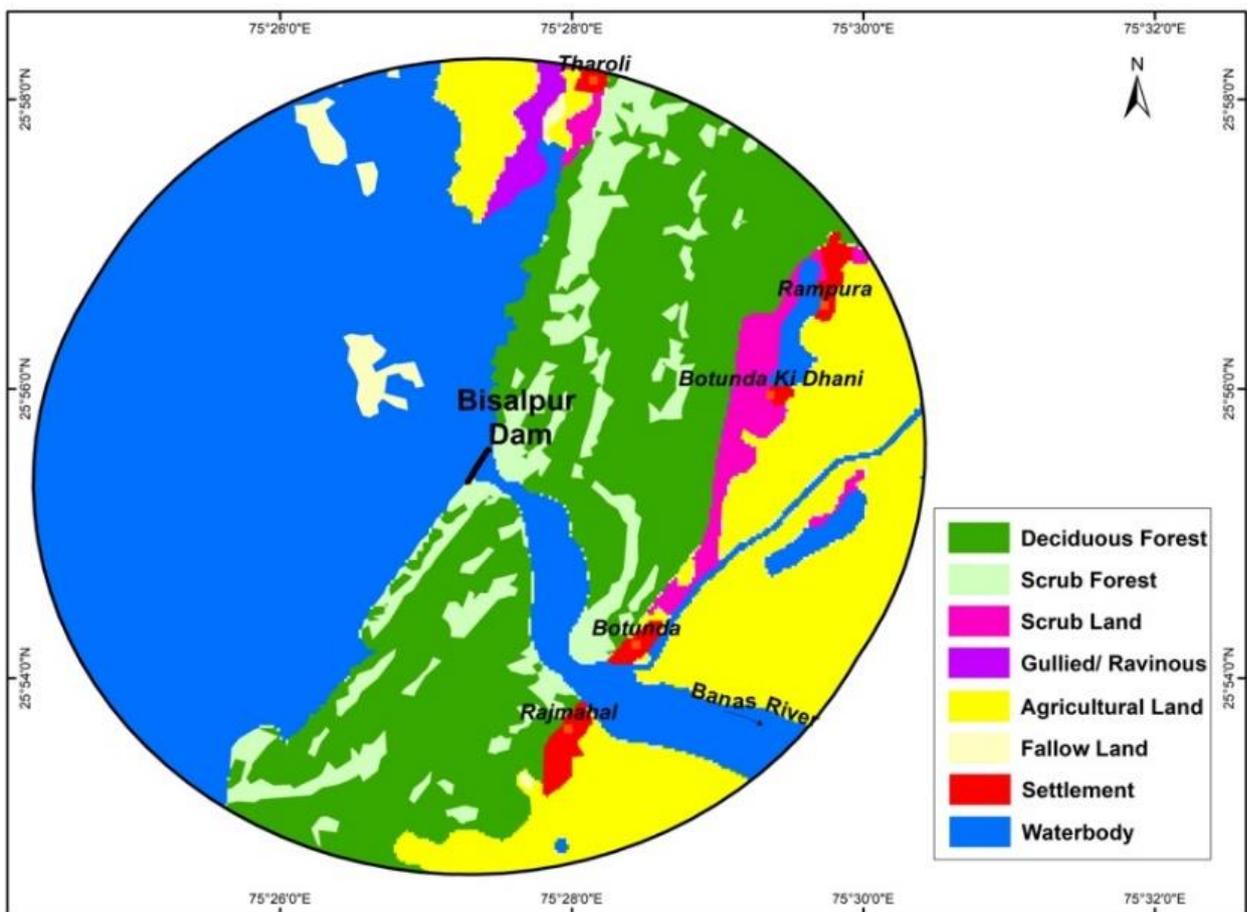


Figure 3.1: Land Use and Land Cover Map of 5 Km radius around Dam site

### **Ambient Air Quality and Noise**

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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 from air and noise pollution. This is substantiated by the fact that the dam is away from habitation, traffic and industries and that there 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**

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Surface water quality of Bisalpur dam was downloaded from National Water Quality Monitoring Programme of Rajasthan State Pollution Control Board for a period of 10 months during January to October 2019 and is given at **Annexure I**.

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

### **Natural Hazards**

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Potential of natural hazards such as flooding and earthquake is not significant. Project is designed for a design flood value of 33800 cumec, revised design flood has been worked as 35212 cumec by CWC i.e. 4.18% increase, which is not significant increase. Project falls in earthquake zone II, there is no revision and dam design has taken care of this aspect as well. *Bureau of Indian Standards [IS 1893 (Part I):2002], has grouped the country into four seismic zones, viz. Zone II, III, IV and V. Zone II is the least active and Zone V is the most active.*

## **3.2 BIOLOGICAL ENVIRONMENT**

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### **Flora and Fauna**

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The extent of natural forests in Rajasthan is not only one of the lowest in the country but also the lowest in terms of productivity of forest. The Forest Cover in the State is 16,629.51 sq km which is 4.86 % of the State's geographical area (India State of Forest Report, FSI, 2019). Tropical Dry Deciduous Forests is the largest forest group in the state. Catchment of Banas river provides habitation and sustenance for numerous fauna. The hillock forests, streams provide favorable factors for sheltering many kinds of wild animals. Black Buck, Wolf, Jackal, Hyena, Rhesus Monkey, Blue Bull, Indian Fox, and Indian Palm Squirrel are

reported from study area.

The study area is rich in avifaunal diversity due to large water body. Nesting spots are easy to find along the bank of Banas river. Total 176 species of birds belonging to 61 different families were reported from the study area of Bisalpur Dam (Meena *et al.* 2019). The category of water birds included 60 species and 116 species of terrestrial birds were reported from the study area.

Proposed activities remain limited to dam premises and therefore no risk is envisaged on flora and fauna in the surrounding areas and no direct impacts are envisaged. Due to proximity to Bisalpur Conservation Reserve, a Biodiversity Conservation Plan will be prepared to ensure that there are no indirect impacts/risks of proposed intervention on flora and fauna in Conservation Reserve.

### **Fish & Fisheries**

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Bisalpur reservoir supports good fishery and contributes to economy of Rajasthan state. Banyal and Kumar (2015), reported that 21 fish species belonging to eleven families under seven orders were recorded from the study area. Cypriniformes was the dominant order with 11 species, which is a common feature for inland fish diversity followed by Siluriformes with 4 species, Perciformes with 2 species besides Osteoglossiformes, Synbranchiformes, Beloniformes & Clupeiformes each represented with one species.

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

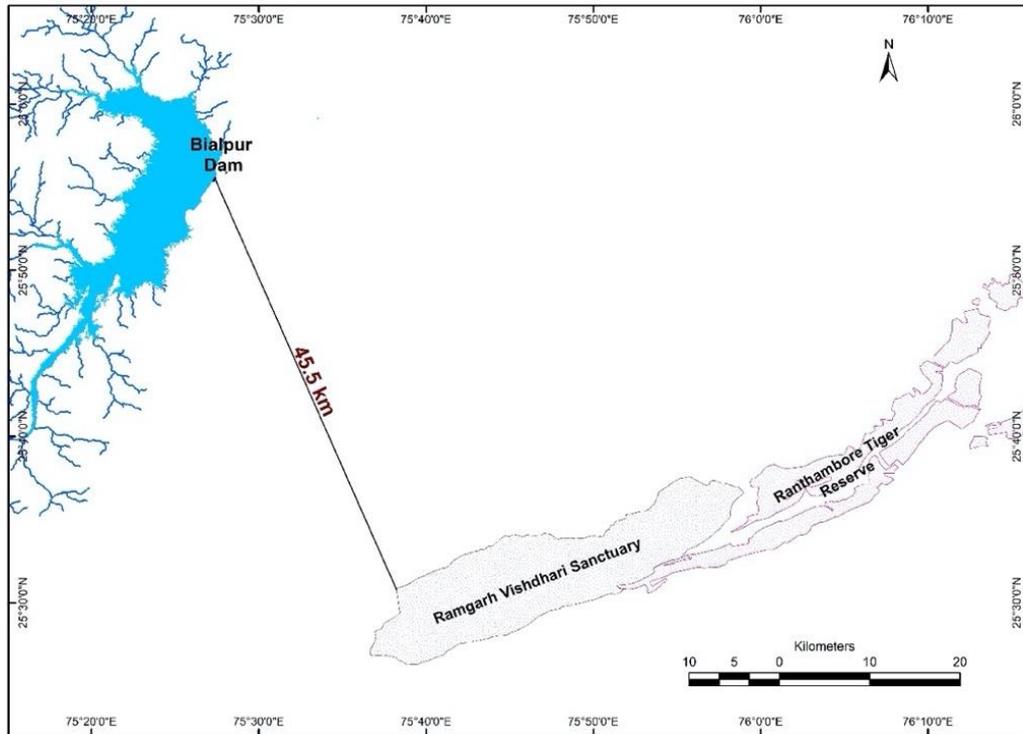
## **3.3 PROTECTED AREA**

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### **Nearest Protected Area**

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Ramgarh Vishdhari Sanctuary is about 45.50 km from the Bisalpur Dam location of the Bisalpur dam Project. The location of Ramgarh Vishdhari Sanctuary in relation to Bisalpur dam is given at **Figure 3.2**.



**Figure 3.2: Location of Ramgarh Vishdhari WLS wrt Bisalpur Dam**

### **Conservation Reserves**

Bisalpur conservation reserve lies in the vicinity of Bisalpur Dam. Bisalpur Conservation Reserve was declared in year 2008 by state government comprising of an area of 48.31 sq km for the conservation of species like Black Buck, Wolf, Jackal, Hyena, etc.

Conservation Reserves are declared for the purpose of protecting landscapes, seascapes, flora and fauna and their habitat. The rights of people living inside a Conservation Reserve are not affected.

As per World bank’s ESS6, the conservation Reserve is defined as “Natural Habitat”. The project is not proposing to undertake any work in Conservation Reserves so no direct impacts are envisaged. To mitigate adverse indirect impacts, if any, on “Natural Habitat”, Biodiversity Conservation Plan will be prepared.

Location of Bisalpur Conservation Reserve with respect to Bisalpur Dam is shown at **Figure 3.3**.

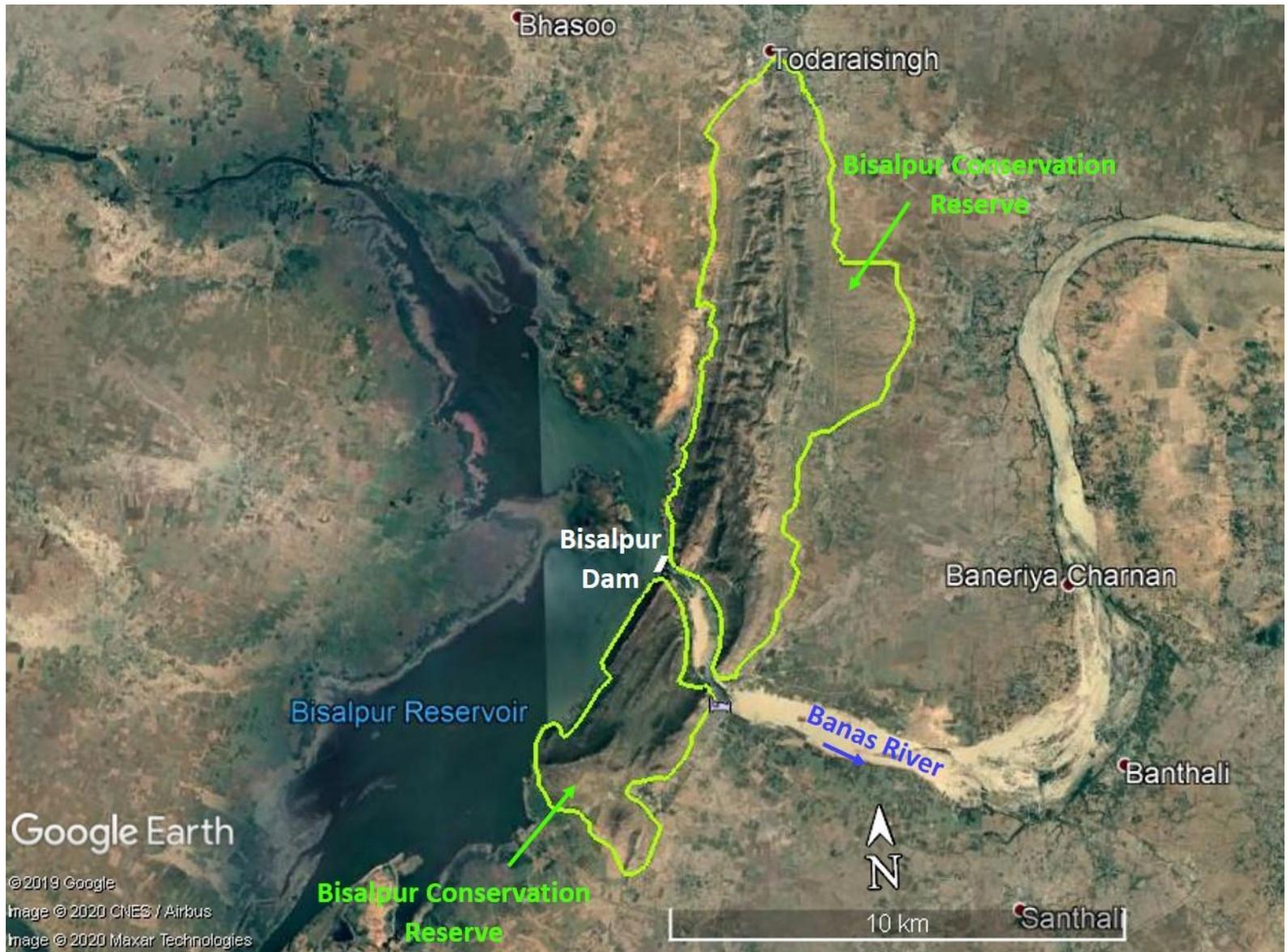


Figure 3.3: Location of Bisalpur Conservation Reserve wrt Bisalpur Dam

### 3.4 SOCIAL ENVIRONMENT

The dam is located in district Tonk, tehsil Toda Raisingh. Four villages namely Tharoli, Rampura, Botunda and Rajmahal have been identified as falling in 5 Km area on downstream side of dam. The project area does not fall within the Schedule V<sup>1</sup> areas of Rajasthan.

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

|                                |                  |                                     |                  |
|--------------------------------|------------------|-------------------------------------|------------------|
| <b>No. of Households</b>       | <b>2,66,870</b>  | <b>Household Size</b>               | <b>5</b>         |
| <b>Total Population</b>        | <b>14,21,326</b> | <b>Population (0-6 age)</b>         | <b>2,04,038</b>  |
| Male                           | 7,28,136         | Boys (0-6 age)                      | 1,07,868         |
| Female                         | 6,93,190         | Girls (0-6 age)                     | 96,170           |
| Sex Ratio                      | 952              | Sex Ratio (0-6)                     | 892              |
| <b>Population (SC)</b>         | <b>2,87,903</b>  | <b>Population (ST)</b>              | <b>1,78,207</b>  |
| Male                           | 1,48,110         | Male                                | 92,677           |
| Female                         | 1,39,793         | Female                              | 85,530           |
| <b>Literates</b>               | <b>7,49,659</b>  | <b>Literacy Rate</b>                | <b>61.6</b>      |
| Male                           | 4,78,329         | Male                                | 77.1             |
| Female                         | 2,71,330         | Female                              | 45.4             |
| <b>No. of Workers</b>          | <b>6,49,161</b>  | <b>Cultivators</b>                  | 3,26,083 (50.2%) |
| Male                           | 3,71,848         | <b>Agricultural Labours</b>         | 1,13,426 (17.5%) |
| Female                         | 2,77,313         | <b>Household Industrial Workers</b> | 16,004 (2.5%)    |
| <b>No. of Main Workers</b>     | <b>4,95,797</b>  | <b>Other Workers</b>                | 1,93,648 (29.8%) |
| <b>No. of Marginal Workers</b> | <b>1,53,364</b>  |                                     |                  |

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

Data on population, occupation and amenities of vicinity villages have been compiled from Census of India, 2011 and are placed at **Annexure II**.

According to Census 2011, total population of the study area has been worked out to 12,517. The gender wise distribution of the above population is 6,394 (51.08%) male and 6,123 (48.92%) female. The overall sex ratio of the study area has been worked out to 958 females per 1,000 males.

Total population of the study area is distributed into different social groups like Scheduled Castes (SC), Scheduled Tribes (ST) and General Category (including OBC). The share of these social groups' population to the total population of the study area is 30.82%, 10.03% and 59.15% respectively.

In the study area, 51.81% of the population is literate in which male literates are 65.75% and that of females are 34.25%. The overall literacy rate in the study area has been worked out to 60.04%. The male literacy rate is 77.84% and female literacy rate is 41.72.

The economic classification of workers as per Census 2011 indicates that total number of workers in the study area is 6,053 which constitute 48.36% of the total population. Of the total workers, 56.58% are males and remaining 43.42% are females.

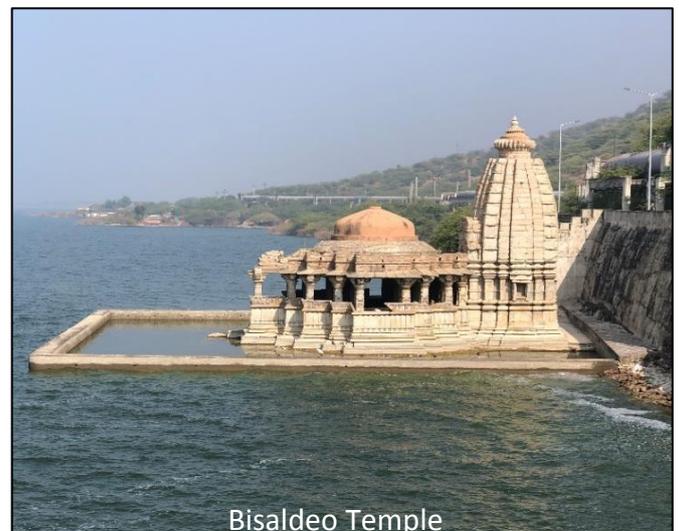
<sup>1</sup> **Scheduled Areas** are areas in India with a preponderance of tribal population subject to a special governance mechanism wherein the central government plays a direct role in safeguarding cultural and economic interests of **scheduled** tribes in the **area**.

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. It is also observed that workers in small numbers are also engaged in household industries and ancillary works.

The project area does not fall within the Schedule V of the state. Though there are Scheduled Tribe households in the downstream areas, there are no physical interventions planned in the downstream areas. The ST households are mainstreamed in the area and do not possess any character that triggers ESS7. These areas and the ST households will be taken into account during the preparation of overall Emergency Action Plan for Bisalpur Dam.

### **3.5 CULTURAL ENVIRONMENT**

Bisaldeo temple, a monument of National Importance as designated by Archaeological Survey of India (ASI) is located besides the Bisalpur dam on the left u/s section of the dam. It is a Hindu temple also known as Bisaldev temple or Bisal Deoji's temple and is dedicated to Gokarneshvara, an aspect of Lord Shiva. It was commissioned by the 12th century by Chahamana ruler Vigraharaja IV, who was also known as Bisal Deo. Presently the temple is partially submerged in the reservoir behind the dam and is not visited/used by devotees.



Bisaldeo Temple

Before the construction of the dam, the temple stood on the top of a hill overlooking the confluence of Banas and Dai river. ASI has carried out restoration and maintains the temple. No construction activity is proposed in the vicinity of the temple and also temple will not be accessible to labour working on construction work.

## 4.1 STAKEHOLDER CONSULTATION

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

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

A stakeholder consultation meeting was conducted at dam on 17/01/2020. It was attended by permanent staff of the borrower (WRD) working at dam, workers from nearby villages; families who were displaced at the time of construction of the dam and now are resettled in command areas as well as in upstream areas; and local media persons.



Following is the outcome of the stakeholder consultation meeting:

1. Agriculture is still the main occupation of people around the dam
2. Contract workers generally work for 3-4 months on dam in a year and carry out repair and maintenance activities
3. All the participants welcomed the proposed interventions relating to dam safety.
4. There are no pending issues regarding dam construction related resettlement
5. The participants explicitly mentioned that the dam is their lifeline and strengthening works will help their long term livelihood and therefore welcomed such information
6. Participants have expressed that they do not have any grievances and as such no grievances were ever reported from their communities/neighbourhoods
7. Local media representative informed that the dam is visited by many tourists (about 25000) during the monsoon season and the interventions will have a positive impact including safety.

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; 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 Emergency Action Plan (EAP).

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

Communities welcomed such interactions and indicated that they would prefer Dam authorities conduct one such face -to- face meeting once a month at a convenient location to inform of developments/interventions relevant to them. They welcomed other means of information such as advertisements in the local papers etc, but preferred to have face to face interactions at least once a month.

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

| <b>Applicable ESS</b>  | <b>Risk and Impacts area assessed</b>  |
|--|--|
| ESS1- Assessment and Management of Environmental and Social Risks and Impacts          | 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<br>Impacts on water resources/Water Quality<br>Impact on Air quality/Noise levels<br><br>Impact due waste generation/disposal |
| ESS4- Community Health and Safety  | Community Health and safety  |
| ESS6- Biodiversity Conservation and Sustainable Management of Living Natural resources | Impact on Biodiversity due to proximity of Bisalpur Conservation Reserve   |

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

Proposed interventions are categorised as civil, electromechanical and painting 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 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 reach out to the disadvantaged and vulnerable persons and groups and involve them mainly during 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; suppliers of material/equipment and other implementation support partners, engaged 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 onsite over a period of 3 years. In addition, there will be floating population of suppliers, transporters of material and their labour who will keep on moving in and out of the site during the work period of 3 years. Construction contractors are expected to stay at/near dam, set up construction equipment and machinery near work location at pre-determined /approved sites.

The project has established a labour colony during the dam construction, which is located at about 3 Km from the dam. Some of the dam maintenance workers are residing there. It is observed that there is enough accommodation available to house 50-60 workers during the rehabilitation work implementation. The colony has temporary houses, water and power connection, septic tank connection, road connectivity and green areas. There is a middle school as part of the colony and also a police station nearby. WRD has committed to house all the labour in these houses.



**View of the Existing Labour Colony**

**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 20 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 labour will not be fully sourced locally for a number of reasons, such as worker unavailability and lack of technical skills and capacity.

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

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

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

**Impact/Risks on Community**

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

**Impacts/Risks for Workforce**

2. Safety issues while at work like injuries/accidents/ fatalities leading to even death, while at work;
3. Short term effects due to exposure to dust and noise levels, while at work
4. Long term effects on life due to exposure to chemical /hazardous wastes
5. Inadequate accommodation facilities at work force camps, including inadequate sanitation and health facilities
6. Non-payment of wages
7. Discrimination in Employment (e.g. abrupt termination of the employment, working conditions, wages or benefits etc.)
8. Sexual harassment at work

9. Absence or inadequate or inaccessible emergency response system for rescue of labour/workforce in situations of natural calamities.
10. Health risks of labour relating to HIV/AIDS and other sexually transmitted diseases

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

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

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

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#### **Impact on Physiography**

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The dam is operational for over 15 years now 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 and extension of downstream retaining walls on both the banks, 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**

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All project components are proposed to be implemented within existing dam with no land acquisition. Therefore, impact on land and geology will be limited to sourcing of construction material or disposal of construction waste related only. The civil works will require different construction 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 reused or disposed 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 as well as construction waste from repair activities for wall foundation and thereby reduce potential impact due to dumping etc., and achieve minimum construction footprint.

#### **Impact on Soil**

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The land where construction activities will take place such as wall extension area will be directly impacted due to excavation, removal of topsoil, temporary storage of excavated material, etc. Other repair sites will also impact soil due to repair and demolition works such as removal and fresh laying of rip-raps, repair to steps, spillage during shotcreting and guniting, 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 excavation for the foundation of retaining wall, removal of damaged rip-raps, other repair activities such as repair to steps, parapet walls, treatment of upstream honeycombed areas, repair to spillway crest, etc. This being largely repair work, quantities have not been estimated and they are not expected to be significant to create disposal problem. Nevertheless, all the construction debris/muck generated needs to be disposed off in a planned manner to avoid adverse impacts on soil.

**Impacts on Water Resources**

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The proposed intervention activities are not expected to impact water resources in any way as the proposed interventions are neither crossing, altering or disturbing drainages nor impacting ground water resource in any form. Use of resources such as water and power will be optimised before start of work through Resource Efficiency and Pollution Prevention Plan.

**Impacts on Water Quality**

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Construction related impacts and risks for water quality include:

- Accidental release of fuel or chemicals and contamination from poor waste practices affecting surface and groundwater
- Contamination from construction machinery working near water bodies
- Discharges and disturbance of soil and sediment that drain into surface waters
- Construction of retaining wall along river bank
- Generation of sanitary wastes from camp site and construction sites finding way to water bodies

**Impact on Ambient Air Quality**

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

Gaseous emission during construction will be from machinery, equipment and vehicles used for material transportation. The operation of vehicles and equipment will result in emissions of carbon monoxide, sulphur dioxide, and oxides of nitrogen as most of the commercial vehicles use diesel fuel. Impact on air quality due to emissions from vehicles will be in the areas immediately adjacent to work area. 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 increased distance from road. The impacts will therefore apply mostly to the villages en route the dam.

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

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

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Sources of noise will be from 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 others who are working in the surroundings. Such impacts can become significant if these workers are exposed to high noise for long hours continuously.

### **Impact of Waste Generation**

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About 190 migratory population is expected to reside in the area during peak construction period. Proper sanitary and solid waste management facilities would be provided at the labour colonies. In the absence of proper solid waste management plan, there can be serious impacts of land and water pollution due to indiscriminate disposal. In addition, there will be odour issues and health impacts. There will be an influx of labourers and other service providers into the project area. Sewage and solid waste will be generated from the colonies. It is essential that from the planning stage, sewage management and solid waste disposal facilities should be conceptualized to maintain the health of the people and the environment. Solid waste generated from the colonies during construction phase will be disposed off as per Solid Wastes Management Rules, 2016.

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

Project interventions include substantial amount of electro-mechanical work such as repair/replacement of hoists and ropes, repair of training/guide walls, general maintenance and upkeeping of 18 numbers of radial gates, installing armoured cable and providing new instruments/replacing the older items. These activities will generate significant amount of waste in terms of replaced parts, packaging material, empty containers, use and disposal of

oil & grease, iron scrap, etc. there will be a mix of hazardous and non-hazardous wastes. It is important to have a plan ready for disposal of such wastes before start of the activity.

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

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

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

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

Engagement of labour for project work and their stay at site over a 3 years' time, will increase the risks of crimes. Waste generation from labour 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. Highway is about 19 Km away from dam site and this access road passes through 4-5 villages. Village nearest to dam site is Rajmahal and is en-route for traffic to and from the dam site. Increased movement of traffic will 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 will have the potential of impacting the surrounding community.

#### **5.5 BIODIVERSITY CONSERVATION AND SUSTAINABLE MANAGEMENT OF LIVING NATURAL RESOURCES (ESS 6)**

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Bisalpur Conservation Reserve is in close proximity to project site, which is a Natural Habitat. No activities are proposed in the reserve and no direct impacts and risk to living natural resources are envisaged. However, influx of migrant labour over a period of about 3 years in close proximity to reserve can lead to indirect impacts such as cutting of trees for cooking and space heating, hunting of wildlife for food and game, etc. To minimise such risks, Biodiversity Conservation Plan will be prepared to ensure no net loss to biodiversity.

The plan will list all such activities having potential impact – direct or indirect on biodiversity covering flora, fauna including fish fauna in reservoir and will provide appropriate measures to minimise the impacts.

As can be seen from the above discussion, the interventions proposed under Bisalpur sub-project are of the nature of civil and electromechanical work, besides Non-structural interventions such as early flood warning systems, Emergency action plans. In case of structural interventions, there is no additional land requirement – neither forest nor private, as all the interventions remain within the close proximity to dam body itself. The land is owned and is in the possession of WRD. 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 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

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

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

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

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

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

- ***OHS Measures***

Measures relating to occupational health and safety applies to the project as it involves engagement of workers. The OHS measures will take into account the General Environment

Health and Safety Guidelines and applicable legal requirements. The OHS measures will be designed and implemented to address:

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

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

- ***GBV Risk Mitigation Guidelines***

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

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

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

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

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

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

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

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

For solid and hazardous waste management, sites should be identified for disposal of construction waste, surplus excavated material, and other solid wastes; and appropriate permissions taken for dumping with restoration plan covering engineering and biological measures as appropriate. No dump site shall be located in forest area. WRD will share identified locations of muck or debris disposal sites with the contractor. The contractor will develop a muck and debris disposal plan after incorporating longitudinal and cross section references to assess volume or capacity of the disposal site and will submit muck/ debris disposal plan before commencement of the work at site. This action needs to be included in the Bid Document as one of the key requirements.

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

Measures should also cover cleanliness of the labour colony, provision of basic 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 staff and shall be applicable for all dams taken under DRIP 2 in the state. It shall be disclosed by Rajasthan WRD one month before mobilization of the Contractor.

- ***Biodiversity Conservation Plan***

The plan should be prepared to address all possible impacts on Bisalpur Conservation Reserve, which is in close proximity to dam. All such activities having potential impact – direct or indirect, will be identified and appropriate measures proposed to control these activities.

The plan shall be prepared by Rajasthan WRD with support from the ESIA consultants and shall be applicable for all dams taken under DRIP II in the state which are in proximity to protected areas/Conservation reserves. 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 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**

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

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

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

In the event tourism activities, towards additional revenue generation are taken up, then as stated in the Environment and Social Commitment Plan (ESCP), activity specific ESIA will be conducted for these sub-components before invitation of bids for such works.

**Annexure I**  
**Surface Water Quality of Bisalpur Dam**

| <b>Parameter</b>                           | <b>14-01-19</b> | <b>01-02-19</b> | <b>19-03-19</b> | <b>24-04-19</b> | <b>23-05-19</b> | <b>18-06-19</b> | <b>23-07-19</b> | <b>23-08-19</b> | <b>26-09-19</b> | <b>24-10-19</b> |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Ammonia Nitrogen(mg/l)                     | 0.58            | 0.62            | 0.54            | 0.52            | 0.54            | 0.58            | 0.54            | 0.48            | 0.44            | 0.48            |
| B.O.D.(mg/l)                               | 0.47            | 0.94            | 1.13            | 0.82            | 0.86            | 1.24            | 1.48            | 1.06            | 0.9             | 0.8             |
| Boron Dissolved(mg/l)                      | 0.33            | 0.36            | 0.36            | 0.21            | 0.21            | 0.18            | [N/A]           | [N/A]           | 0.18            | 0.21            |
| C.O.D.(mg/l)                               | 3.47            | 5.824           | 21.55           | 20.8            | 8.17            | 14.31           | 14.04           | 5.31            | 7.2             | 10.4            |
| Calcium as Ca(mg/l)                        | 32              | 30.4            | 33.6            | 30.4            | 32              | 33.6            | 28.8            | 30.4            | 22.4            | 43.2            |
| Chloride(mg/l)                             | 104             | 96              | 124             | 60              | 56              | 64              | 52              | 36              | 28              | 76              |
| Conductivity (µmho/cm)                     | 440             | 430             | 440             | 450             | 470             | 490             | 460             | 290             | 270             | 590             |
| Dissolved Oxygen(mg/l)                     | 5.83            | 6.768           | 6.58            | 6.08            | 4.51            | 4.18            | 5.51            | 5.19            | 4.6             | 5.2             |
| Fecal Coliform (MPN/100ml)                 | 7               | 9               | 9               | 7               | 11              | 23              | 20              | 9               | 23              | 39              |
| Fixed Dissolved Solids(mg/l)               | 184             | 192             | 236             | [N/A]           |
| Fluoride As F(mg/l)                        | 0.82            | 0.86            | 0.8             | 0.82            | 0.8             | 0.84            | 0.8             | 0.74            | 0.8             | 0.84            |
| Magnesium as Mg(mg/l)                      | 11.712          | 13.664          | 14.64           | 13.664          | 15.616          | 16.592          | 11.712          | 7.808           | 4.88            | 20.496          |
| Nitrate as N(mg/l)                         | 2.1             | 1.84            | 2               | 1.76            | 1.6             | 1.66            | 1.76            | 1.66            | 1.84            | 1.7             |
| Nitrite As N(mg/l)                         | [N/A]           | [N/A]           | [N/A]           | 0.0004          | 0.0012          | 0.002           | 0.0012          | 0.0004          | 0.0012          | 0.002           |
| pH   | 8.03            | 7.95            | 8.32            | 8.44            | 8.42            | 8.45            | 8.5             | 7.92            | 7.82            | 7.64            |
| Phenolphthalein Alkalinity                 | nil             | [N/A]           | 4               | 4               | 4               | 4               | 8               | NIL             | NIL             | NIL             |
| Phosphate As PO <sub>4</sub> (mg/l)        | 0.1             | 0.1             | 0.1             | 0.1             | 0.1             | 0.1             | 0.1             | 0.1             | 0.1             | 0.1             |
| Potassium As K (mg/l)                      | 0.9             | 1.1             | 1               | 2.3             | 2.7             | 2.2             | 1.9             | 2.2             | 1.7             | 2.7             |
| Sodium(mg/l)                               | 52              | 48              | 53              | 25.5            | 27              | 32              | 28              | 21              | 18.5            | 32              |
| Sulphate(mg/l)                             | 32.5            | 41              | 63              | 41              | 44              | 49              | 54              | 30              | 32.5            | 71              |
| Temperature(OC)                            | 20              | 17              | 20              | 24              | 31              | 30              | 22              | 19              | 19              | 28              |
| Total Alkalinity (mg/l)                    | 116             | 128             | 132             | 128             | 128             | 136             | 120             | 64              | 60              | 148             |
| Total Coliform(MPN/100ml)                  | 20              | 28              | 39              | 21              | 28              | 64              | 75              | 39              | 64              | 75              |
| Total Dissolved Solids(mg/l)               | 272             | 276             | 336             | 338             | 348             | 370             | 342             | 216             | 198             | 454             |
| Total Hardness As CaCO <sub>3</sub> (mg/l) | 128             | 132             | 144             | 132             | 144             | 152             | 120             | 108             | 76              | 192             |
| Total Kjeldahl Nitrogen(mg/l)              | 3.64            | 3.36            | 3.64            | [N/A]           |
| Total Suspended Solids(mg/l)               | 12              | 21              | 25              | [N/A]           |
| Turbidity(JTU/NTU)                         | 3               | 6.4             | 5.7             | 3.3             | 4.5             | 4.9             | 4.5             | 7.8             | 16.3            | 1.3             |
| SAR  | 2.0             | 1.8             | 1.9             | 1.0             | 1.0             | 1.1             | 1.1             | 0.9             | 0.9             | 1.0             |

**Annexure II**  
**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 Tharoli, Rampura, Botunda and Rajmahal.

**A. Demography of Study Area**

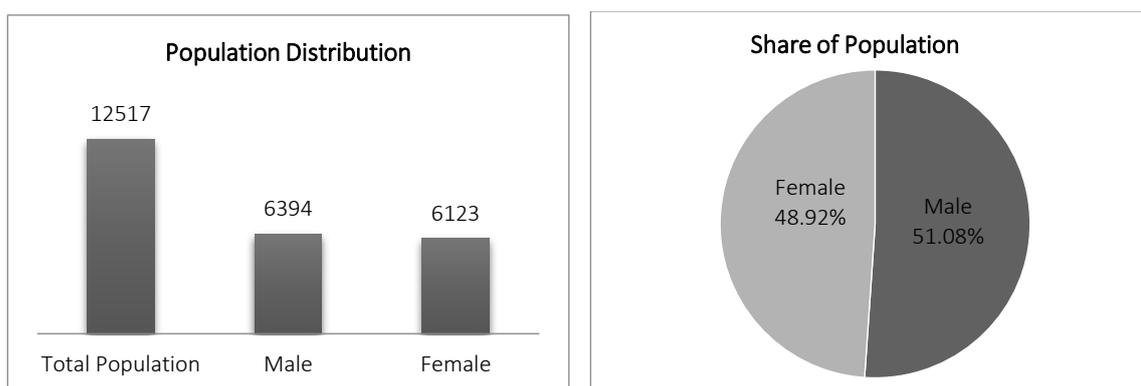
| S. No.    | Description                             | Number        | Percentage to Respective Total |
|-----------|---|---------------|--------------------------------|
| <b>1</b>  | <b>Total Population</b>                 | <b>12,517</b> | <b>100.0</b>                   |
|           | Male                                    | 6,394         | 51.08                          |
|           | Female                                  | 6,123         | 48.92                          |
|           | Sex Ratio                               | <b>958</b>    |                                |
| <b>2</b>  | <b>Population (0-6 age group)</b>       | <b>1,715</b>  | <b>100.0</b>                   |
|           | Male                                    | 916           | 53.41                          |
|           | Female                                  | 799           | 46.59                          |
|           | Child Sex Ratio                         | <b>872</b>    |                                |
| <b>3</b>  | <b>Scheduled Caste (SC) Population</b>  | <b>3,858</b>  | <b>100.0</b>                   |
|           | Male                                    | 1,988         | 51.53                          |
|           | Female                                  | 1,870         | 48.47                          |
|           | Sex Ratio                               | <b>941</b>    |                                |
| <b>4</b>  | <b>Scheduled Tribe (ST) Population</b>  | <b>1,255</b>  | <b>100.0</b>                   |
|           | Male                                    | 641           | 51.08                          |
|           | Female                                  | 614           | 48.92                          |
|           | Sex Ratio                               | <b>958</b>    |                                |
| <b>5</b>  | <b>General Category (Including OBC)</b> | <b>7,404</b>  | <b>100.0</b>                   |
|           | Male                                    | 3765          | 50.85                          |
|           | Female                                  | 3639          | 49.15                          |
|           | Sex Ratio                               | <b>967</b>    |                                |
| <b>6</b>  | <b>Total No. of Households</b>          | <b>2,517</b>  |                                |
|           | Average Household Size                  | 5             |                                |
| <b>7</b>  | <b>Total Literates</b>                  | <b>6,485</b>  | <b>100.0</b>                   |
|           | Male                                    | 4,264         | 65.75                          |
|           | Female                                  | 2,221         | 34.25                          |
|           | <b>Overall Literacy Rate</b>            | <b>60.04</b>  |                                |
|           | Male Literacy Rate                      | 77.84         |                                |
|           | Female Literacy Rate                    | 41.72         |                                |
|           | Gender Gap in Literacy Rate             | 36.12         |                                |
| <b>8</b>  | <b>Total Workers</b>                    | <b>6,053</b>  | <b>100.0</b>                   |
|           | Male                                    | 3,425         | 56.58                          |
|           | Female                                  | 2,628         | 43.42                          |
|           | Gender Gap in Work Participation Rate   | 13.16         |                                |
| <b>9</b>  | <b>Main Workers</b>                     | <b>3,601</b>  | <b>100.0</b>                   |
|           | Male                                    | 2,436         | 67.65                          |
|           | Female                                  | 1,165         | 32.35                          |
|           | Gender Gap in Work Participation Rate   | 35.30         |                                |
| <b>10</b> | <b>Marginal Workers</b>                 | <b>2,452</b>  | <b>100.0</b>                   |
|           | Male                                    | 989           | 40.33                          |
|           | Female                                  | 1,463         | 59.67                          |
|           | Gender Gap in Work Participation Rate   | -19.34        |                                |
| <b>11</b> | <b>Household Industrial Workers</b>     | <b>170</b>    | <b>100.0</b>                   |
|           | Male                                    | 102           | 60.00                          |
|           | Female                                  | 68            | 40.00                          |

|           |                            |              |              |
|-----------|----------------------------|--------------|--------------|
| <b>12</b> | <b>Cultivators</b>         | <b>2,756</b> | <b>100.0</b> |
|           | Male                       | 1,608        | 58.35        |
|           | Female                     | 1,148        | 41.65        |
| <b>13</b> | <b>Agricultural Labour</b> | <b>1,737</b> | <b>100.0</b> |
|           | Male                       | 643          | 37.02        |
|           | Female                     | <b>1,094</b> | 62.98        |
| <b>14</b> | <b>'Other Workers'</b>     | <b>1,390</b> | <b>100.0</b> |
|           | Male                       | 1,072        | 77.12        |
|           | Female                     | 318          | 22.88        |

*Source: Census of India, 2011*

## B. Population Composition

According to Census 2011, total population of the study area has been worked out to 12,517. The gender wise distribution of the above population is 6,394 (51.08%) male and 6,123 (48.92%) female. The overall sex ratio of the study area has been worked out to 958 females per 1,000 males. The entire population of the study area is distributed into approx. 2,517 households and the average household size is five.



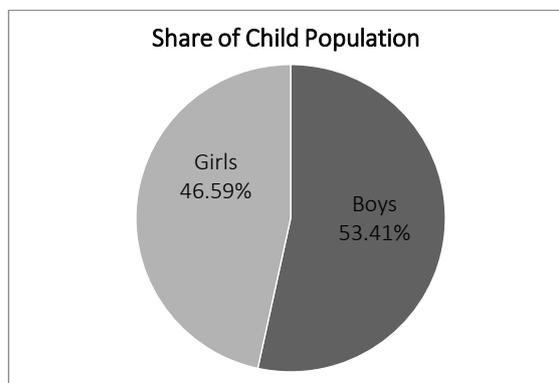
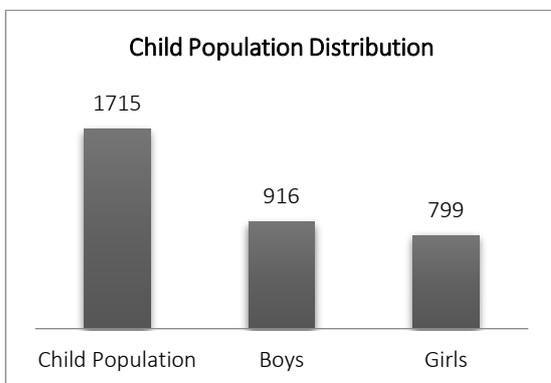
Village wise population distribution of the study area is given in the table below:

| Village wise Population Distribution with Sex Ratio |          |               |             |              |             |             |            |
|---|----------|---------------|-------------|--------------|-------------|-------------|------------|
| S. No.  | Village  | Tehsil        | No. of HH   | Population   |             |             | Sex Ratio  |
|   |          |               |             | Total        | Male        | Female      |            |
| 01  | Tharoli  | Toda Raisingh | 579         | 2746         | 1389        | 1357        | 977        |
| 02  | Rampura  |               | 243         | 1245         | 650         | 595         | 915        |
| 03  | Botunda  |               | 373         | 1804         | 898         | 906         | 1009       |
| 04  | Rajmahal | Deoli         | 1322        | 6722         | 3457        | 3265        | 944        |
| <b>TOTAL</b>  |          |               | <b>2517</b> | <b>12517</b> | <b>6394</b> | <b>6123</b> | <b>958</b> |

*Source: Census of India, 2011*

## C. Child Population Distribution

In the study area, the total child population of 0-6 age group has been worked out to 1,715 which represent 13.70% of the total population. Of the total child population, 53.41 % are boys and remaining 46.59% are girl child. The child sex ratio in this age group is 872 girls per 1,000 boys.



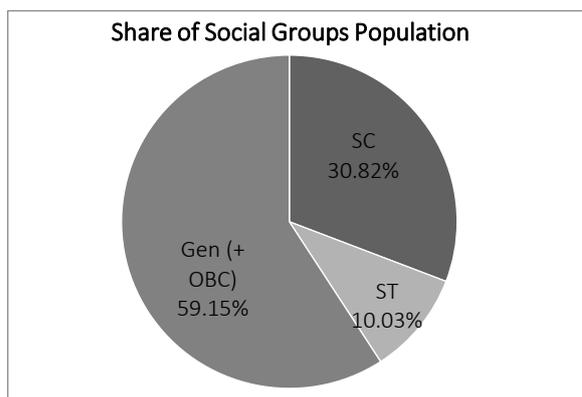
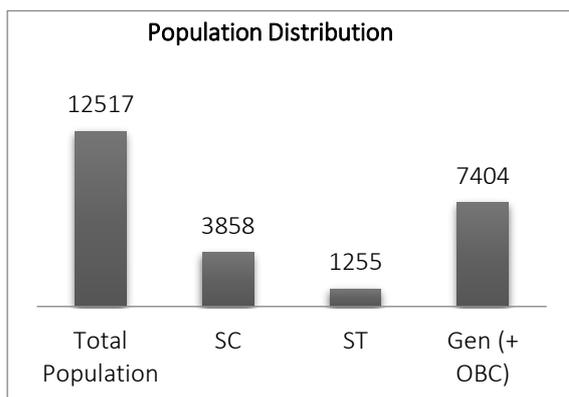
Village wise child population distribution of the study area is given in the table below:

| S. No.       | Village  | Tehsil        | Child Population (0-6) Age Group |            |            | Sex Ratio  |
|--------------|----------|---------------|----------------------------------|------------|------------|------------|
|              |          |               | Total                            | Boys       | Girls      |            |
| 01           | Tharoli  | Toda Raisingh | 350                              | 190        | 160        | 842        |
| 02           | Rampura  |               | 184                              | 97         | 87         | 897        |
| 03           | Botunda  |               | 275                              | 142        | 133        | 937        |
| 04           | Rajmahal | Deoli         | 906                              | 487        | 419        | 860        |
| <b>TOTAL</b> |          |               | <b>1715</b>                      | <b>916</b> | <b>799</b> | <b>872</b> |

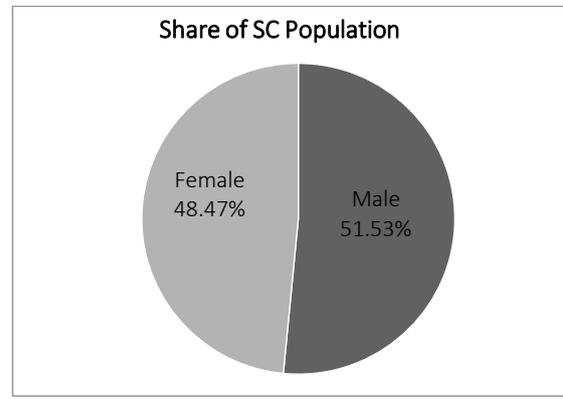
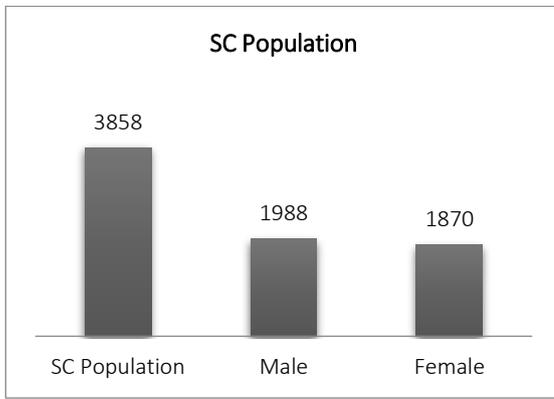
*Source: Census of India, 2011*

#### D. Social Group Population Distribution

Total population of the study area is distributed into different social groups like Scheduled Caste (SC), Scheduled Tribe (ST) and General Category (including OBC). The share of these social groups' population to the total population of the study area is 30.82%, 10.03% and 59.15% respectively.



- Scheduled Caste (SC) Population:** In the study area, Scheduled Caste population has been worked out to 3,858 which constitute about 30.82% of the total population. Of this, 51.53% is male and remaining 48.47% is female. The sex ratio among Scheduled Caste population has been worked out to 941 females per 1,000 males.

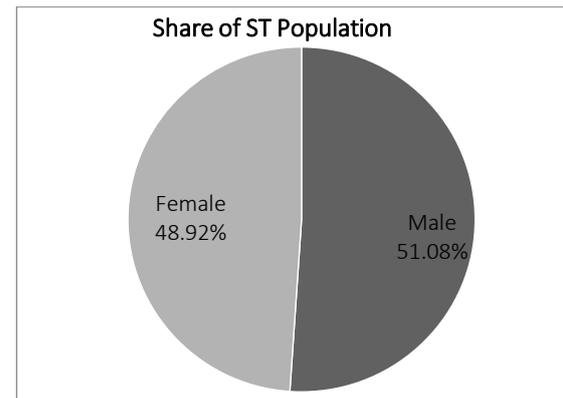
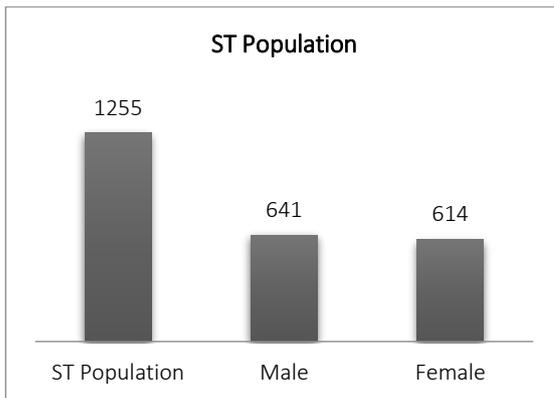


Village wise SC population distribution of the study area is given in the table below:

| S. No.       | Village  | Tehsil        | SC Population |              |              | Sex Ratio  |
|--------------|----------|---------------|---------------|--------------|--------------|------------|
|              |          |               | Total         | Male         | Female       |            |
| 01           | Tharoli  | Toda Raisingh | 971           | 492          | 479          | 974        |
| 02           | Rampura  |               | 20            | 12           | 8            | 667        |
| 03           | Botunda  |               | 379           | 195          | 184          | 944        |
| 04           | Rajmahal | Deoli         | 2488          | 1289         | 1199         | 930        |
| <b>TOTAL</b> |          |               | <b>3,858</b>  | <b>1,988</b> | <b>1,870</b> | <b>941</b> |

*Source: Census of India, 2011*

- Scheduled Tribe Population:** The Scheduled Tribe population in the study area has been worked out to 1,255 which represent 10.03% of the total population. Of the total Scheduled Tribe population, 51.08% is male and 48.92% is female. The sex ratio among the Scheduled Tribe population has been worked out to 958 females per 1,000 males.



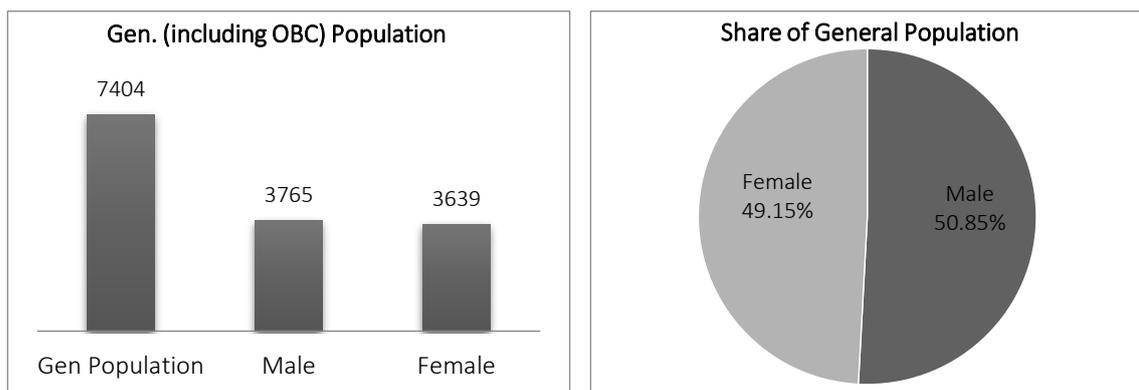
Village wise ST population distribution of the study area is given in the table below:

| S. No.       | Village  | Tehsil        | ST Population |            |            | Sex Ratio  |
|--------------|----------|---------------|---------------|------------|------------|------------|
|              |          |               | Total         | Male       | Female     |            |
| 01           | Tharoli  | Toda Raisingh | 719           | 368        | 351        | 954        |
| 02           | Rampura  |               | 188           | 95         | 93         | 979        |
| 03           | Botunda  |               | 131           | 63         | 68         | 1079       |
| 04           | Rajmahal | Deoli         | 217           | 115        | 102        | 887        |
| <b>TOTAL</b> |          |               | <b>1,255</b>  | <b>641</b> | <b>614</b> | <b>958</b> |

*Source: Census of India, 2011*

- General Category (including OBC) Population:** The population of this group has been worked out to 7,404 which is 59.15% of the total population of the study area. Of the total population

of this group, 50.85% is male and 49.15% is female. The sex ratio among this group of population has been worked out to 967 females per 1,000 males.



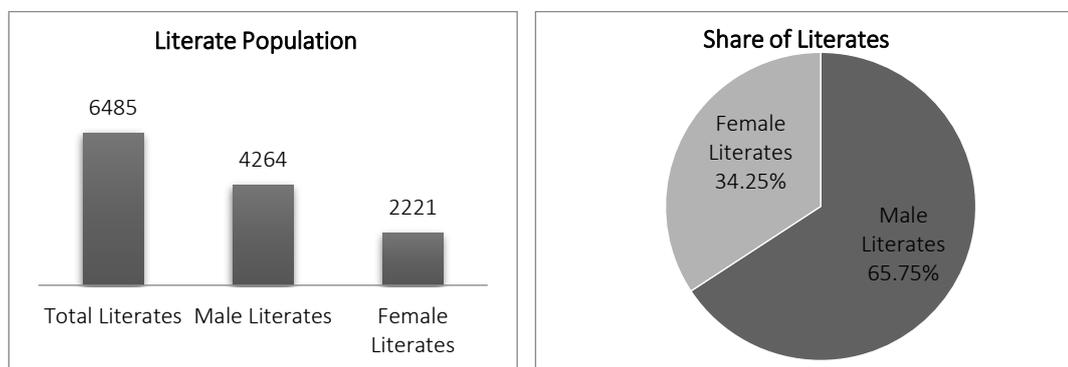
Village wise General Category (including OBC) population distribution of the study area is given in the table below:

| S. No. | Village  | Tehsil        | GEN (including 'OBC') Population |              |              | Sex Ratio  |
|--------|----------|---------------|----------------------------------|--------------|--------------|------------|
|        |          |               | Total                            | Male         | Female       |            |
| 01     | Tharoli  | Toda Raisingh | 1056                             | 529          | 527          | 996        |
| 02     | Rampura  |               | 1037                             | 543          | 494          | 910        |
| 03     | Botunda  |               | 1294                             | 640          | 654          | 1022       |
| 04     | Rajmahal | Deoli         | 4017                             | 2053         | 1964         | 957        |
| TOTAL  |          |               | <b>7,404</b>                     | <b>3,765</b> | <b>3,639</b> | <b>967</b> |

*Source: Census of India, 2011*

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

In the study area, 51.81% of the population is literate in which male literates are 65.75% and that of females are 34.25%. The overall literacy rate in the study area has been worked out to 60.04%. The male literacy rate is 77.84% and female literacy rate is 41.72%, creating a gender gap in literacy rate of 36.12%.



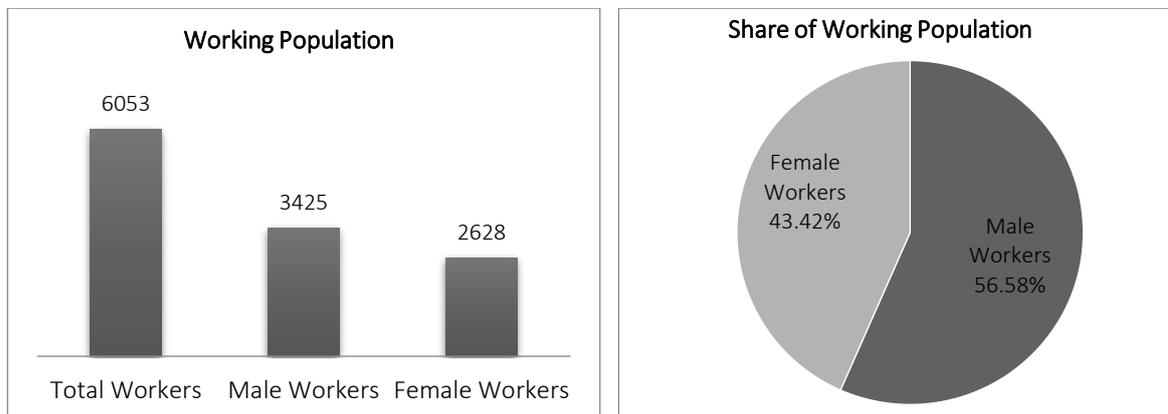
Village wise literate population and literacy rate is given in the table below:

| S. No. | Village  | Tehsil        | Literate Population |              |              | Literacy Rate (%) |              |              |
|--------|----------|---------------|---------------------|--------------|--------------|-------------------|--------------|--------------|
|        |          |               | Total               | Male         | Female       | Total             | Male         | Female       |
| 01     | Tharoli  | Toda Raisingh | 1449                | 930          | 519          | 60.48             | 77.56        | 43.36        |
| 02     | Rampura  |               | 607                 | 446          | 161          | 57.21             | 80.65        | 31.69        |
| 03     | Botunda  |               | 895                 | 588          | 307          | 58.53             | 77.78        | 39.72        |
| 04     | Rajmahal | Deoli         | 3534                | 2300         | 1234         | 60.76             | 77.44        | 43.36        |
| TOTAL  |          |               | <b>6,485</b>        | <b>4,264</b> | <b>2,221</b> | <b>60.04</b>      | <b>77.84</b> | <b>41.72</b> |

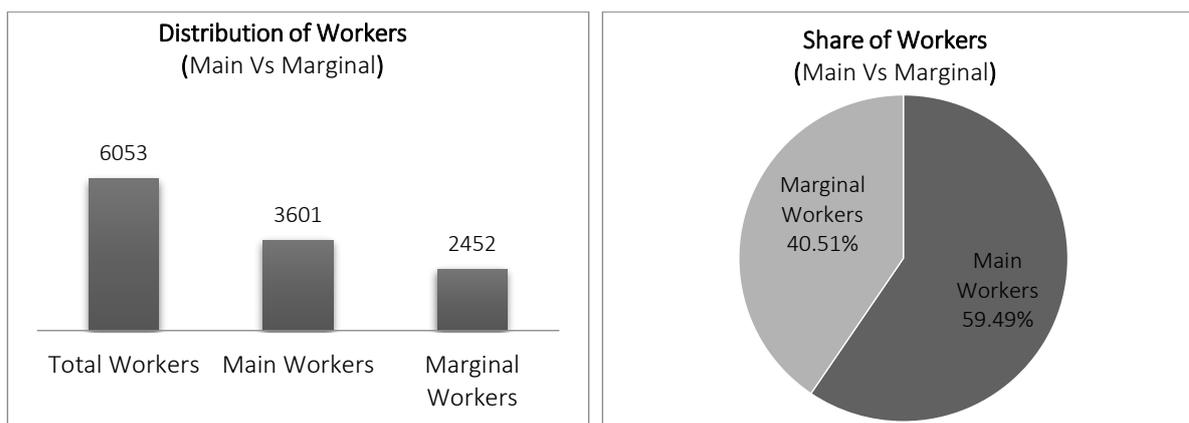
*Source: Census of India, 2011*

## F. Workers and Work Participation Rate

The economic classification of workers as per Census 2011 is saying that total number of workers in the study area is 6,053 which constitute 48.36% of the total population. Of the total workers, 56.58% are males and remaining 43.42% are females. In absolute term, total number of male workers is 3,425 and that of female is 2,628. The gender gap in work participation rate is 13.16%.



Further of the total workers, 59.49% are main workers and remaining 40.51% are marginal workers. Of the total main workers, 67.65% are male and remaining 32.35% are female which creates a gender gap in work participation of 35.30%. In case of marginal workers, 40.33% are male and 59.67% are female that creates a gender gap of minus (-) 19.34% in this segment of work participation.

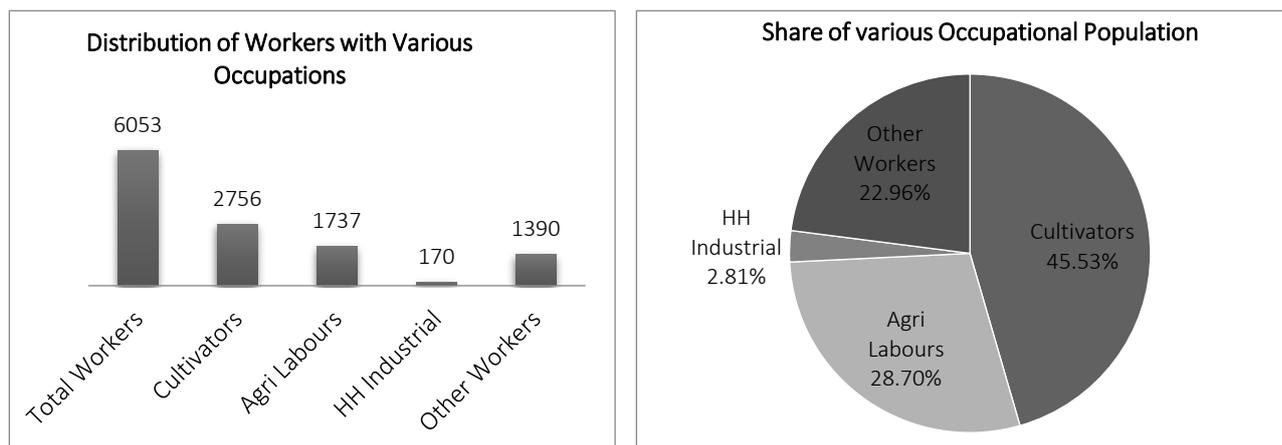


Village wise working population of the study area is given in the table below:

| Village Name | Total Worker |              |              | Main Worker  |              |              | Marginal Worker |            |              |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|------------|--------------|
|              | T            | M            | F            | T            | M            | F            | T               | M          | F            |
| Tharoli      | 1538         | 789          | 749          | 897          | 596          | 301          | 641             | 193        | 448          |
| Rampura      | 705          | 378          | 327          | 379          | 312          | 67           | 326             | 66         | 260          |
| Botunda      | 968          | 471          | 497          | 472          | 307          | 165          | 496             | 164        | 332          |
| Rajmahal     | 2842         | 1787         | 1055         | 1853         | 1221         | 632          | 989             | 566        | 423          |
| <b>TOTAL</b> | <b>6,053</b> | <b>3,425</b> | <b>2,628</b> | <b>3,601</b> | <b>2,436</b> | <b>1,165</b> | <b>2,452</b>    | <b>989</b> | <b>1,463</b> |

*Source: Census of India, 2011*

The workers are further divided into Cultivators, Agricultural Labours, Household Industrial Workers and 'Other Workers'. Their shares in the total workers are 45.53%, 28.70%, 2.81% and 22.96% 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           | Tharoli  | 1538          | 836          | 548                 | 2                            | 152           |
| 02           | Rampura  | 705           | 352          | 283                 | 10                           | 60            |
| 03           | Botunda  | 968           | 359          | 367                 | 26                           | 216           |
| 04           | Rajmahal | 2842          | 1209         | 539                 | 132                          | 962           |
| <b>TOTAL</b> |          | <b>6,053</b>  | <b>2,756</b> | <b>1,737</b>        | <b>170</b>                   | <b>1,390</b>  |

*Source: Census of India, 2011*

Agriculture and allied activities are the main occupation & sources of livelihood and income for most of the local people in the study area. Rabi and Kharif, both are the main crops. 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                                   |                                 |        |
|   | Type of Institutes              | Number |
| Educational Institutions                    | Pre-primary School (Pvt.)       | 07     |
|   | Primary School (Govt.)          | 09     |
|   | Primary School (Pvt.)           | 07     |
|   | Middle School (Govt.)           | 07     |
|   | Middle School (Pvt.)            | 03     |
|   | Secondary School (Govt.)        | 04     |
|   | Secondary School (Pvt.)         | 03     |
|   | Senior Secondary School (Govt.) | 01     |

| <b>HEALTH</b>          |   |                        |
|------------------------|---|------------------------|
| Health Facilities      | <b>Type of Facilities</b>                       | <b>Number</b>          |
|                        | Primary Health Centre                           | 01                     |
|                        | Primary Health Sub-Centre                       | 03                     |
|                        | Maternity and Child Welfare Centre              | 02                     |
|                        | Hospital (Alternative Medicine)                 | 01                     |
|                        | Dispensary                                      | 02                     |
|                        | Hospital (Veterinary)                           | 01                     |
|                        | Family Welfare Centre                           | 01                     |
|                        | Non-Govt. Medical Facilities (For Out Patient)  | 03                     |
|                        | Non-Govt. Medical Facilities (In & Out Patient) | 01                     |
|                        | ASHA  | 04                     |
|                        | Anganwadi Centre (Nutritional Centre)           | 04                     |
|                        | Nutritional Centre- ICDS                        | 04                     |
| <b>WATER</b>           |   |                        |
| Drinking Water         | <b>Means of Drinking Water</b>                  | <b>No. of Villages</b> |
|                        | Tap (Treated & Un-treated)                      | 02                     |
|                        | Well (Covered & Un-covered)                     | 04                     |
|                        | Hand Pump                                       | 04                     |
|                        | Tube wells                                      | 04                     |
|                        | River/Canal                                     | 02                     |
|                        | Tank  | 03                     |
| <b>ELECTRICITY</b>     |   |                        |
| Electricity Supply     | <b>Types of Electricity Available</b>           | <b>No. of Villages</b> |
|                        | Power for Domestic Uses                         | 04                     |
|                        | Power for Agriculture Uses                      | 04                     |
|                        | Power for Commercial or Industrial Uses         | 01                     |
| <b>ROAD</b>            |   |                        |
| Approach Road          | <b>Types of Approach Roads</b>                  | <b>No. of Villages</b> |
|                        | Black Topped (Paved/Pucca) Road                 | 03                     |
|                        | Gravel (Mud/Kachcha) Road                       | 04                     |
|                        | Footpath Road                                   | 04                     |
| <b>TRANSPORTATION</b>  |   |                        |
| Road Transportation    | <b>Types of Road Transportation Available</b>   | <b>No. of Villages</b> |
|                        | Public Bus Services                             | 03                     |
|                        | Private Bus Services                            | 03                     |
|                        | Auto/Modified Autos                             | 02                     |
|                        | Taxi Services                                   | 01                     |
| <b>OTHER AMENITIES</b> |   |                        |
| Other Amenities        | Agricultural Credit Society                     | 02                     |
|                        | Self-Help Group (SHG)                           | 01                     |
|                        | Public Distribution System Shop                 | 04                     |
|                        | Sub-post Office                                 | 03                     |
|                        | Public Library                                  | 01                     |
|                        | Open Drainage                                   | 04                     |
|                        | Closed Drainage                                 | 02                     |

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, River/Canal 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.