Initial Environmental Examination

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India: Rajasthan Secondary Towns Development Sector Project – Additional Financing (PART A)

Bundi Storm Water Drainage

Prepared by Rajasthan Urban Infrastructure Development Project, Government of Rajasthan for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 1 July 2022)

Currency unit – Indian rupee (₹)
₹1.00 = $ 0.01
$1.00 = ₹ 79.09

ABBREVIATIONS

ADB	–	Asian Development Bank
BOCW	–	Building and other Construction Workers
CLC	–	City Level Committee
CPCB	–	Central Pollution Control Board
DPR	–	Detailed Project Report
EHS	–	Environmental Health and Safety
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
IEE	–	Initial Environmental Examination
IFC	–	International Finance Corporation
MOEFCC	–	Ministry of Environment, Forest and Climate Change
PHED	–	Public Health Engineering Department
PIU	–	Project Implementation Unit
PMU	–	Project Management Unit
PWD	–	Public Works Department
REA	–	Rapid Environmental Assessment
ROW	–	Right-Of-Way
RSPCB	–	Rajasthan State Pollution Control Board
RSTDSP	–	Rajasthan Secondary Towns Development Sector Project
RUDSICO-EAP	–	Rajasthan Urban Drinking Water Sewerage and Infrastructure Corporation Limited-Externally Aided Projects
RUDSICO	–	Rajasthan Urban Drinking Water Sewerage and Infrastructure Corporation
ULB	–	Urban Local Body
WHO	–	World Health Organization

WEIGHTS AND MEASURES

m^3	–	cubic meter
dB	–	decibels
^oC	–	degree centigrade
dia	–	diameter
kg	–	kilogram
kl	–	kilolitre
km	–	kilometer
kmph	–	kilometer per hour
KLD	–	kilolitres per day
ha	–	hectare
HP	–	horsepower
LPCD	–	liters per capita per day
lps	–	liters per second
m	–	meter
mg	–	milligram
mm	–	millimetre
MCM	–	million cubic meter
MLD	–	million liters per day
km^2	–	square kilometer

NOTE

In this report, "$" refers to United States dollars.

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APPENDICES:

Appendix C1 – C25 – common appendices, attached separately, provide statutory standards, guidelines, reporting templates etc. are applicable to all subproject IEEs.

List of common Appendices

EXECUTIVE SUMMARY

ADB approved a loan for the Rajasthan Secondary Towns Development Sector Project (RSTDSP, Loan 3972: IND) in September 2020. This is currently under implementation and will close by May 2028. The additional financing (the project) will expand the improved access to WSS services in at least ten urban local bodies (ULBs), benefiting 1.2 million people. Important value addition of the proposed project to the ongoing project is that it will provide innovative solutions to address climate change to respond to the growing climate risks and vulnerability and also to improve livability and prosperity through enhancing natural and/or built heritage at least ten ULBs in Rajasthan, benefiting 1.0 million people. The overall project is aligned with the following impacts: (i) access to potable, affordable, reliable, equitable, environmentally sustainable drinking water supply in all urban areas of Rajasthan improved, (ii) health status of urban population, especially the poor and under-privileged improved, and (iii) productivity, livability and prosperity for the citizens in Rajasthan cities and towns enhanced. Reflecting the additional measures to enhance climate resilience and heritage-sensitive urban development of the project, impact statement (iii) was added; the outcome statement is modified as quality, reliability, equity, and sustainability of urban assets and services in project towns of Rajasthan improved; and additional output was also added, resulting in four outputs.

Bundi is one of the project towns, and improvement of storm water drainage system in Bundi is proposed under the RSTDSP-AF. Following are the proposed components:

- **Storm Water Drainage.** (1) Upgradation of Drain-1 Jaipur bypass - Rani ji ki Baori - Lanka gate – ice factory to UIDSMT Nalla (2.693 km); (2) Upgradation and extension of Drain -2- Agarwal Dharamshala to highway nalla on Silor road (1.210 km); (3) Upgradation of Drain-3 - Khoja gate to ice factory (0.407 km); (4) Upgradation and extension of Drain-4 - Gurudwara Devpura to Nanak PuliyaTiraha (4.008 km) and (5) Upgradation and extension of Drain- 5 - Jait Sagar to Devpura (5.9 km).

Screening and Categorization assessment of potential impacts. Bundi Town storm water drainage subproject is classified as environmental category B per ADB's Safeguard Policy Statement (SPS), 2009, and accordingly this initial environmental examination (IEE) assesses the environmental impacts and provides mitigation and monitoring measures to ensure that there are no significant impacts as a result of the subproject. Per Government of India environmental impact assessment (EIA) Notification, 2006, subproject do not require environmental clearance.

Description of the Environment. Subproject components are in Bundi City and in its immediate surroundings which were converted into urban use for many years ago, and there is no natural habitat left at the proposed subproject sites. The subproject sites are located in existing road right of way (RoW) and government-owned lands. Nearest protected area is Ramgarh Vishdhari Wildlife Sanctuary, about 350 metres from proposed components i.e Jait Sagar Drain. There is one protected monument of national importance, Wall paintings of Hardoti School in the Palace - 300 m from starting point of Jait sagar drain and three protected monuments of local importance. None of the components or located in or close to monuments. There are also some old/heritage buildings in old town area of Bundi, which are not notified or protected, but are part of local heritage. No works are located within these, drainage rehabilitation works are proposed within the existing drains and extension works are within the ROW of the roads along which some of these buildings are located. About 60 number of trees of *Acacia nelotica* may be required to cut, which will be compensated with compensatory plantation.

Potential Environmental Impacts and Mitigation measures. In this draft IEE, negative impacts were identified in relation to location, design, construction and operation of the improved infrastructure. Environmental impacts as being due to the project design or location were not significant as various measures are already included in site planning and preliminary design. No impacts on forests or archaeological resources envisaged. Discharge of wastewater into open drains may deteriorate the drain water quality and receiving water bodies. Sewerage system is also being improved in the city in uncovered areas. Temporary measures suggested to avoid any disturbance / damage to old/heritage buildings during construction of drains.

Potential impacts during construction are considered significant but temporary and are common impacts of construction in urban areas, and there are well developed methods to mitigate the same. All construction activities will be confined to the selected sites and the interference with the general public and community around is minimal. In these works, the temporary negative impacts arise mainly from construction dust and noise, hauling of construction material, waste and equipment on local roads (traffic, dust, safety etc.), mining of construction material, occupational health and safety (OHS) aspects. Construction works will be conducted along public roads in an urban area congested with people, activities and traffic. Therefore, these works may have adverse, but temporary impacts arising mainly from the disturbance of residents, businesses and traffic due to construction work; safety risk to workers, public and nearby buildings due to deep trench excavations in the road; access impediment to houses and business, disposal of large quantities of construction waste etc.

Environmental Management. An environmental management plan (EMP) has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels, along with the delegation of responsibility to appropriate agency. Various design related measures are already included in the project design. During construction, the EMP includes mitigation measures such as (i) proper planning and scheduling of drainage works to minimize public inconvenience; (ii) measures to avoid impacts on heritage building and chance find procedures (iii) barricading, dust suppression and noise control measures; (iv) traffic management measures for works along the roads and for hauling activities; (v) occupational and community health and safety, labour welfare, (vi) provision of walkways and planks over trenches to ensure access will not be impeded; (vii) reuse of excavated materials to extent possible, (viii) spill and sediment control measures to avoid water and soil pollution, etc.,. EMP will guide the environmentally-sound construction of the subproject. EMP includes a monitoring program to measure the effectiveness of EMP implementation and include observations on- and off-site, document checks, and interviews with workers and beneficiaries. A copy of the updated EMP/ site environmental management plan (SEMP) shall be kept on-site during the construction period at all times. The EMP will be included in bids and contracts, and implementation shall be binding on contractors.

Implementation Arrangements. The executing and implementing agencies will remain unchanged from the current project, which are Government of Rajasthan's Local Self Government Department (LSGD) and Rajasthan Urban Drinking Water, Sewerage and Infrastructure Corporation (RUDSICO), respectively. The AF project retains the project management unit (PMU) at the implementing agency, as well as the two Zonal Offices in Jaipur and Jodhpur. Project implementation units (PIUs) have been established in project towns. A total of eight PIUs will manage 18 ULBs under the AF Project. Consultants will support the PMU and PIUs. Project Officer (Environment) at PMU and Safeguard and Safety Officer at each of the PIUs will be responsible for environment management and monitoring activities and will be supported by Safeguard support staff from Supervision Consultant, town staff/team and Environment Safeguard Specialist of Supervision Consultants. Contractor personnel will also include an Environment, Health and Safety (EHS) Engineer in the project construction team.

Consultation, Disclosure and Grievance Redress. The stakeholders were involved in developing the IEE. Informal and formal consultation are conducted with local population of the area at 8 places along with proposed alignment with about 100 persons (90 male and 10 females) in the month of January and July 2022. A City Level Committee (CLC) was held and CLC has appreciated and approved the subproject. The IEE will be made available at public locations; this draft IEE will be disclosed to a wider audience via the ADB and RUDSICO websites. Consultation process will continue during project implementation. A grievance redress mechanism (GRM) will be established to redress public grievances.

Monitoring and Reporting. The PMU, PIU and consultants will be responsible for monitoring and reporting. During construction, results from internal monitoring by the contractor will be reflected in their monthly EMP implementation reports to the PIU. PIU with the assistance of CMSC, will monitor the compliance of contractor, prepare a quarterly environmental monitoring report (QEMR) and submit to PMU. The PMU will oversee the implementation and compliance and will submit semi-annual environmental monitoring reports (SEMR) to ADB. SEMRs will be disclosed on ADB and RUDSICO websites.

Conclusions. The proposed project is unlikely to cause significant adverse impacts, and potential impacts are mainly due to construction and can be mitigated or minimized to acceptable levels through measures included in the EMP. The citizens of the Bundi will be the major beneficiaries of this subproject, (i) Improved drainage system will result in the better environmental conditions of city, (ii) improved public health particularly reduction in vector borne and infectious diseases, (iii) people would spend less on healthcare and lose fewer working days due to illness, so their economic status, as well as their overall health should also improve.

Based on the findings of the IEE, the classification of the project as Category “B” is confirmed. No further special study or detailed environmental impact assessment (EIA) needs to be undertaken to comply with ADB SPS (2009) or GoI EIA Notification (2006). As per primary survey a total 296 trees may be required to cut. At stage of project planning higher side of tree cutting is taken as 300 for assessment of compensatory plantation to be adopted in the project. As per RUDSICO-EAP policy compensatory plantation in the ratio of 1:3 will be required therefore total 180 tree plantations are being suggested for compensatory plantations. During detail survey contractor will be required to confirm the presence of trees on the alignment of drains, which will be required to cut for construction works.

I. INTRODUCTION

A. Rajasthan Secondary Town Development Section Project – Additional Financing

1. Sector Project (RSTDSP, Loan 3972: IND) from its regular ordinary capital resources on 25 September 2020 and became effective on 4 January 2021. The closing date of the current project is 31 May 2028. This project is on track and has performed well consistently since the first quarter of 2021. Under this project, water supply systems are being improved in eight urban local body (ULB) towns (Output 1), and sanitation systems in 13 ULBs (Output 2). During the implementation, an additional 13 ULBs were added to the project for fecal sludge and septage management system development. Under Output 3, capacity building and training activities on sustainable and resilient water supply and sanitation (WSS) operations, hygiene, gender equality and social inclusion conducted.

2. The additional financing (the project) will expand the improved access to WSS services in at least ten urban local bodies (ULBs), benefiting 1.2 million people. Important value addition of the proposed project to the ongoing project is that it will provide innovative solutions to address climate change to respond to the growing climate risks and vulnerability and also to improve livability and prosperity through enhancing natural and/or built heritage at least ten ULBs in Rajasthan, benefiting 1.0 million people. The overall project is aligned with the following impacts: (i) access to potable, affordable, reliable, equitable, environmentally sustainable drinking water supply in all urban areas of Rajasthan improved, (ii) health status of urban population, especially the poor and under-privileged improved, and (iii) productivity, livability and prosperity for the citizens in Rajasthan cities and towns enhanced. Reflecting the additional measures to enhance climate resilience and heritage-sensitive urban development of the project, impact statement (iii) was added; the outcome statement is modified as quality, reliability, equity, and sustainability of urban assets and services in project towns of Rajasthan improved; and additional output was also added, resulting in four outputs.

(i) **Output 1: Resilient water supply systems developed or improved.** By 2028, the project will (i) At least 1,300 km of water supply pipelines will be commissioned through a district-metered area approach for effective non-revenue water (NRW) management, (ii) at least 79,000 households will be connected to an improved water supply system, including at least 95% below poverty line households, with 100% functional meters allowing for the introduction of volumetric billing, (iii) three new water treatment plants (WTPs) will be commissioned with a total capacity of at least 24 million liters per day (mld).

(ii) **Output 2: Resilient and inclusive sanitation systems developed or improved.** By 2028, (i) at least 500 km of sewers will be constructed; (ii) seven sewage treatment plants (STPs) with co-treatment of wastewater and fecal sludge and with a total capacity of at least 30 mld will be commissioned and one existing STP with 10 mld capacity will be upgraded to meet current effluent standards; and (iii) at least 54,000 new household connections (including at least 95% below poverty line households) to the sewer system will be installed.

(iii) **Output 3: Urban assets to enhance climate resilience and heritage living developed or improved.** By 2028, (i) at least 50 km of drainage networks will be constructed in five ULBs; (ii) at least five either kunds or baories rehabilitated and/or reconstructed in three ULBs that were heritage structures built for drainage, rainwater harvesting, and reuse, but currently are not properly functioning; (iii) five water parks rehabilitated in one ULB to enhance water retention and storage capacity and/or to improve people's well-being, both residents and visitors; and (iv)

at least four heritage structures are refurbished in five ULBs to improve the living environment and attract more tourists.

(iv) **Output 4: Institutional and human capacities strengthened for sustainable service delivery, gender equality, and improved public health**.

3. The executing and implementing agencies will remain unchanged. GOR's Local Self Government Department (LSGD) is executing agency and the Rajasthan Urban Drinking Water, Sewerage and Infrastructure Corporation (RUDSICO) is implementing agency.

4. **Bundi Drainage Improvement Works**. This is one of the subprojects proposed under RSTDSP-AF. It will improve drainage system in the town.

B. Purpose of Initial Environmental Examination Report

5. Per ADB's Safeguards Policy Statement, 2009, ADB requires the consideration of environmental issues in all aspects of the Bank's operations. Using rapid environmental assessment (REA) checklist **(Appendix 1),** subproject is unlikely to cause significant adverse impacts, and classified as category B and per ADB SPS requirements this IEE is conducted.

C. Scope of IEE

6. The subproject is proposed for implementation under the small works modality. The IEE is based mainly on field reconnaissance surveys and secondary sources of information. No field monitoring (environmental) survey was conducted; however, the environmental monitoring program developed as part of the environmental management plan (EMP) will require the contractors to establish the baseline environmental conditions prior to commencement of civil works. Stakeholder consultation was an integral part of the IEE. This IEE will be updated during the pre-construction phase to reflect any changes and submitted to ADB for approval. IEE will be further updated during implementation if there are any changes in project scope, design or sites updates will supersede the earlier version.

D. Report Structure

7. This Report contains the following sections:

Executive summary;
(i) Introduction;
(ii) Description of the project;
(iii) Analysis of alternatives;
(iv) Policy, legal and administrative framework;
(v) Description of the environment;
(vi) Anticipated environmental impacts and mitigation measures;
(vii) Public consultation and information disclosure;
(viii) Grievance redress mechanism;
(ix) Environmental management plan; and
(x) Conclusions and recommendations.

II. DESCRIPTION OF PROJECT

A. Bundi Town

8. Location, Area and Connectivity*:* Bundi is one of the towns of Rajasthan state with rustic setting that stands on the foothills of the Aravali Mountains and very famous for its historical Baories, forts and painting. The city is surrounded by rocky and barren hills on North-West side and fertile land on South-East side. The general topography of the town is undulating hilly terrain. The ground level varies from 310 m to 248 m and has an average elevation of 268 m (879 feet).

B. Existing Conditions of the Town

1. Water Supply

9. Current source of water at Bundi town is 26 MLD surface form Kota Barrage and 5 MLD ground water. The town is benefited from Kota Barrage situated in the Kota city approximately at a distance of 30 kms from Bundi. Raw water from Kota Barrage is conveyed to existing WTP of capacity 26 MLD at Jakhmund and further supplied to Mangli H/W in the city & from there by pumping water is transferred to related various CWR to various overhead service reservoir & direct pumping to Zone. Total present production is approximately 26 MLD.The water transmission for raw water 9.9 kms and for treated water 70.14 kms of DI K-9 is already laid in town from WTP to Mangli Head works to various OHSRs located in the city. Dia of existing lines are from 100 mm to 600 mm.

10. The Water supply of Bundi Town is proposed to be further strengthened by construction of 8 MLD WTP at existing PHED Premises at Jhamkund along with strengthening of network piping in five zones of Bundi city in RUIDP Phase-IV.

2. Sewerage

11. The existing sewerage system of Bundi Town consists of the sewerage system established by RUIDP in phase-II under which 13 km sewer line, 950 nos. of house sewer connection and one STP of 8 MLD capacity executed. 5% network was covered under the project. In AMRUT Yojana, Works of sewer network in Zones 1, 2, 3, 4, 5, 6, 8 & 9 and two STPs of 0.5 MLD capacity each in zones 8 and 9 respectively are in progress under AMRUT Yojna. At present, approx. 120 km length of sewer line has been laid (out of total 135 km), and 11916 nos. households have taken house sewer connection (out of total 7480 nos. households have been connected till date).

12. Approx. 150 km sewer network is laid under existing sewerage project under execution in town.13 km has been laid by RUIDP (Phase-II) and 137 km is in the scope of AMRUT Scheme, of which 119.627 km has already been laid. There are no existing sewage pumping stations. Three STPs in the town viz 8 MLD STP based on SBR treatment process for Zones 1, 2, 3, 5, and 6 (Constructed under RUIDP, Phase-II and under operation) and another two STPs each 0.50 MLD under AMRUT for zone 8 & 9 proposed and under execution stage.

13. Sewerage Treatment Plant (WTP). One STP at Devpura; Near Ram Ganj Balaji; Bundi of 8 MLD is treating collected sewerage from town. Sequential Batch Reactor based STP is operational since 2015. Two STPs each 0.50 MLD under AMRUT are separate from the proposed subproject components in RUIDP Phase -IV and will cater only zone 8&9.

14. Almost all are area under town is covered by sewerage/ ongoing sewerage works. Most

of the residential buildings, commercial buildings, and educational institutions have on-site septic tanks. Indiscriminate solid waste disposal is prevalent in the town. There is no industrial area within the catchment area of these drains and sewer system is already established/ under construction by Bundi Municipality under RUIDP Phase -IV and AMRUT scheme. The connectivity to proposed drains will be restricted to storm water only and local body will ensure that no industrial wastewater and sewerage enter in to proposed drains.

A. Existing Drainage System of Bundi

15. The existing storm water drainage system in Bundi comprises of about 12 drains with Mangli River as the ultimate carrier. The city has a natural surface drainage system, and the entire city drains towards Mangali River which is an non perennial river and flows from north-east to south - west of the city. Bundi city for the purpose of storm water drainage system, depends upon the natural surface topography and is divided into five master drainage areas. The Primary drains i.e.; Jait Sagar Nallah are 100 ft. width with 5 ft. depths at various stretches. The following table depicts the list of major drains and their approximate length.

16. In proposed subproject 5 existing drains of Bundi town will be rehabilitated/rejuvenated. Some drain's length will be extended. Jait Sagar to Devpura drain will be extended up to 2.4 km. Gurudwara Devpura to Nanak Bridge circle drain will be extended upto 2.08 km. Agarwal Dharamshala to Highway Nallah drain, Silor road will be extended up to 0.61 km.

Table 1: Details of Existing Drains in Bundi (Highlighted drains are considered in current proposal)

S. No	Name of drain	length
1.	**Bundi Bypass - Rani Ji Ki Bawadi - Lanka Gate - ICE Factory to UIDSSMT Nallah**	**2.693 Km**
2.	**Khoja Gate to Ice Factory**	**0.407 Km**
3.	Circuit House to Gurudwara	0.700 Km
4.	Gurudwara Devpura to Nanak Puliya Tiraha	4.008 Km
5.	**Gurudwara to Nanakpura Tiraha**	**2.000 Km**
6.	Nanakpura Tiraha to Nanakpura Village	1.500 Km
7.	**Jait Sagar to Devpura**	**5.900 Km**
8.	Devpura to Nanakpura Village	2.500 Km
9.	Medical Colony to Highway Nallah	0.300 Km
10.	**Agarwal Dharamshala to Highway Nallah on Silor Road**	**1.210 Km**
11.	Highway Nallah to Agersen Dharamsala	0.600 Km
12.	Agersen Dharamshala to Ambedkar Circle	0.600 Km

3. Need of the Project

17. Bundi is the district headquarter and it is a historic town of Rajasthan having many tourist attractions. Bundi city is surrounded by hills and during the rains the water comes from surrounding areas and accumulates in Jait Sagar and Nawal Sagar ponds. Topography of Bundi is such that water comes from hills in its catchment area which sometimes overflows Shambhu Sagar, Jait Sagar and Nawal Sagar. Surplus water in Jait Sagar is released by opening its gates and discharged to Mangli River through Jait Sagar drain. The existing sections of Jait Sagar Drain are not adequate to carry the surplus discharge of Jait Sagar pond, which results in inundation in city areas. The other drains are also do not have adequate capacity to carry the storm water and are in poor condition. Due to this, many areas in city gets flooded during the rainy season, causing disruption of daily activities.

4. Objectives:

18. **The objectives of the scheme are to:**

(i) Improve infrastructure facilities and help create durable public assets and quality-oriented services in the city and to create healthy environment.
(ii) To improve gap in existing infrastructure, such as Drainage system of the town to make city infrastructure complete, thus improving the city environment.
(iii) Improvement of city drainage system and thus protecting city roads and improvement of quality of life.
(iv) Promote planned integrated development of the city.
(v) The interventions will enhance the infrastructure in the town and will enhance tourism in Bundi district.

B. Proposed Drainage works in Bundi

19. Under this subproject Rejuvenation/ Upgradation and Extension of Five existing drains are proposed.

- Drain-1 - Jaipur bypass - Rani ji ki Baori - Lanka gate – ice factory to UIDSMT Nalla (2.693 Km) - drain stats from Bundi Bypass and ends up at FCI Godam at Chatrapura Road. Here it Joins the existing drain running along the Chatrapur road. This drain continues up to Mangli River. Section 0.60 m x 0.6 m to 2.00 m x 1.50 m, Length 2.693 Km. Upgradation of drain with box type drain in RCC.
- Drain-2 - Khoja gate to ice factory (0.407 Km)- drain starts from Khoja Gate Ganeshji and ends up at Ice Factory, where it joins the drain -1. Thus storm water from Drain-2 onwards Ice Factory (merger point of Drain 2 in Drain 1) is also carried by Drain -1 up to Chatrapura Road, where it joins Existing drain. Section 0.60 m x 0.60 m to 0.75 m x 0.75 m, Length 0.407 Km. Upgradation of existing drain with RCC box type drain.
- Drain-3 - Gurudwara Devpura to Nanak PuliyaTiraha (4.008 Km) - drain starts at Gurudwara Devpura and ends at Nanak Puliya Tiraha. This drain runs along with Bundi Road for its major length and turns Eastward along the New Mandi Road to Join Jetsagar Drain. Beyond this point Jetsagar is a Kachha (Unlined) drain and discharges storm water to Mangli River. Section 1.50 m x 1.50 m to 2.0 m x 2.0 m, Length 4.008 Km. Upgradation upto 2 km existing drain and extension for 2.008 km is proposed. Length of box type drain will be 3.2 km and 0.808 of stone pitching.
- Drain- 4 - Jait Sagar to Devpura (5.9 Km)- Drain starts immediate downstream (below the Gates of Jait Sagar Dam). It is a natural unlined drain and carries excess water of Jait Sagar to Amngli River. This Drain-4 (Jait Sagar Drain) is joined by Drain 3 and storm water

of both the drains is carried to Mangli River by Jait Sagar Drain. Section 5.0 m x 4.5 m to 6.5 m x 3.5 m, Length 5.900 Km traverses through the entire city. It passes through open land (uninhabited) in the initial stretch (less than 1 Km), then through the colonies, and finally again through the open land (about 2.6 Km). The layout of the drain is mostly of cross-country nature and its ROW falls within the jurisdiction of the municipality. Upgradation upto 3.5 km existing drain and extension for 2.46 km is proposed. Length of in situ drain will be 3 km and 2.9 km will be stone pitching.

- Drain -5 - Agarwal Dharamshala to highway nalla on Silor road (1.210 Kms) - drain starts from Agarwal Dharamsala and ends at Highway Nalla along the Seelore Road. From Highway Nala it joins a Kachha Drain (Unlined) and turns eastward to Join Existing drain on Chatrapura Road, which already carries water from Drain 1&2. Section 1.0 m x 1.0 m to 1.50 m x 1.50 m, Length 1.210 Km. Upgradation upto 0.6 km existing drain and extension for 0.61 km is proposed. Entire section of 1.210 km Length will be of box type drain.

20. Thus, final drainage of Drain-1, Drain-2 and Drain-5 is passes through existing unlined kachha drain. This drain runs along the Chatarpura Road up to Government Varist Upadhayay Sanskrit School, Chatarpurs and then it turns westward and is aligned in agricultural areas and finally drains water from Drain 1,2 and 5 to Mangli River. Google Map of proposed and existing drains up to Mangli river is provided in figure 1.

21. . The total length of proposed works in Bundi Drainage is 14.218 km. Of the total length of drainage of 14.218 km., rejuvenation/upgradation in a length of 9.7 km is proposed in existing drains while extension in 5.09 km of drains is proposed. Details of existing drains is depicted in Table 1 and their condition is detailed in Table 2.

Table 2: Proposed Works of Drainage in Bundi

S.No	Name of the Drain	Existing length (In km)	Rejuvenation/ Upgradation (In km)	Extension proposed (In km)	Total length
1	Jaipur bypass – Rani Ji Ki Bawdi – Lanka Gate – Ice Factory – UIDSMT Nallah	3.2	2.640	0.0	2.693
2	Agarwal Dharamshala to Highway Nallah, Silor Road	0.6	0.600	0.61	1.210
3	Khoja Gate to Ice Factory	0.4	0.400	0.0	0.407
4	Gurudwara Devpura to Nanak Bridge circle	2.0	2.000	2.008	4.008
5	Jait Sagar to Devpura	3.5	3.500	2.46	5.900
	Total	**9.7**	**9.14**	**5.078**	**14.218**

Table 3: Details of Proposed Works of Drainage in Bundi based on drain type

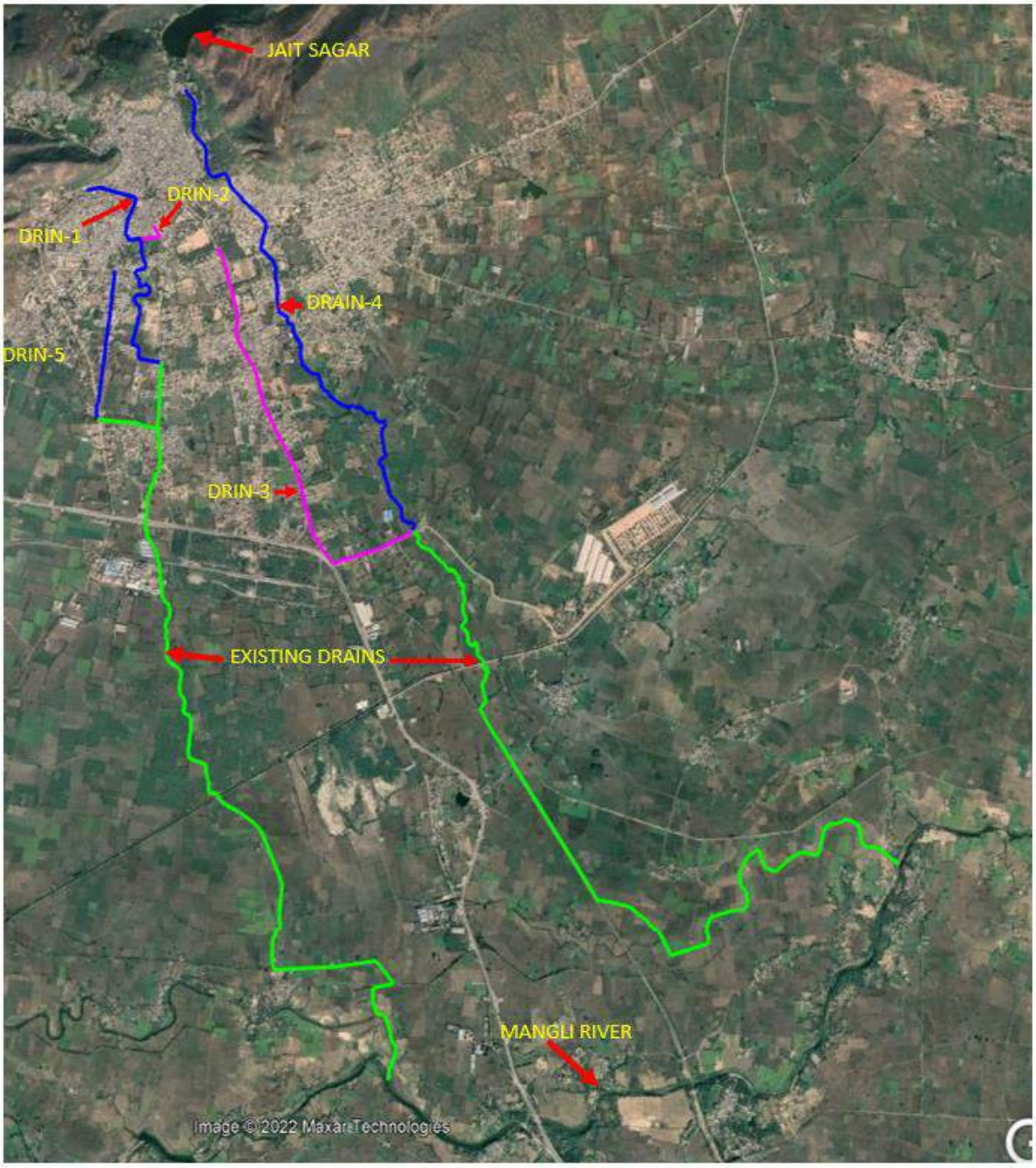
S.N.	Proposed works and location	Description of works
1)	Bundi bypass - Rani ji ki Baori - Lanka gate - ICE factory to UIDSMT Nalla **Length: 2.693**	• Construction of Box Drain in RCC from Bundi bypass - Rani ji ki Baori - Lanka gate - ICE factory to UIDSMT Nalla. • Box Section length- 1.440(A1)+1.250(A2) km. • A1-RCC Box ; A2-Cast in Situ Drain
2)	Khoja gate to ice factory **Length: 0.407 km**	• Construction of Box type drains • From Koja gate to Ice Factory • RCC Box Drain – Entire section
3)	Gurudwara Devpura to Nanak Puliya Tiraha. **Length:4.008 km**	• Construction of Box Drain and Stone Pitching Drain • Fom Gurudwara Devpura to Nanak Puliya Tiraha • Box Drain Length-3.2 km • Stone Pitching-0.808 Km
4)	Jait Sagar Nallah to Devpura **Length:5.900 Km**	• Construction of RCC Cast in Situ Drain & Stone Pitching Drain • From Dargah near jait Sagar to Mangli river • **In situ Drain- 3.0 km** • **Stone Pitching-2.9 km**
5)	Agarwal Dharamshala to highway nalla on Silor road **Length:1.210 Km**	• Construction of RCC Box Drain • **Agarwal Dharamshala to Chattarpur drain** • **RCC Box Drain Length-1.210 km**

Table 4: Drain wise Scope of Work Proposed under Bundi Drainage works and the proposed drain type.

Location	Length of Drain											Total Length of Drain (Mtr)	Remarks
	D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-7A	D-8	D-9	D-10		
Drain name/ Proposed size	**0.6 x 0.6 m**	**0.75 x 0.75 m**	**1.0 x 1.0 m**	**1.0 x 1.25 m**	**1.25 x 1.25 m**	**1.5 x 1.5 m**	**2.0 x 2.0 m**	**2.0 x 2.0 m**	**2.0 x 1.50 m**	**5.0 x 4.5 m**	**6.5 x 3.5 m**		
Jaipur Bypass to FCI godam along with Rani ji ki Bawadi	250	50	400	300	443	300			950			2693	RCC Box / RCC Cast in Situ
Khoja Gate Ganesh ji to Ice Factory		150	257									407	RCC Box
Gurudwara Devpura to Nanak Puliya Tiraha						1170	2000					3170	RCC Box
								838				838	Stone Pitching
Jait Sagar Nallah										3300		3300	RCC Cast in situ
											2600	2600	Stone Pitching
Silor Road (Agarwal Dharamshala to highway nalla on Silor road)			750		300	160						1210	RCC Box
Total	250	200	1407	300	743	1630	2000	838	950	3300	2600	**14218**	

22. Subproject is proposed for implementation under work contract, wherein which the successful bidder will validate design of the proposed drainage systems and components during Service Improvement Plan (SIP) preparation (within three months of contract award) as per updated /changed scope of works/project locations (if any) and revised IEE shall be submitted to ADB for approval and after approval from ADB shall be applicable to contractor throughout the project. Contractor will also conduct Environmental monitoring of baseline conditions of air, noise, water and soil and the same will be reflected in the revised IEE to be prepared during SIP Period. This IEE is revisable document and can be revised anytime during project implementation if there is any considerable change in scope of works, change in location of component, change in cost due to addition or subtraction of components etc. which can change the environmental impacts, and revised IEE shall supersede the earlier version of IEE and shall be contractually applicable to the contractor after approval from RUDSICO-EAP and ADB. Map of proposed drains in Bundi are showed in Figure 1**.**

Figure 1: Map showing Existing (Green) and Proposed (Blue and Pink) Drains on google earth up to Mangli river



Drain -1 Jaipur Bypass to FCI godam along with Rani ji ki Bawadi
Drain – 2 - Khoja Gate Ganesh ji to Ice Factory
Drain – 3- Gurudwara Devpura to Nanak Puliya Tiraha
Drain – 4 - Jait Sagar Nallah
Drain – 5 - Silor Road (Agarwal Dharamshala to highway nalla on Silor road)

Figure 2: Proposed drain and Mangli river in Bundi town Survey of india Toposeet

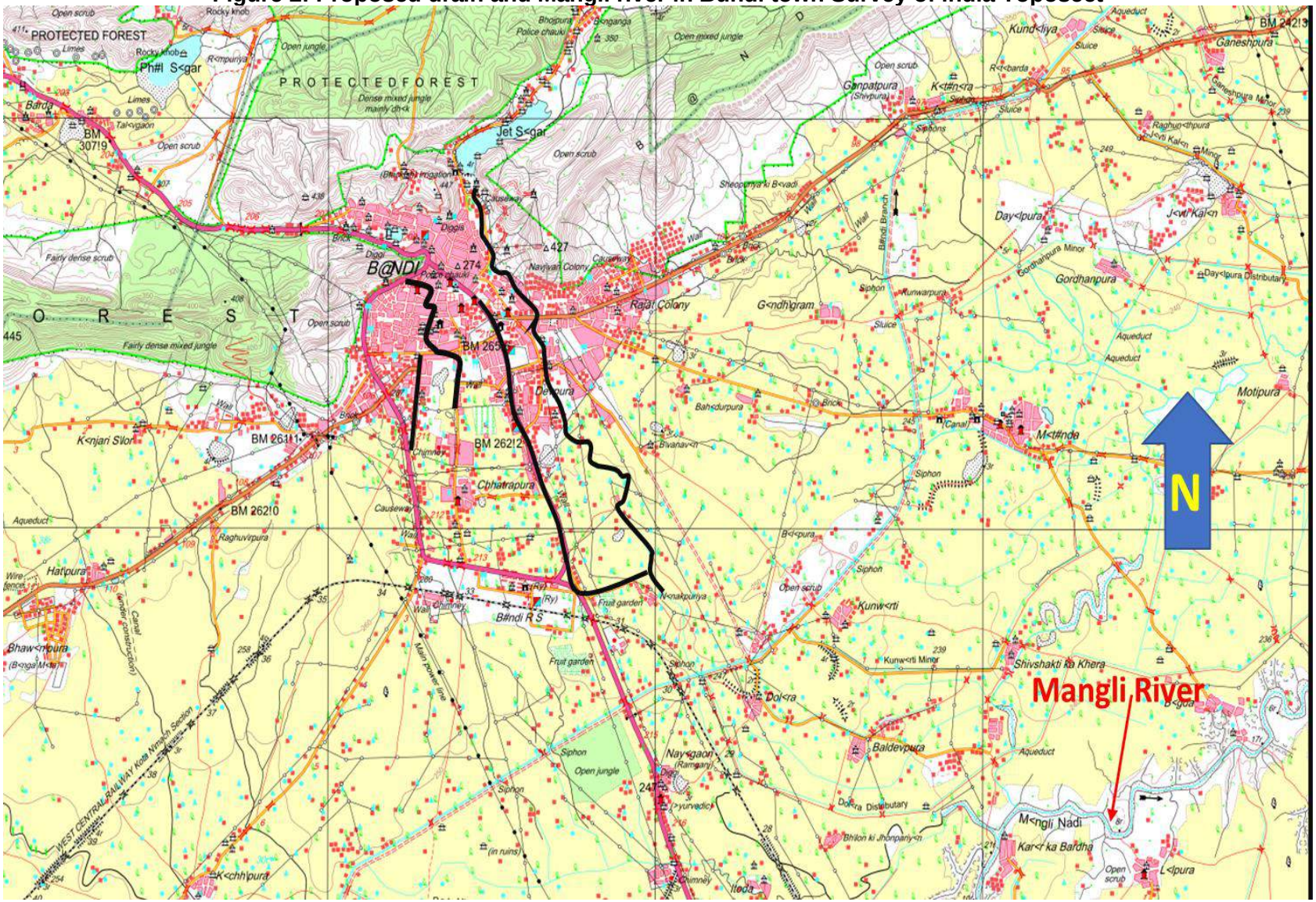


Figure 3: Location of Proposed Drainage (Jait Sagar Nallah to Devpura) in Google Earth Map

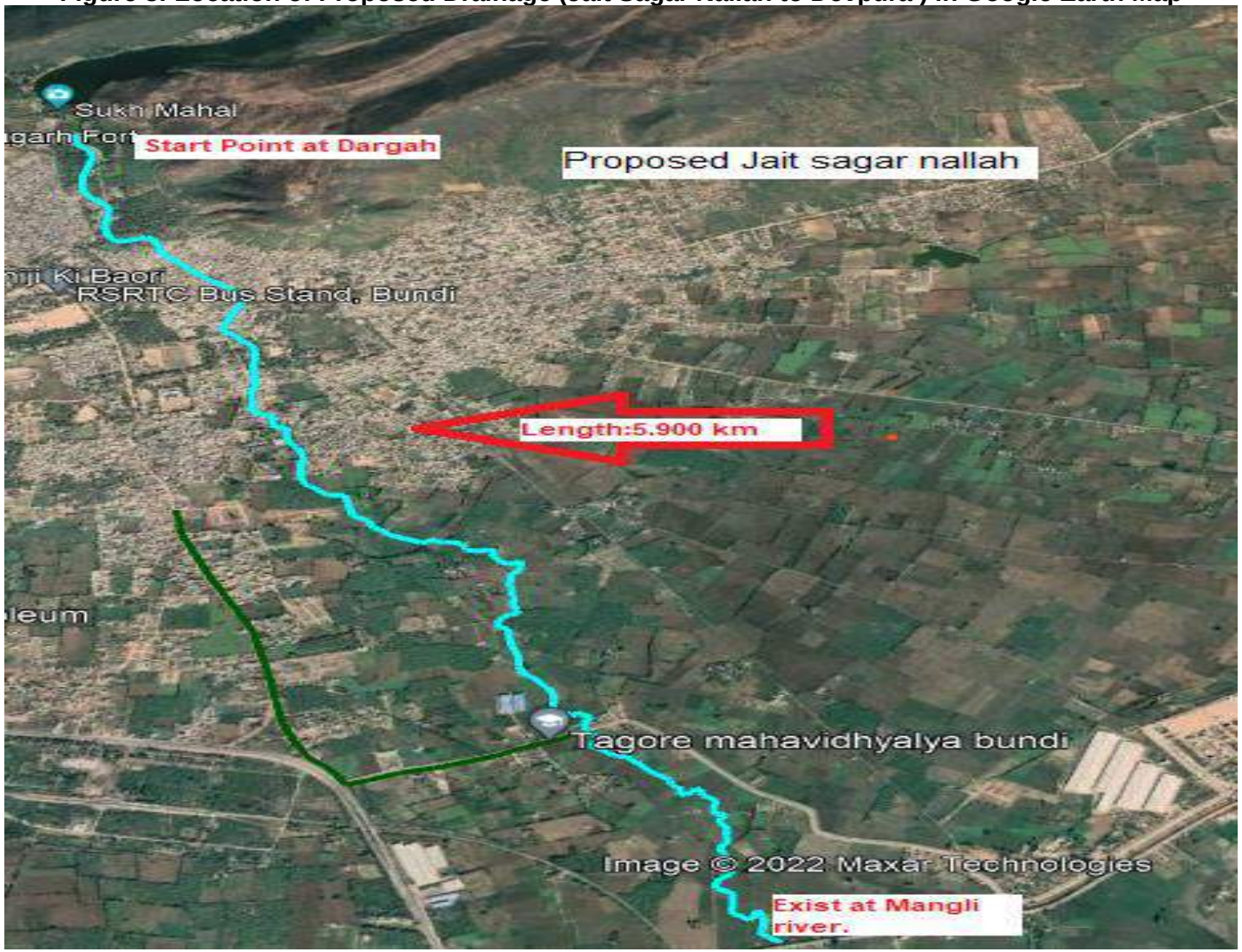


Figure 4: Location of Proposed Drainage (Bundi bypass - Rani ji ki Baori - Lanka gate - ICE factory to UIDSSMT Nalla) in Google Earth Map (Proposed alignment of Nalla in green line)

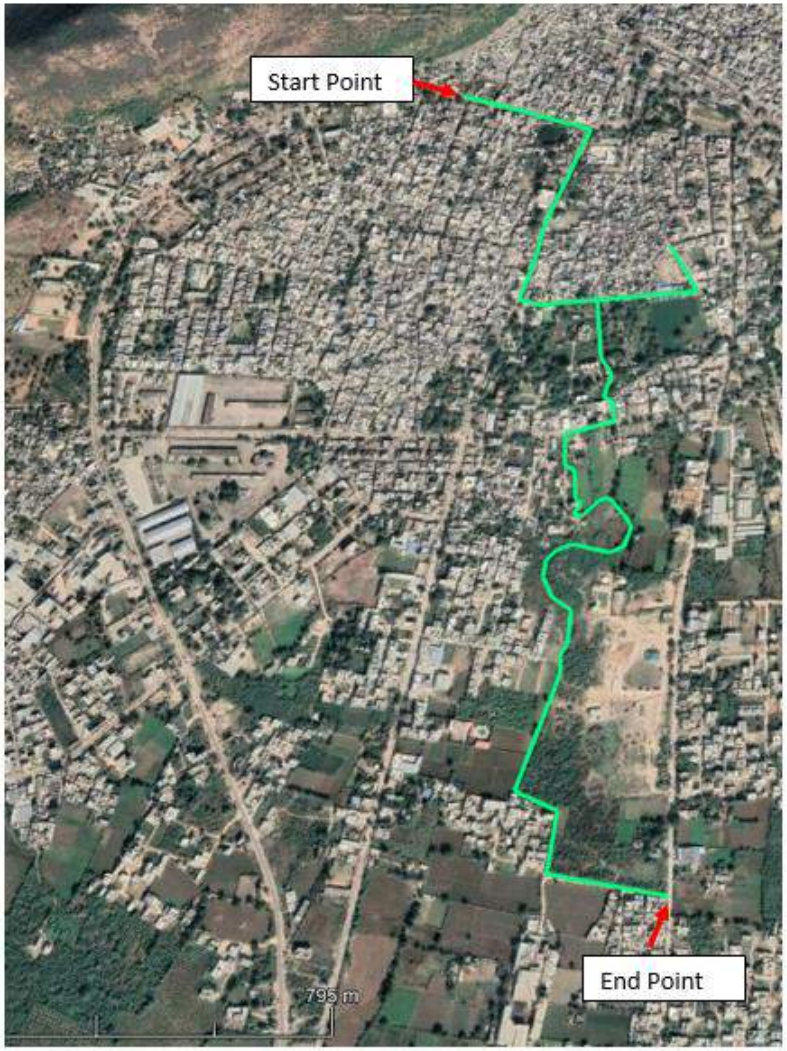


Figure 5: Location of Proposed Drainage (Khoja gate to ice factory) in Google Earth Map

Figure 6: Location of Proposed Drainage (Gurudwara Devpura to Nanak Puliya Tiraha.) in Google Earth Map

Figure 7: Location of Proposed Drainage (Agarwal Dharamshala to highway nalla on Silor road) in Google Earth Map

Figure 8: Layout of Typical Detail of Open Drain (U Through Section)

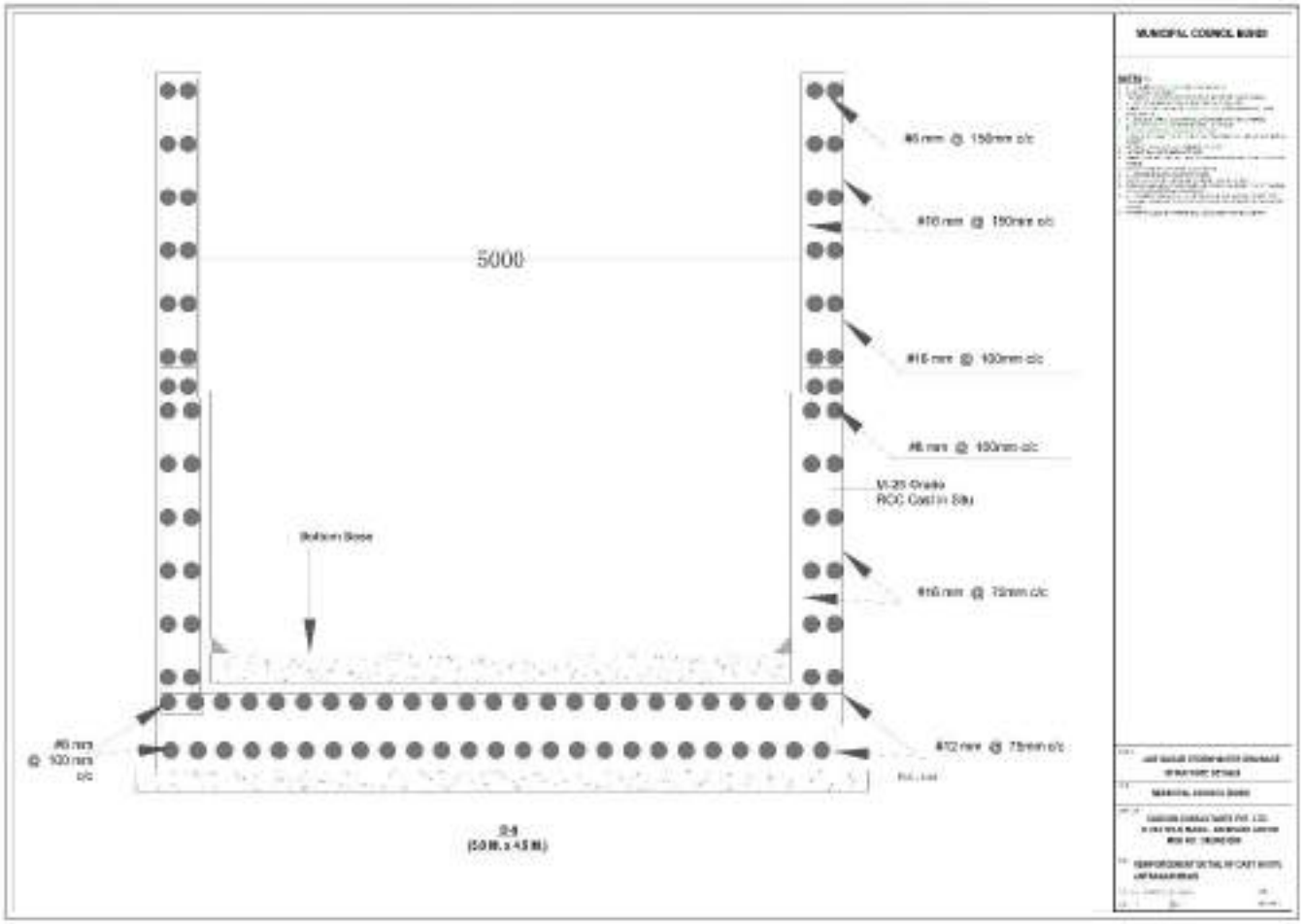
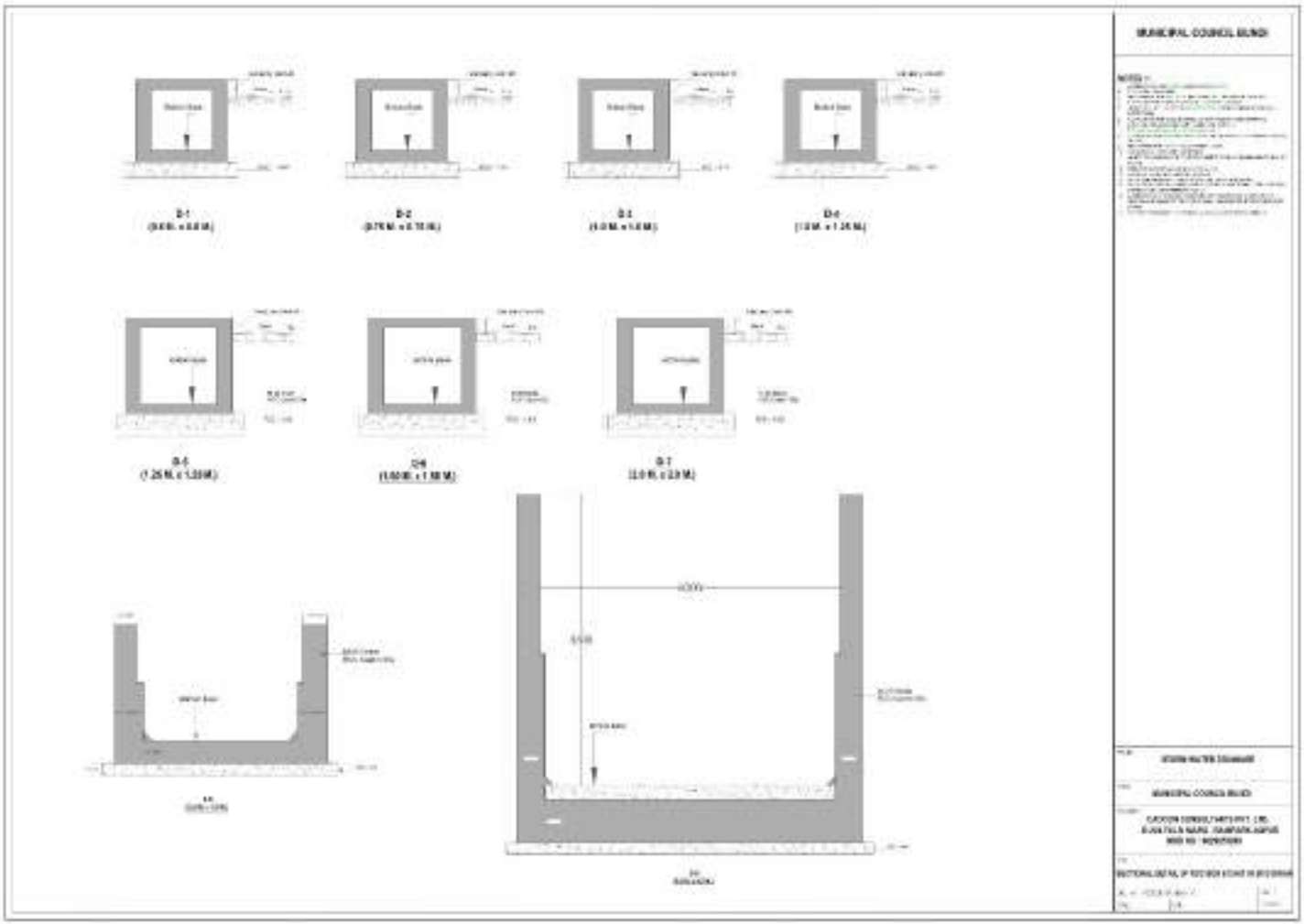


Figure 9: Typical Details of Box Drains & U drains



C. Subproject Benefits

23. The subproject is primarily designed to improve environmental quality and living conditions of Bundi city through provision of drainage improvement works. The existing drain of Jait Sagar Nallah- It is main drain of the city which discharges water from lakes in city to Mangli River. This drain is also used for discharging city drainage and during monsoon its carrying capacity do not meet the demand of discharging city drainage as well as overflow waters from Jait Sagar Lake. Similarly, Khoja gate to ice factory drainage- is damaged and results into flooding of adjacent roads. Agarwal Dharamshala to highway nalla on Silor road drainage- It covers the main market area drainage and is in poor shape and Bundi bypass - Rani ji ki Baori - Lanka gate - ICE factory to UIDSMT Nalla- is a main drain which is not lined at present. Therefore the drainage of Budni requires rehabilitation to improve its adequacy to discharge the city drainage as well as overflowing water from Jait Sagr Lake, during monsoon to ultimate disposal in Mangli River . Implementation of the project will improve the drainage system of Bundi city, thereby liveability of the city.

D. Implementation Schedule

24. After the completion of preliminary designs, bids were invited in September 2022 for the subproject. After evaluation of Bids LOA was issued to successful bidder on 13 January 2023 and thereafter work is awarded. Project duration is 18 months including survey, investigation, inspection & construction. After completion of construction and commissioning, both the drainage works shall be handed over to Bundi Nagar Parishad, who will operate and maintain all five drains.

III. ANALYSIS OF ALTERNATIVES

25. The ADB SPS 2009 requires an analysis of project alternatives to determine the best method of achieving project objectives (which is safely collecting and disposing the water from five major drain, in Bundi Town, in this case) while minimizing environmental impacts. Alternative analysis provides opportunity to integrate environmental considerations into early stages of project (i.e., pre-feasibility or feasibility study), so that adverse environmental impacts can be avoided or minimized by various alternatives. It also provides opportunity to study various options vis a vis costs, provides a logical base, via transparent process, assist in decision making, gaining public support and ultimately in project approvals and timely implementation.

26. The proposed drainage subproject component in Bundi includes strengthening of five major drains of Bundi city, for safe collection and disposal of water into Mangali river and other specific disposal point. Descriptions of various alternatives considered for proposed components are presented in the following Table 5.

Table 5: Analysis of Alternatives

1	**Project Locations (alignment)**
Description of alternatives	Bundi initially had a natural system of drainage and governed by the physiographic profile. Over the years, the population grew and utilizing the available open space more intensely, which has changed the natural drainage physiographic system. The drain system in the town is stabilized in market area and nearby market and is adequate to carry waste water and light storm. The existing drain network is analyzed and provides remedial measures for adequacy of drainage system. As per Bundi Master plan 2031, new inhabitant areas of city are being developing and it was found existing drainage system

	does not cover newly developed area. These drains end up in surrounded irrigation land or in major drain (Nalah). The conditions of these drains are in very poor condition, and its discharge point does not properly connected to major drain (Nalah), that causes water logging at the downstream side with wastewater. The existing drains under observation are constructed with RCC and PCC or stone or brick masonry. Therefore, due to topography of the area the waste water and the storm water of the area either fall in Near by lakes or in the town, in the event of heavy storm the Jait Sagar overflows and Jait Sagar Drain do not cope with the situation emerging form overflow of water or intentional release of surplus water from the Jait Sagar Lake. This results in flooding in city areas. Similarly, other drains are also capable to discharge the waste water and are not adequate to discharge storm water as well as waste water.. The location at drain crossing the road RCC box (AA class) drain are consider for drain depth less than 1 meter and to carry the vehicular load as recommended by CHPEEO Manual. The alignment of major storm water drains under each drainage zones are identified based on the topography and sloping of Drainage area. To the maximum extent, the alignments are proposed along the existing road network only, to avoid any land acquisition. Location (alignment) of Jait Sagar Nala up to Mangli River- The entire city drains towards Mangli River which is a non perennial river and flows from north-east to south-west of the city. As per the Topography of terrain and existing major drains and also keeping in view of their flow direction and ultimate disposal, The alignment of major storm water drains under each drainage zones are identified based on the topography and sloping of Drainage area. To the maximum extent, the alignments are proposed along the existing road network only to avoid any land acquisition. Therefore proposed alignments of drains are selected based on available ROW and govt. lands, and no project alternative selected.

IV. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORKS

A. ADB Safeguard Policy

27. ADB SPS Requires that during the design, construction, and operation of the project necessary compliance to all applicable laws and international conventions / treaties along with pollution prevention and control technologies and practices consistent with international good practice, are ensured.

28. ADB uses a classification system to reflect the significance of a project's potential environmental impacts. A project's category is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts in the project's area of influence. Each proposed project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts. Projects are assigned to one of the following four categories:

(i) Category A. A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An Environmental Impact Assessment (EIA) is required.
(ii) Category B. A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination (IEE) is required.
(iii) Category C. A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.
(iv) Category FI. A proposed project is classified as category FI if it involves investment of ADB funds to or through a FI.

29. The environmental impacts of Bundi Drainage subproject have been identified and assessed as part of the planning and design process. An environmental assessment using ADB's REA checklist for Urban Development (see **Appendix 1**) was conducted, and results of the assessment show that the subproject is unlikely to cause significant adverse impacts. Thus, this IEE has been prepared in accordance with ADB SPS's requirements for environment category B projects.

30. **Environmental Management Plan.** An EMP which addresses the potential impacts and risks identified by the environmental assessment shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the Project's impact and risks.

31. **Environmental Audit of Existing Facilities.** ADB SPS, 2009 requires an environmental audit, if a subproject involves facilities and/or business activities that already exist or are under construction, including an on-site assessment to identify past or present concerns related to impacts on the environment. The objective of this compliance audit is to determine whether actions were in accordance with ADB's safeguard principles and requirements for borrowers/clients, and to identify and plan appropriate measures to address outstanding compliance issues.

32. **Public Disclosure.** The IEE will be put in an accessible place (e.g., local government offices, libraries, community centers, etc.), and a summary translated into local language for the project affected people and other stakeholders. The following safeguard documents will be put up in ADB's website so that the affected people, other stakeholders, and the public can provide meaningful inputs into the project design and implementation:

(i) For environmental category A projects, a draft EIA report at least 120 days before Board consideration;
(ii) Final or updated EIA and/or IEE upon receipt; and
(iii) Environmental monitoring reports submitted by the PMU during project implementation upon receipt.

33. **Consultation and Participation.** ADB SPS, 2009 require borrower to conduct meaningful

consultation[1] with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. The consultation process and its results are to be documented and reflected in the environmental assessment report.

34. **Grievance Redress Mechanism.** ADB SPS, 2009 require borrowers to establish a mechanism to receive and facilitate resolution of affected people's concerns, complaints, and grievances about the subproject's performance. The grievance mechanism shall be scaled to the risks and adverse impacts of the subproject.

35. **Monitoring and Reporting.** Borrower shall monitor, measure and document the implementation progress of the EMP. If necessary, the borrower shall identify the necessary corrective actions, and reflect them in a corrective action plan. Borrower shall prepare and submit to ADB semi-annual environmental monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any. For subprojects likely to have significant adverse environmental impacts during operation, reporting will continue at the minimum on an annual basis until ADB issues a project completion report.

36. **Unanticipated Environmental Impacts.** Where unanticipated environmental impacts become apparent during subproject implementation, ADB SPS, 2009 requires the borrower to update the environmental assessment and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.

37. **Occupational Health and Safety.** ADB SPS, 2009 requires the borrower[2] to ensure that workers[3] are provided with a safe and healthy working environment, taking into account risks inherent to the sector and specific classes of hazards in the subproject work areas, including physical, chemical, biological, and radiological hazards. Borrower shall take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work, including: (i) identifying and minimizing, so far as reasonably practicable, the causes of potential hazards to workers; (ii) providing preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives to use and comply with health and safety procedures and protective equipment; (v) documenting and reporting occupational accidents, diseases, and incidents; and (vi) having emergency prevention, preparedness, and response arrangements in place.

38. **Community Health and Safety.** ADB SPS, 2009 requires the borrower to identify and assess risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of the subproject, and shall establish preventive measures and plans to address them in a manner commensurate with the identified risks and

[1] Per ADB SPS, 2009, meaningful consultation means a process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle 1; (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues.

[2] In case where responsibility is delegated to subproject contractors during construction phase, borrower shall ensure that the responsibilities on occupational health and safety are included in the contract documents.

[3] Including nonemployee workers engaged by the borrower/client through contractors or other intermediaries to work on project sites or perform work directly related to the project's core functions.

impacts.

39. **Physical Cultural Resources.** Borrower is responsible for siting and designing the subproject to avoid significant damage to physical cultural resources. ADB SPS, 2009 requires that such resources likely to be affected by the subproject are identified, and qualified and experienced experts assess the subproject's potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process. When the proposed location of a subproject component is in areas where physical cultural resources are expected to be found as determined during the environmental assessment process, chance finds procedures shall be included in the EMP.

40. **ADB SPS International Best Practice Requirements**. ADB SPS, 2009 requires that, during the design, construction, and operation of the project, the executing agency shall apply pollution prevention and control technologies and practices that are consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety (EHS) Guidelines. (IFC's General EHS Guidelines[4] and Sector Specific [Water and Sanitation] Guidelines[5]). These standards contain performance levels and measures that are normally acceptable and applicable to projects. These standards contain performance levels and measures that are normally acceptable and applicable to projects. When Government of India regulations differ from these levels and measures, the PMU and PIUs will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the PMU and PIUs will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS, 2009.

B. National Laws

41. The implementation of the subprojects will be governed by Government of India and State of Rajasthan and other applicable environmental acts, rules, regulations, and standards. These regulations impose restrictions on the activities to minimize or mitigate likely impacts on the environment. It is the responsibility of the project executing and implementing agencies to ensure subprojects are consistent with the legal framework, whether applicable international, national, state or municipal or local. Key standards include those related to drinking water quality, air quality, effluent discharge, and protected areas. Compliance is required in all stages of the subprojects including design, construction, and operation and maintenance.

42. **Environmental assessment.** The Government of India EIA Notification of 2006 (replacing the EIA Notification of 1994), sets out the requirement for environmental assessment in India. This states that environmental clearance is required for specified activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts.

43. **Category A** projects require environmental clearance from the central Ministry of Environment, Forests and Climate Change (MOEFCC). The proponent is required to provide preliminary details of the project in the prescribed manner with all requisite details, after which an Expert Appraisal Committee (EAC) of the MOEFCC prepares comprehensive terms of reference

[4] https://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final%2B%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES

[5] https://www.ifc.org/wps/wcm/connect/e22c050048855ae0875cd76a6515bb18/Final%2B%2BWater%2Band%2BSanitation.pdf?MOD=AJPERES

(TOR) for the EIA study. On completion of the study and review of the report by the EAC, MOEFCC considers the recommendation of the EAC and provides the environmental clearance if appropriate.

44. **Category B** projects require environmental clearance from the State Environment Impact Assessment Authority (SEIAA). The State level EAC categorizes the project as either B1 (requiring EIA study) or B2 (no EIA study) and prepares TOR for B1 projects within 60 days. On completion of the study and review of the report by the EAC, the SEIAA issues the environmental clearance based on the EAC recommendation. The Notification also provides that any project or activity classified as category B will be treated as category A, if it is located in whole or in part within 10 km from the boundary of protected areas, notified areas or inter-state or international boundaries.

45. None of the components of this Drainage subproject falls under the ambit of the EIA Notification 2006, and, therefore EIA Study or environmental clearance is not required for the subproject.

46. **Applicable environmental regulations.** Besides EIA Notification 2006, there are various other acts, rules, policies and regulations currently in force in India that deal with environmental issues that could apply to infrastructure development. The specific regulatory compliance requirements of the subproject are shown in Table 6.

C. Environmental Regulatory Compliance

47. **Table 6** presents a summary of environmental regulations and mandatory requirements applicable to Bundi Drainage subproject.

Table 6: Applicable Environmental Regulations

Law	Description	Requirement	Relevance to Project Phase
National Environment Policy (NEP), 2006.	NEP is a comprehensive guiding document in India for all environmental conservation programs and legislations by Central, State and Local Government. The dominant theme of this policy is to promote betterment of livelihoods without compromising or degrading the environmental resources. The policy also advocates collaboration method of different stakeholders to harness potential resources and strengthen environmental management.	RSTDSP should adhere to NEP principle of “enhancing and conservation of environmental resources and abatement of pollution”.	All phases of project
Rajasthan State Environment Policy, 2010	Follows the National Environment Policy, 2006 and core objectives and policies are: -Conserve and enhance	Project implementation should adhere to the policy aims of: conservation and enhancement of environmental resources,	All phases of project

Law	Description	Requirement	Relevance to Project Phase
And Rajasthan Environment Mission and Climate Change Agenda for Rajasthan (2010-14)	environmental resources; assure environmental sustainability of key economic sectors; and, improve environmental governance and capacity building - it recommends specific strategies and actions to address the key environmental issues: water resources, desertification and land degradation, forest and biodiversity, air quality, climate change: adoption and mitigation, mining, industry, tourism, energy, urban development, etc. - Establishment of Environment Mission under the chairpersonship of the Chief Minister and a Steering Committee under the chairpersonship of Chief Secretary, Government of Rajasthan Tasks force set up for six key areas	integration of environmental concerns into projects/plans, and capacity building in environmental management. Under water sector, major concerns, as the policy notes, are huge water losses and wastage, declining water availability, pollution. Relevant recommendations for the project include control of losses, integrated water resources management, control of raw water pollution, reuse and recycling. Avoid/minimize use of forest lands. With reference to climate change adoption and mitigation following should be considered in the project: (i) diminishing flows in surface water bodies, and groundwater depletion, and revival traditional water bodies as water sources (lakes/tanks); (ii) equal stress on demand side management in water; and (iii) minimize energy use - design energy efficiency systems.	
EIA Notification,2006	Projects indicated in the schedule of this notification require EIA study and environmental clearance.	None of the components of this subproject falls under the ambit of the notification; no EIA study or environmental clearance required	-
Central Ground Water Authority (CGWA) Public Notice 2/100	Public Notice specifies districts and areas where there are restrictions on the construction and installation of any new structure for extraction of groundwater resources without specific approval from the CGWA	No new ground water well are proposed in subproject	Not applicable
Central Ground Water Authority under Department Of Water Resources, River	extraction of ground water for drinking & Domestic use for Residential apartments/ Group Housing Societies/ Government water supply agencies in urban	For grant of No Objection Certificate for ground water extraction, the project proponent has to furnish the details as per the guidelines	Pre-construction/ construction and operation

Law	Description	Requirement	Relevance to Project Phase
Development And Ganga Rejuvenation-Gazette Notification dtd. 24.09.2020	areas need to take NOC from Central Ground Water Authority (CGWA)	issued by the CGWA in proper format as available in CGWA website (https://cgwa-noc.gov.in/LandingPage/index.htm). No new ground water well are proposed in subproject	
Water (Prevention and Control of Pollution) Act of 1974, Rules of 1975, and amendments (1987)	Act was enacted to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water, by Central and State Pollution Control Boards and for conferring on and assigning to CPCB/SPCBs powers and functions relating to water pollution control. Control of water pollution is achieved through administering conditions imposed in consent issued under provision of the Water (Prevention and Control of Pollution) Act of 1974. These conditions regulate the quantity and quantity of effluent, the location of discharge and the frequency of monitoring of effluents. Any component of the subproject having the potential to generate sewage or trade effluent will come under its purview. Such projects have to obtain Consent to establish (CTE) under Section 25 of the Act from Rajasthan State Pollution Control Board (RSPCB) before starting implementation and Consent to Operate (CTO) before commissioning.	Proposed project components does not require consent under this Act	Not applicable
Air (Prevention and Control of Pollution) Act of 1981, Rules of 1982 and amendments.	This Act was enacted to achieve prevention, control and abatement of air pollution activities by assigning regulatory powers to Central and State boards for all such functions. The Act also establishes ambient air quality standards. The projects having potential to emit air pollutants into the	The following will require CTE and CTO from RSPCB: (i) Diesel generators (more than 15 KVA); (ii) Batching Plant hot mix plants; and (iii) stone crushers, if installed for construction. All relevant forms, prescribed fees and procedures to obtain the CTE and CTO can be found	Construction and operation

Law	Description	Requirement	Relevance to Project Phase
	atmosphere have to obtain CTE and CTO under Section 21 of the Act from RSPCB. The occupier of the project/facility has the responsibility to adopt necessary air pollution control measures for abating air pollution.	in the RSPCB website (http://environment.rajasthan.gov.in) If ready mix concrete and hot mix bitumen is procured from third party, contractor has to ensure that the plants, from where material is being purchased is having CTE/CTO and copy should be collected from third party and submitted in PIU	
Biodiversity Act of 2002	This Act primarily addresses access to genetic resources and associated knowledge by foreign individuals, institutions or companies, to ensure equitable sharing of benefits arising out of the use of these resources and knowledge to the country and the people.	Not Applicable	-
Wildlife Protection Act, 1972 and amendment 1991	This overarching Act provides protection to wild animals, birds, plants and matters connected with habitat protection, processes to declare protected areas, regulation of wildlife trade, constitution of state and national board for wildlife, zoo authority, tiger conservation authority, penalty clauses and other important regulations.	Not applicable, all subproject components are placed out the area of wildlife sanctuaries. Bundi district has 3 wildlife sanctuaries, the nearest one is Ramgarh Vishdhari Wildlife Sanctuary [6] is located 2 kilometres from Bundi on the Bundi-Nainwa road.	Not Applicable
Forest (Conservation) Act, 1980	The Forest (Conservation) Act prohibits the use of forest land for non-forest purposes without the approval of Ministry of Environment Forests & Climate Change (MoEFCC), Government of India	Not applicable; none of the components of the subproject are located in forest.	Not Applicable
Environmental (Protection) Act, 1986 amended in 1991 and the following rules/notifications:	This is an “umbrella” legislation that empowers the Central Government to take all necessary measures to protect and improve the quality of the environment and prevent, control and abate environmental pollution. Empowers central government to enact various rules to	There are rules / notifications that have been brought out under this Act, which are relevant to RSTDSP, and are listed below	Construction and operation

[6] Recently Ramgarh Vishdhari Sanctuary is declared at tiger reserve and eco sensitive zone notification is in draft format. Before start of construction subproject’s components distance from wildlife sanctuary required to be reverified

Law	Description	Requirement	Relevance to Project Phase
	regulate environmental pollution, including standards for quality of air, water, noise, soil; discharge standards or allowable concentration limits for environmental pollutants, handling of hazardous substances, locating/prohibiting industries, etc.,		
Environmental Standards (ambient and discharge).	Emissions and discharges from the facilities to be created or refurbished or augmented shall comply with the notified standards	**Appendix C-2** provides ambient air quality standards; **Appendix C-5** provides emission limits for vehicle exhaust and **Appendix C-3** provides emission limits of DG sets and **Appendix C-4** provided emission stack height requirements for diesel generators	Construction and operation
Noise Pollution (Regulation and Control) Rules, 2000 amended up to 2010.	Rule 3 of the Act specifies ambient air quality standards in respect of noise for different areas/zones.	**Appendix C-7** provides applicable noise standards	Construction and operation
Solid Waste Management Rules 2016	Responsibility of Solid Waste Generator segregate and store the waste generated in three separate streams namely bio-degradable, non-biodegradable and domestic hazardous wastes in suitable bins and handover segregated wastes to authorized waste pickers or waste collectors as per the direction or notification by the local authorities from time to time; store separately construction and demolition waste, as and when generated, in his own premises and shall dispose off as per the Construction and Demolition Waste Management Rules, 2016; (iii) No waste generator shall throw, burn or burry the solid waste generated by him, on streets, open public spaces outside his premises or in the drain or water bodies.	Contractor to follow all the rules during construction works	Construction and operation
Construction and Demolition Waste Management	(i) Every waste generator shall segregate construction and demolition waste and	Construction waste shall be collected at stockpile area for 8-10 days and will be sent to	Construction

Law	Description	Requirement	Relevance to Project Phase
Rules 2016	deposit at collection centre or handover it to the authorized processing facilities (ii) Shall ensure that there is no littering or deposition so as to prevent obstruction to the traffic or the public or drains (iii) Large generators (who generate more than 20 tons or more in one day or 300 tons per project in a month) shall submit waste management plan and get appropriate approvals from the local authority before starting construction or demolition or remodelling work, (iv) Large generators shall have environment management plan to address the likely environmental issues from construction, demolition, storage, transportation process and disposal / reuse of C & D Waste. (v) Large generators shall segregate the waste into four streams such as concrete, soil, steel, wood and plastics, bricks and mortar, (vi) Large generators shall pay relevant charges for collection, transportation, processing and disposal as notified by the concerned authorities;	disposal site. Disposal site shall be identified and allotted by Municipality after mobilization of contractor (during SIP period) and can't be mentioned at this time. Contractor to follow all the rules during construction works. Sludge or any material if classified as hazardous waste / material is to be handled and disposed according to this Rules	
Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016,	Responsibilities of the occupier for management of hazardous and other wastes. - (1) For the management of hazardous and other wastes, an occupier shall follow the following steps, namely:- (a) prevention; (b) minimization; (c) reuse, (d) recycling; (e) recovery, utilization including co-processing; (f) safe disposal. (2) The occupier shall be responsible for safe and environmentally sound management of hazardous and other wastes. (3) The hazardous and other wastes generated in the establishment	Contractor to comply all the requirements of this Act during construction works.	Construction and operation

Law	Description	Requirement	Relevance to Project Phase
	of an occupier shall be sent or sold to an authorized actual user or shall be disposed of in an authorized disposal facility. (4) The hazardous and other wastes shall be transported from an occupier's establishment to an authorized actual user or to an authorized disposal facility in accordance with the provisions of these rules. (5) The occupier who intends to get its hazardous and other wastes treated and disposed of by the operator of a treatment, storage and disposal facility shall give to the operator of that facility, such specific information as may be needed for safe storage and disposal. (6) The occupier shall take all the steps while managing hazardous and other wastes to- 6 (a) contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and (b) provide persons working in the site with appropriate training, equipment and the information necessary to ensure their safety.		
Wetlands (Conservation and Management) Rules, 2017	The Rules specify activities which are harmful and prohibited in the wetlands such as industrialization, construction, dumping of untreated waste and effluents, and reclamation. The Central Government may permit any of the prohibited activities on the recommendation of Central Wetlands Regulatory Authority.	Not applicable as subprojects components are not located in or near to designated wetland area.	Not applicable
Ancient Monuments and Archaeological Sites and Remains Act, 1958 and Ancient Monuments and Archaeological Sites and Remains	The Act designates areas within 100 meters (m) of the "protected monument/area" as "prohibited area" and beyond that up to 200 m as "regulated area" respectively. No "construction" is permitted in the "prohibited area" and any construction activity in the "regulated area" requires prior	There is no cause of impairment to historical/cultural monuments /areas and loss /damage to these sites and no cultural heritage site present near the proposed drains. Wall painting of Hardoti school in the palace is nearest ASI protected monument about 300	Not Applicable

Law	Description	Requirement	Relevance to Project Phase
(Amendment and Validation) Act, 2010.	permission of the Archaeological Survey of India (ASI).	m form proposed Jait Sagar Drain in Northern direction in Bundi.	
The Rajasthan Monuments, Archaeological Sites and Antiquities Act, 1961; the Rajasthan Monuments, Archaeological Sites and Antiquities (amendment) Act 2007	Any construction/excavation work in the 'protected area' (as declared by GoR under the Act) requires prior permission of Department of Archaeology & Museums -Application under the Rules shall be submitted to Director, State Archaeological Department, at least 3 months prior to the work. Department provides conditional permission, including time for completion, procedures to be followed during the work and for chance finds et–.	In case of chance finds, the contractor/ PIU will be required to follow a protocol as defined in the Environmental Management Plan (EMP Some of cultural assets in the form of religious places or historically important sites present in the project area are Shiv Temple, Inscription of Hamir and Raniji-ki-Baori. Raniji-ki-Baori having 50 m distance from nearest proposed drain. However, these cultural heritage sites may not come within the project influence area and utmost care will be provided to the nearby areas during constructional phase with adequate protection measures and by effectively implementing Environmental Management Plan**.**	Not applicable
The Building and Other Construction Workers (BOCW) Act 1996 and Rajasthan Building and Construction Workers Rules 2009	**Employer shall-** • Provide and maintain, at suitable point, sufficient quantity of wholesome drinking water, such point shall be at least 6 meters away from any washing areas, urinals or toilets • Provide sufficient urinals and latrines at convenient place, easily accessible by workers • Provide free of charge, temporary living accommodations near to work sites with separate cooking place, bathing and lavatory facilities and restore the site as preconditions after completing the construction works • Provide crèche with proper accommodation,	Contractors are required to follow all the provisions of BOCW Act and Rajasthan BOCW Rules. Salient features of Rajasthan BOCW Rules are- Chapter III, section 17- Registration of establishments Chapter VIII, section 61- Hours of works, intervals or rest and spread over, overtime Section 62- weekly rest Section 63- night shift Section 67- registers of workers Section 68- Muster roll, wages register Section 70- latrine and urinal facilities Chapter XI- Safety and Health Section 78- fire protection Section 79- emergency action plan Section 80- fencing of motors	Construction

Law	Description	Requirement	Relevance to Project Phase
	ventilation, lighting, cleanliness and sanitation if more than fifty female workers are engaged • Provide first aid facilities in all construction sites **For safety of workers employer shall provide-** • Safe access to site and workplace • Safety in demolition works • Safety in use of explosives • Safety in operation of transporting equipment and appoint competent person to drive or operate such vehicles and equipment • Safety in lifting appliance, hoist and lifting gears • Adequate and suitable lighting to every workplace and approach • Prevention of inhalation of dust, smoke, fumes, gases during construction works and provide adequate ventilation in workplace and confined space • Safety in material handling and stacking/un stacking • Safeguarding the machinery with fly-wheel of moving parts • Safe handling and use of plants operated by compressed air • Fire safety • Limit of weight to be lifted by workers individually • Safety in electric wires, apparatus, tools and equipment • Provide safety net, safety sheet, safety belts while working at height (more than 1.6 mtrs as per OSHA) • Providing scaffolding,	Section 81- lifting and carrying of weight Section 82- H&S policy Section 83- dangerous and harmful environment Section 84- Overhead protection Section 88- eye protection Section 89- PPEs Section 90- electrical hazards Section 97- use of safety helmets and shoes Chapter XIII-lifting appliances and gears Chapter XV- transport and earth moving equipment Chapter XVI- concrete works Chapter XVII- demolition works Chapter XVIII-Excavation and tunnelling Chapter XX- ladders and step ladders Chapter XXII- structural frame and formworks Chapter XXIV- medical facilities and first aid box	

Law	Description	Requirement	Relevance to Project Phase
	ladders and stairs, lifting appliances, chains and accessories where required • Safety in pile works, concrete works, hot asphalt, tar, insulation, demolition works, excavation, underground construction and handling materials • Provide and maintain medical facilities for workers • Any other matters for the safety and health of workers		
Contract Labor (Regulation and Abolition) Act, 1970; The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979	Provides for welfare measures to be provided by the Contractor to contract labor 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 a License from the designated Officer. The Act is applicable to the establishments or Contractor of principal employer if they employ 20 or more contract labor. 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.,	• Applicable to all construction works in the project • Principle employer (RUDSICO-EAP) to obtain Certificate of Registration from Department of I, as principle employer • Contractor to obtain license from designated labor officer • Contractor shall register with Labor Department, if Inter-state migrant workmen are engaged • Adequate and appropriate amenities and facilities shall be provided to workers including housing, medical aid, traveling expenses from home and back, etc., **Appendix C-12** provides applicable labour laws including amendments issued from time to time applicable to establishments engaged in construction of civil works.	Construction and operation
The Child Labour (Prohibition and Regulation) Act, 1986	Prohibits employment of children below 14 years of age in certain occupations and processes Employment of child labor is prohibited in building and construction Industry.	No child labour should be employed	Construction and operation
Minimum Wages Act, 1948	Minimum wages fixed by appropriate Government as per	Applicable to all construction works in the project	Construction and operation

Law	Description	Requirement	Relevance to Project Phase
	provisions of the Act if the employment is a scheduled employment. Construction of buildings, roads and runways are scheduled employment.	All construction workers should be paid not less than the prescribed minimum wage	
Workmen Compensation Act, 1923	Provides for compensation in case of injury by accident arising out of and during the course of employment.	Compensation for workers in case of injury by accident	Construction and operation
Equal Remuneration Act, 1979	Provides for payment of equal wages for work of equal nature to male and female workers and not for making discrimination against female employees in the matters of transfers, training and promotions etc.	Equal wages for work of equal nature to male and female workers	Construction and operation
Rajasthan Forest Act, 1953 and Rajasthan Forest Rules, 1962	This Act makes the basis for declaration of Reserved Forests, constitution of village forest committees, management of reserved forests and penalties and procedures.	Not applicable; none of the components / alignment are in reserved or community forest areas.	Construction
International conventions and treaties			
Ramsar Convention, 1971	The Ramsar Convention is an intergovernmental treaty that provides the framework for national action and international co-operation for the conservation and wise use of wetlands and their resources. India is one of the signatories to the treaty. The Ramsar convention made it mandatory for the signatory countries to include wetland conservation in their national land use plans.	There are no Ramsar sites in or near Bundi. Not applicable to Bundi drainage subproject.	Not applicable
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973	India is a signatory of this convention which aims to control international commercial trade in endangered species	Not applicable in this project as no endangered species of wild fauna and flora is found in project locations.	-
Montreal Protocol 1992	India is a signatory of this convention which aims to reduction in the consumption and production of ozone-depleting substances (ODS), while recognizing differences in a nation's responsibilities.	Not applicable in this project as no ODS are involved in construction works	Not applicable

Law	Description	Requirement	Relevance to Project Phase
	Ozone depleting substances are divided in two groups Chlorofluorocarbons (CFCs) and Hydrochlorofluoro carbons (HCFCs)		
Basel Convention on Trans-boundary Movement of Hazardous Wastes, 1989	India is a signatory of this convention which aims to reduce trans-boundary movement and creation of hazardous wastes	Contractor to follow the provisions of Hazardous Waste Rules 2016 for storage, handling, transport and disposal of hazardous waste emerged during construction works Under this Convention, asbestos or asbestos waste in the form of dust and fibers is classified as hazardous waste.	Not applicable
Convention on Migratory Species of Wild Animals (CMS), 1979 (Bonn convention)	CMS, also known as Bonn convention, was adopted in 1979 and entered into force on 1 November 1983, which recognizes that states must be the protectors of migratory species that live within or pass through their national jurisdictions, and aims to conserve terrestrial, marine and avian migratory species throughout their ranges. Migratory species threatened with extinction are listed on Appendix I of the Convention. CMS Parties strive towards strictly protecting these species, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them. Migratory species that need or would significantly benefit from international cooperation are listed in Appendix II, and CMS encourages the Range States to conclude global or regional agreements.	Not applicable to this project as no migratory species of wild animals are reported in the project areas.	Not applicable

48. **Clearances / permissions to be obtained prior to start of construction**. **Table 5** shows the list of clearances/permissions required for project construction. This list is indicative and the contractor should ascertain the requirements prior to start of the construction, and obtain all necessary clearances/permission prior to start of construction.

Table 7: Clearances and permissions required for Construction activities

S. No	Construction Activity	Statute under which Clearance is Required	Implementation
1	Land for project activity	Allotment and approval for specific land use from Bundi Nagar Parishad	Municipal Corporation/Bundi Nagar Parishad
2	Establishment of construction camps	Allotment and approval for specific land use	Contractor
3	Tree Cutting	State forest department/Revenue (Tehsildar)	PIU
4	Hot mix plants, Crushers, Batching plants and DG Set	Consent to establish and consent to operate under Air Act, 1981 from RSPCB	Contractor
5	Storage, handling and transport of hazardous materials	Hazardous Wastes (Management and Handling) Rules. 2016 Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989 from RSPCB	Contractor
6	Sand mining, quarries and borrow areas	Permission from District Collector/ State Department of Mines & Geology	Contractor
7	New quarries and borrow areas	Environmental clearance under EIA Notification 2006	Contractor
8	Use of vehicles and equipment	Pollution under control certificate (PUC) form RTO	Contractor
9	Temporary traffic diversion measures	Temporary traffic diversion measure including use of alternate road from District traffic police	Contractor
10	Use of Railways ROW for construction area/ crossing	Indian Railways	PIU
11	Use of highway ROW for construction area/ crossing	National Highway Authority of India-	PIU

49. PMU will be overall responsible for getting all clearances and provide details to ADB through semi-annual report. PMU will ensure all necessary regulatory clearances and approvals are obtained prior to commencement of works. Respective PIUs, with support of project consultants and contractors, are responsible for obtaining the clearances/permits and ensuring conditions/specifications/provisions are incorporated in the subproject design, costs, and implementation. The PIUs shall report to PMU the status of compliance to clearances/permits as part of the regular progress reporting.

V. DESCRIPTION OF ENVIRONMENT

A. Physical Resources

1. Location, Area & Connectivity

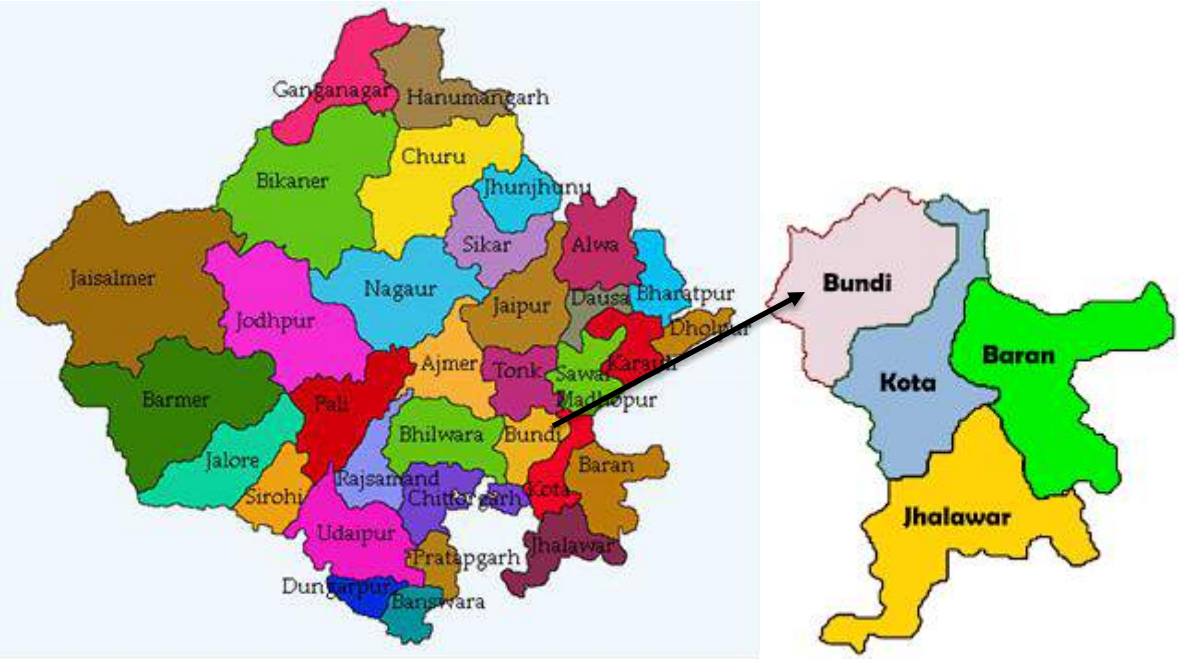
50. Bundi town is a district headquarter of Bundi district in state of Rajasthan. Bundi is situated in the south-east of Rajasthan. Bundi is a small city in the Hadoti region of Rajasthan, which is famous for its beautiful forts and palaces, and step-well reservoirs (local name: Baoris). Bundi District is situated at a distance of about 210 km from Jaipur, the capital of Rajasthan. The total area of the district is 5776 sq.km. This accounts for 1.68 % of the total area of Rajasthan. Bundi lies between 24°59'11"& 25°53'11" north latitude and 75°91'30" & 76°19'30" east longitudes.

51. It is bounded in the north by Tonk district, and in the south by Chittaurgarh district. The

river Chambal forms the south-eastern boundaries and separates Bundi from Kota. A double line of hills (Vindhyan rocks) running through the district in the north-east and south-west directions. It is varying in height between 300 and 1,793 feet above sea level.

52. Bundi town is very famous for its Baoris (waterworks or stepwells), havelis (Rajasthani houses), temples and chhatris (elevated, dome-shaped pavilions) with carved pillars. The mural adorned palaces, the forts and the monuments tell tales about the glorious past of the town. A picturesque lake where the entire town and the palaces get reflected in the lake adds a stunning quality to the place. In the past, a tribe called Meena inhabited this region and Bundi derived its name from the tribe' chieftain's name - Bunda Meena. In the 12th century Bundi came under the dominion of the Chauhans and reached its highest glory in the medieval times. The glory of Bundi declined with the Mughal rule and later became an independent state. Hindi, Urdu, Rajasthani and Mewadi are all spoken in Bundi, as well as a number of local languages.

Figure 10: Location of Bundi Town in Rajasthan State Map



2. Topography, Soils and Geology

53. **Topography**. Topography of the district is characterized by flat to undulating terrain with small isolated mounds. It is divided in almost two equal parts by NE-SW trending Vindhyan Range. The general topographic gradient is from southwest to northeast in the southern part of the Range whereas to the northern part of the ridge the gradient is generally from west to east. High elevation hills are found southern part of the district around Budhpura and to the west of Bundi city. Chambal is the most prominent River in the district and there are some important tributaries like Dungari, Bhimlat, Mej, Bajian, Sugll and Kupal etc. The general topographic elevation in the district is between 250 m to 300 m above mean sea level. Elevation ranges from a minimum of 200 m above mean sea level in Keshorai Patan block in the south-eastern part of the district and maximum of 547.1 m above mean sea level In Talera block in southern part of the district

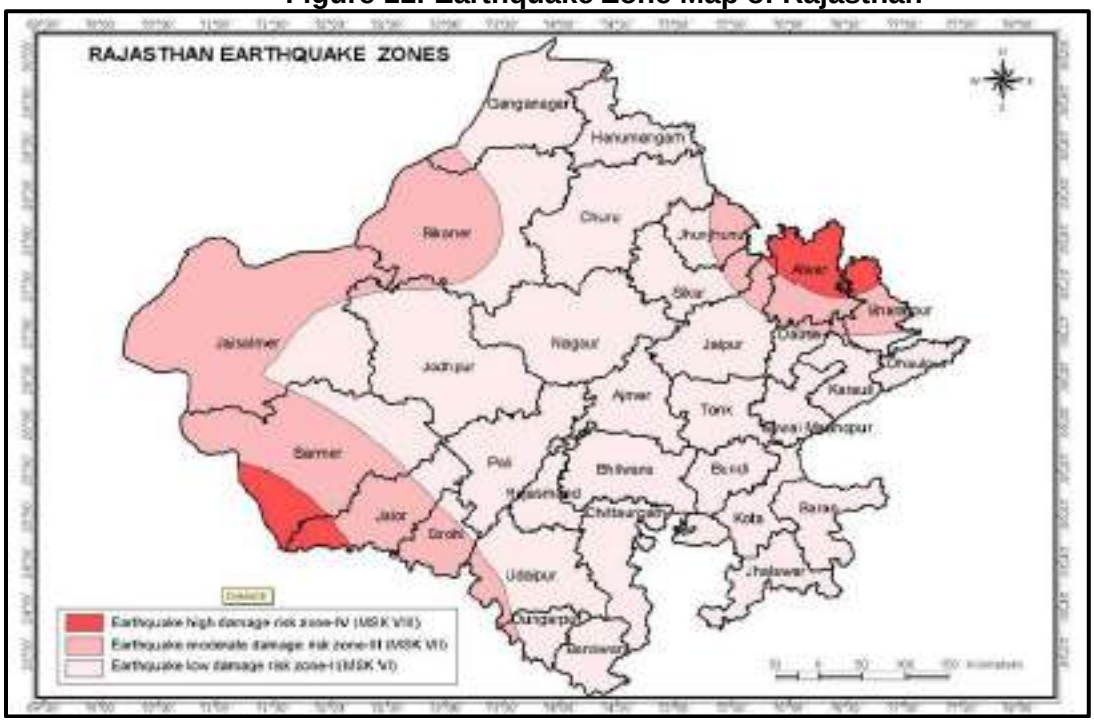
54. **Soils**. Soil of the region falls within low rainfall zone of 650-1000 mm. The soil is generally black of alluvial origin, clay loam with saline ground water.

55. Rock types exposed in the area belongs to the Bhilwara Supergroup (Archaean) and the Vindhyan Supergroup (Middle to Upper Proterozoic).The Bhadesar shale ,slate , phyllite, quartzite and dolomitic limestone belonging to the Hindoli Group of the Bhilwara Supergroup are exposed mainly near Hindoli and Khinia in the northeren part. These are intruded by the Kaimur ,the Rewa and Bhander Groups , in decreasing order of antiquity .The kaimur Group is represented by conglomerate and Akoda Mahadeo Sandstone. The Bhander Group of rocks are best exposed between Bundi and Lakheri .The contact between the Hindolis and the Vindhyans is marked by thrusts and faults.

56. Limestone is the most important mineral of the district. Deposits have been located near Bundi, Lakheri, and Satur. Limestone occurs sandwiched between the Ganurgarh Shale and the Lower Bhander Sandstone. An indicated reserves of 850 million tons with 42.73 % calcium oxide (CaO) has been estimated. Glass sand occurrences are located near Barodia and Satur. Barytes near Umar occurs as small veins at the contact of limestone and schist. Minor occurrence of copper near Barodiya, marble at Umar and iron near Manak Chawk have also been reported.

57. **Seismology**: Many parts of the Indian subcontinent have historically high seismicity. Seven catastrophic earthquakes of magnitude greater than 8 (Richter scale) have occurred in the western, northern and eastern parts of India and adjacent countries in the past 100 years. Approx. 59 % of the land area of India is liable to seismic hazard damage. In India, seismic zones are divided into four zones i.e., V, IV, III and II. As per the seismic zoning map of India, Bundi Town falls under the Zone II, which is the lowest earthquake risk zone in India. This zone is termed as “low damage risk zone” (figure 11). Hence the risk of earthquake at the proposed sites is minimal and so the site is safe.

Figure 11: Earthquake Zone Map of Rajasthan



3. Demographic Profile

Table 8: Population growth Bundi, Rajasthan			
Census	**Population**	**Decadal Growth (Increase in Population per Decade)**	**% Increase in Population per Decade**
1981	48027		
1991	65047	17020	35.44%
2001	88871	23824	36.63%
2011	103286	14415	16.22%

B. Climatic Conditions

58. The city has a dry climate except in the monsoon seasons. The winter season runs from mid-November to February and summer season runs from March to mid of June. The period from mid of June to September is the monsoon season followed by the months October to mid of November constitutes the post monsoon or the retreating monsoon. The average rainfall in the district is 850 mm. January is the coldest month with the average daily maximum temperature of 24.3'C and the average daily minimum temperature of 10.6'C. The project area has got a sub-tropical climate with moderate to hot temperature, ranges between 7 Degree C to 45 Degree C and relative humidity drops to about 20 % during March, April and May. July-August is most humid period averaging 70% to 80% humidity.

1. Surface Water

59. The main Bundi Rivers include Chambal and Kushal. The Chambal River dissects the two districts of Bundi and Kota and forms the southern boundary of the Bundi District. Chambal River is not only the Perennial River among the rivers of Bundi but among the rivers of Rajasthan. The length of the river is 165 km. Chambal River flows about 376 km in Rajasthan. The major town of Keshorai Patan lies on the bank of the Chambal River. Kushal River is also another small river in Bundi. There are 3 famous lake situated in surroundings of Bundi 1) Jait Sagar lake, 2) Kanak Sagar lake & 3) Nawal Sagar Lake

60. Jait Sagar lake is located at a distance of three kilometers from Bundi. Mountains surround the lake from all sides. The lake was built by Jaita Meena the ruler of Bundi in 14th century AD. Later got repaired by Gehlotni Jayvanti, the mother of Rao Raja Sarjan Singh The beautiful fountain in the lake presents a beautiful sight to the spectators at night.

61. Kanak Sagar is a historic lake at the Dugari town of the Bundi district . It is famous for migrated birds around the year. Lake is about 67 km away from the main city of Bundi. Kanak Sagar has covered a total area of 44.85 Hectares.

62. This lake is famous for water animals and birds. The lake accords home to Pelicans, Black-tailed Godwit, Little Ringed Plover, Snail bird, Common Sweeper Bird, and Common Gull Bird. This lake is also famous for the Indian Screamer bird, Bar-Headed Goose.

63. Nawal Sagar Lake is a huge, manmade lake that can be seen from the Talagarh Fort. This lake has more than a few small islands. This lake is located in the middle of the city. The mirror

image of the entire city of Bundi falls on the serene waters of this lake making it a unique tourist destination.

2. Rivers in Bundi district

64. Chambal river's name is based on the ancient mythological river Charmawati. The river starts from Manpur near Mhow in Madhya Pradesh. It is covered a total area of 965 km and flows through a long narrow and steep gorge at Chaurasigarh. Where the Chambal River falls from 884.4 meters at its source to 505 meters. Again Chambal river enters the gorge from about 113 km and leaves it near the Kota district of Rajasthan.

65. The Chambal stream runs north for about 257 km and crossed the Jawahar Sagar sanctuary. Chambal river makes the boundary between Kota and Bundi districts of Rajasthan. Its total length is 376 km and depth 50 meters.

66. After crossing the Kota district, the Chambal river flows the boundary of Sawai Madhopur and Districts with the Madhya Pradesh state of India. Then, it finally enters in the Uttar Pradesh and engaged with the Yamuna River near Etawah. Chambal is the only river of Rajasthan which flows all over the year. It has beautiful sites and excellent resources for the development of cheap hydel power and irrigation facilities.

67. The Chambal River is famous for wildlife, Dams, endangered species, and also for history. It has 2 wildlife sanctuaries in Rajasthan Jawahar Sagar Wildlife Sanctuary in Kota and National Chambal Sanctuary in Dholpur.Red-crown turtles and Gangetic river Dolphins are endangered species only found in the Chambal River. And Indian Skimmers are only seen around Chambal River between Kota to Dholpur district.Chambal River has a total of 4 dams and all are in Rajasthan like Gandhi Sagar Dam, Jawahar Sagar Dam, Rana Pratap Sagar Dam, and Kota Barrage.

68. **Kota Barrage** is the fourth construction in the Chambal Valley Project over River Chambal, perineal river of Rajasthan. It was built to store water, release by the three upstream dams of the Chambal Valley project i.e. Gandhi Sagar Dam, Jawahar Sagar Dam and Rana Pratap Sagar Dam, and then channelize it to the dry areas of Rajasthan and Madhya Pradesh for irrigation purposes via canals. At present, it helps in agriculture in around 20,000 acres of land. The 19-gate long barrage forms a bridge over River Chambal at Kota.

69. The Kota Barrage has its roots in scarcity and necessity of water distribution. It was in the 1950s and water was being harnessed at the Gandhi Sagar Dam, Jawahar Sagar Dam and Rana Pratap Sagar Dam - the three dams of Chambal River of Rajasthan, for hydroelectricity. However, the authorities realised that this water was not getting enough channelization and that agriculture in parts of both Rajasthan and Madhya Pradesh was suffering because of water scarcity. That is when a barrage was set up in Kota to hold huge amounts of water and further regulating and diverting them to the areas in need of water via canals.

70. After the completion of construction in 1960, the Kota Barrage started discharging water to both the states. According to an agreement, 50% water of Kota Barrage goes to Madhya Pradesh. At present, almost 20,000 acres of land are being benefitted by water irrigated by Kota Barrage, of which 11,300 acres are in Madhya Pradesh.

71. Kota Barrage stretches for a catchment area of 27,332 sq. Km in total. The primary support of the barrage is the Jawahar Sagar dam which holds 99 million cubic metres. The concrete

spillway leads to a 188 cubic metres discharge capacity canal on the right and a 42 cubic metres one on the left. Like a typical barrage, it obviously serves as a bridge over River Chambal between the two sides. The barrage operates through 19 gates to control the flow of water and regulate it accordingly.

3. Mangli River

72. Mangli river originates in Bundi District itself and is a tributary to Mej River, which in turn is a left bank tributary of Chambal River and joins Chambal River in Kota District. Thus, the Mej river Catchment extends over Bundi District while two other districts also form its catchment and these are Bhilwara District and tonk District. Famous Bhimtal waterfall is also situated in Mangli river, which is upstream to Bundi city.

73. Surface water quality monitoring results show that all physical and chemical parameters fall within the permissible limit of Water quality for Indian Standards as well as WHO's prescribed limits, except for turbidity which is higher than acceptable limits.

Table 9: Surface Water Quality of Kota barrage (Source: PHED, Bundi on dated 19.08.2019)

National Standards for Drinking Water			WHO Guidelines for Drinking-Water Quality, 4th Edition, 2011[b]	Sampling sites								
Parameter	Unit	Max. Concentration Limits		Raw water		Treated water						
				Kota barrage		CF Water	Inlet Chamber No. 1	Inlet Chamber No. 2	Inlet Chamber No. 4	CWR NR WTP	CWR NR Pump House	CWR At Mangli
Date of Sample				30.07.2019	03.12.20	19.08.19	19.08.19	19.08.19	19.08.19	19.08.19	19.08.19	19.08.19
Turbidity	NTU	1 (5)	-	5.65	2.40	9.22	1.00	1.70	2.92	7.18	5.56	6.98
pH		6.5 – 8.5	none	7.23	7.73	6.04	---	---	---	7.43	6.74	7.21
TDS	mg/l	500 (2,000)	-	208	182							
Chloride	mg/l	250 (1,000)	none established	30	30	---	---	---	---		---	---
Nitrate	mg/l	45	50	7	1	---	---	---	---	---	---	_____
Total Alkalinity (as $CaCO_3$)	Mg/l	200 (600)		90	100							
Total Hardness	mg/l	200 (600)	-	100	96	---	---	---	---		---	---
Residual Chlorine	mg/l	0.2	5		---	2.0	1.5	1.5	1.5	5.0	5.0	---
Fluoride	mg/l	1 (1.5)	1.5	0.249	0.244							

Bureau of India Standard 10500: 2012.

- Health-based guideline values.
- Figures in parenthesis are maximum limits allowed in the absence of alternate source

4. Groundwater

74. Ground water occurs under water table conditions both in unconsolidated and consolidated formations. Its occurrence is controlled by topography, physiography and structural features of the geological formations. The movement of ground water in hard rock areas is governed by size, openness, interconnection and continuity of structurally weak planes while in unconsolidated rocks, ground water movement takes place through pore spaces between grains. The district is characterised by five types of soils given below (a). Lithosol and regosols of hills, (b), Yellowish – brown soils of foothills, (c). Recent alluvium (d), Brown soils-saline phase and (e) Black soils.

75. Geologically the district consists of diverse rock types belonging to oldest Archaean metamorphic of Bhilwara supergroup in the northern part and upper Proterozoic sedimentary of Vindhyan supergroup in the southern part. Quaternary alluvium is observed along main river courses and in shallow depressions in the south-western belt of the district. Depth to water level varies widely before monsoon, depending upon topography, drainage, bed rock, geology etc. Depth to water level ranges from 9mbgl (Rajgarh block) to 81.20mbgl (Behror block) in Bundi District. In Budi area the depth to water level is between 5 to 10 m during pre monsoon while2 to 5 meter duig post monsoon.

76. **Groundwater Utilization.** Central Ground Water Board and Ground Water Department, Government of Rajasthan have jointly estimated the ground water resources of Bundi district based on GEC-97 methodology. Net annual ground water availability in the district has been estimated as 349.3267mcm. Annual ground water draft for all uses in the district has been assessed to be 331.9884 mcm with overall stage of ground water development at 95.04%.

77. **Groundwater Quality.** Groundwater quality of tube wells in Bundi is presented in Table 18. Groundwater is alkaline in nature with pH ranging from 7.02 to 7.03, and within the acceptable range of drinking water quality. Most of the tested parameters are well within the desirable limits of drinking water standards (IS 10500-2012) and WHO guidelines for drinking water inducing the Fluoride content. However, Nitrate concentration exceeds the permissible limits and is recorded as high as 135 mg/l in total hardness is also tested above desirable limit and well within permissible limits. Tube well water sample taken near Jain Mndir at Main Raod, Bundi town.

Table 10: Ground Water Quality of Bundi (Source: PHED, Bundi on dated 10.01.2022)

Date of Sample			**07.01.2022**		**07.01.2022**
Source			**Tube well (TW)**		
Village/Town			**Bundi**		
National Standards for Drinking Water			**WHO Guidelines for Drinking-Water Quality, 4th Edition, 2011[b]**	**Location of Source**	
Parameter	**Unit**	**Max. Concentration Limits**		**Jain Mandir Near Main road**	**Near Bawri, Dewpura, Almana Bhatti Bundi**
Turbidity	NTU	1 (5)	-	-----	----
pH		6.5 – 8.5	none	7.02	7.03
Total Alkalinity				430	400
Colour	Hazen units	5 (15)	none	---	---
Taste and Odor		Agreeable	-	---	---

Date of Sample			07.01.2022		07.01.2022
Source			Tube well (TW)		
Village/Town			Bundi		
National Standards for Drinking Water			WHO Guidelines for Drinking-Water Quality, 4th Edition, 2011[b]	Location of Source	
Parameter	Unit	Max. Concentration Limits		Jain Mandir Near Main road	Near Bawri, Dewpura, Almana Bhatti Bundi
TDS	mg/l	500 (2,000)	-	1182	663
Iron	mg/l	0.3	-	---	---
Manganese	mg/l	0.1 (0.3)	-	---	---
Arsenic	mg/l	0.01 (0.05)	0.01	---	---
Cadmium	mg/l	0.003	0.003	---	---
Chromium	mg/l	0.05	0.05	---	---
Cyanide	mg/l	0.05	none	---	---
Fluoride	mg/l	1 (1.5)	1.5	0.810	0.621
Lead	mg/l	0.01	0.01	---	---
Ammonia	mg/l	0.5	none established	---	---
Chloride	mg/l	250 (1,000)	none established	200	50
Sulphate	mg/l	200 (400)	none	---	---
Nitrate	mg/l	45	50	135	23
Copper	mg/l	0.05 (1.5)	2	---	---
Total Hardness as (CaCo3)	mg/l	200 (600)	-	550	410
Calcium	mg/l	75 (200)	-	---	---
Zinc	mg/l	5 (15)	none established	---	---
Mercury	mg/l	0.001	0.006	---	---
Aluminium	mg/l	0.1 (0.3)	none established	---	---
Residual Chlorine	mg/l	0.2	5	---	---
E-coli	MPN/100ml	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	---	---
Total Coliform	MPN/100ml			---	---

5. Air Quality

78. There are no data on ambient air quality of Bundi town, which is not subject monitoring by the Rajasthan State Pollution Control Board (RSPCB) because there are no major industries located here. Traffic is the significant pollutant in Bundi, so levels of oxides of sulphur and nitrogen are likely to be well within the National Ambient Air Quality Standards (NAAQS).

79. Air quality monitoring shall be conducted in the pre-construction phase (SIP period) by the contractor and will be updated in IEE report.

80. **Noise Quality.** There are heavy industrial and development activities in the surrounding areas of municipal limits of Bundi town; therefore, noise quality in town is not so good. Vehicular movements in the town also increases the noise level of the town. Noise level quality of Bundi is not available and contractor is required to conduct noise level monitoring of Bundi; at prominent project sites, in the pre-construction phase and will update in IEE report.

C. Ecological Resources

81. ADB's SPS, 2009 requires demonstration that the project will not adversely affect the identified critical habitat. ADB SPS, 2009 states that projects should not be developed within critical habitat areas unless all of the below criterion are met (i) there are no measurable adverse impacts, or likelihood of such, on the critical habitat which could impair its high biodiversity value or the ability to function; (ii) the project is not anticipated to lead to a reduction in the population of any recognized endangered or critically endangered species or a loss in area of the habitat concerned such that the persistence of a viable and representative host ecosystem be compromised; and (iii) any lesser impacts are mitigated

1. Forest areas

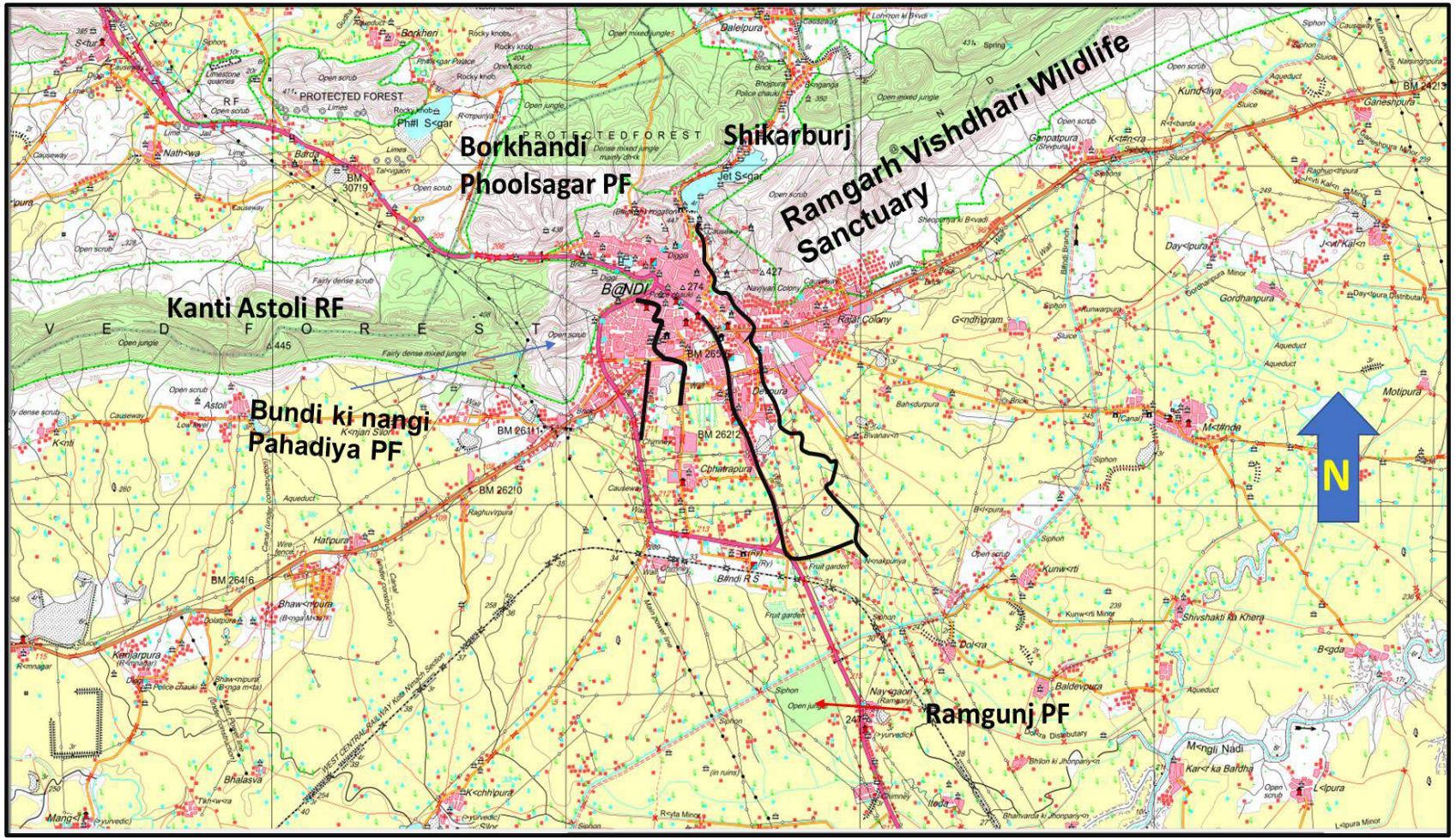
82. The urban area in Bundi is surrounded by land converted for agricultural use. There is no natural habitat in the town, and the flora is limited to artificially planted trees and shrubs, whereas the fauna comprises of domesticated animals (cows, goats, pigs and chickens), plus other species able to live close to man (urban birds, rodents and some insects). There is no protected area nearby the subproject site.

83. Vegetation is sparse and comprises mostly of domesticated species, with limited fauna. There are fishes in most of the rivers and irrigation tanks outside the towns, but no aquatic areas is protected; Rohu (Labeo rohita) and sanwal are the most common fish species.

84. As per the year 2021 assessment of the India State of Forest Report 2021 published by Ministry of Environment, Forests and Climate Change (MoEFCC), Bundi district has about 5,776 sqkm area out of which 564.35 sqkm is total forest area. Out of which, 1 sqkm area is covered with very dense forest, 138.98 sqkm area is covered with moderate dense forest and 424.37 sqkm is open forest The forest area in district has been increased from 7.17 %in 2019 to 9.77% in 2021. About 172.67 sqkm area of Bundi is also covered with scrub forest.

85. The Bundi town in its immediate surrounding are covered many forest blocks these are Kanti astoli Reserved Forest and Borkhandi Phoolsagar Protected Forest and Bundi ki nangi Pahadiya Protected Forest at Northwest. Shirkaburj and Ramgarh Vishdhari Wildlife sanctuary at Northeast. Ramganj forest block at South of Bundi surrounding STP site. The figure below shows the proposed components and forest area in Bundi town.

Figure 12: Forest map of Bundi showing project components.



86. As per the Champion and Seth Classification system, these forest has tropical dry deciduous (1) Dhok (2) Mixed forest of Dhok and Khai as per forest working plan in year 2011-12 these forest has 57 species of tree, 8 species of Shrubs, 11 species of Climbers, 36 species of Grasses , 35 species of Herbs, 29 species of Mammals, 23 species of Reptiles, 8 species of Fishes , species of 4 species of Amphibians and 86 species of Aves.

Common flora and fauna of these forests are:

87. **Trees** - *Emblica officinalis Alangium salvifolium, Buchanania lanzan, Morinda tinctoria, Mangifera indica, Cassia fistula,, Hardwickia binata, Acacia leucophloea, Aillanthus excelsa, Sapindus emarginatus, Polyalthia longifolia, Tamarindus indica, Bauhinia variegate, Anthocephalus cadamba, Mitragyna parvifolia, Terminalia arjuna, Pongamia pinnata, Flacourtia indica, Feronia limonia, Lagerstromia parvifilora, Bridelia retusa, Kydia calycina, Sterculia urens, Miliusa tomentosa, Ficus hispida Linn*. Etc

88. **Shrubs** - *Zanthium strumarium, Calotropis procera, Calotropis gigantea, Achyranthes aspera, Cassia auriculata, Clerodendrun Viscosum , Adhatoda vasica, Calotropis procera, Grewia flavencens, Securinega leucopyrus, Capparis Spinosa, Capparis sepiaria, Capparis decudua, Carissa spinarum, Periploca aphylla* etc

89. **Climbers** - *Mucuna pruriens, Cayratia carnosa, Viscum orientale, Oxalis corniculata , Ichnocarpus frutescens, Millettia auriculata, Cissampolos pareira, Butea parviflora, Celastrus paniculatus, Cryptolepis buchanani, Asparagus dumosus; Tinospora cordifolia, Abrus precatorious* etc

90. **Reptiles** - Magger crocodile, Indian sawbaok Indian mud turtle, Starred tortoise, Northern house geeko, Fat tailed gecko, Common garden lizard, Indian chameleon, Common indian monitor, Johr's earth boa, Indian python, Common rat snake, Common indian krait, Indian cobra, Russell's viper, Spiny tailed lizard, Krait, Pitviper

91. **Amphibians** - Common Indian Toad, Marbled Toad, Indian Bull Frog and Burrowing Frog.

92. Other than timber, fuel wood, fodder and The main forest products from these forest blocks are, Tendu leaves, Gums of Salar, Gurjan, Babool, Karaya, Khair Dhok, Safed Dhok (Dhavda)

93. Protected **Areas:** Three wildlife Sanctuaries has boundaries in Bundi district

94. A The Sanctuary is located at North to northeast side of town about 350 m distance from starting point of existing Jait Sagar Drain where rehabilitation is proposed. Ramgarh Vishdhari Wildlife Sanctuary acts as a buffer for Ranthambore National Park, which is one of the most famous wildlife sanctuaries in India. It covers an area of about 252 square kilometer. It is rich in biodiversity & is home to various kinds of wild animals. The Government of Rajasthan declared it a sanctuary on May 20, 1982 under Section 5 of the Rajasthan Wildlife and Bird Protection Act, 1951. Various types of wild animals like Indian wolf, leopard, striped hyena, sloth bear, golden jackal, chinkara, nilgai and fox can be seen in Ramgarh Vishdhari Wildlife Sanctuary. Featured by dry deciduous forest on Vindhyan formations with the plenteous amount of trees like Khair, Salar, Khirni, Ber, Babool, Mango and Dhok. This Sanctuary is present in the range of Aravali Mountains and one of the major attractions of tourism in Bundi. Recently Ramgarh Vishdhari Sanctuary is declared at tiger reserve and eco sensitive zone notification is in draft format. Before start of construction subproject's components distance from wildlife sanctuary required to be reverified by PIU/ PMU.

95. **The National Chambal Sanctuary** – The Sanctuary is located 27 km South- eastern directed proposed Jait Sagar Drain. The Sanctuary is located at Southeast direction to bundi town town and was set up in 1979 as a riverine sanctuary along an approximately 425 km length of the Chambal River and its ravines stretching over 2-6 km wide along the river. The Project is managed by the Wildlife wing of the Uttar Pradesh Forest Department and is head-quartered at Agra. National Chambal Sanctuary is the main area for the species reintroduction program of the crocodilian species Gavialis gangeticus (Gharial). One of the few places to spot the *Platanista gangetica* - Gangetic Dolphins. (National Aquatic Animal) Only known place where nesting of Indian Skimmers is recorded in large numbers. Chambal supports 8 rare turtle species out of the 26 found in the country. Chambal supports more than 320 resident and migrant birds, NCS is a Tristate sanctuary with an area of 635 sq. kms in Uttar Pradesh, spread over Agra and Etawah districts. Part of the NCS also lies in Madhya Pradesh and Rajasthan, The National Chambal Sanctuary is listed as an important bird area (IBA) IN122 and is a proposed Ramsar site.

96. **Jawahar Sagar is a wildlife sanctuary** – The Sanctuary is located at Southwest direction to town about 70 km from Bundi town and 31 km from nearest proposed drain component i.e Jait Sagar Drain. This Sanctuary is in the Kota and Bundi district of Rajasthan. Gandhi Sagar Dam was built on the Chambal River in 1972 to protect crocodiles and Gadiyals. Gandhi Sahar Dam extended to Jawahar Sagar Sanctuary. It is covering an area of 154 sq. km. This sanctuary is part of Mukandra Tiger reserve.

97. The Sanctuary is house of plant species like Khair, Dhok, Tuberous, Angiosperm, Pteridophytes, Climbers, Fungi, verities of Algae, Bryophytes etc.

98. Jawahar Sagar is also famous for wildlife, and it has huge varieties of wild animals. The Jawahar Sagar Sanctuary is the home of wild animals. Like Blackbuck, Chinkara, Caracal, Wild Wolf, Sloth Bear, Panther, Hyena, Wild Boar, Chittal, Sambar Deer, Gavial, Crocodiles, Jackal, Porcupine, Nilgai, Hare, Civet, Crane, Four-horned Antelope, Wild Cock.

Table 11: Distance from nearest Wildlife Sanctuaries to Proposed Drains

Drain name	Wildlife Sanctuaries and distance from proposed components		
	Ramgarh Vishdhari Sanctuary	National Chambal Gariyal Sanctuary	Jawahar Sagar Sanctuary
Bundi Bypass - Rani Ji Ki Bawadi - Lanka Gate - ICE Factory to UIDSSMT Nallah	1300 m	30 km	34 km
Khoja Gate to Ice Factory	1100 m	31 km	36 km
Gurudwara Devpura to Nanak Puliya Tiraha	873 m	32 km	34 km
Jait Sagar to Devpura	350 m	27 Km	31 Km
Agarwal Dharamshala to Highway Nallah on Silor Road	1800 m	27 km	32 Km

99. Biodiversity Assessment Report (IBAT Analysis) for Bundi town has been attached with this report as **Appendix 7**. The screening study for critical habitation indicates that within the area of analysis (AOA) there are no known species which would qualify the area as critical habitat under the set criteria (criterion 1–5, as presented in the report). As per IBAT report; within 50 km radius of STP. there are 17 species (EN & CR) concern fauna listed as IUCN Red list, most of which are wild species and not reported in urban areas of Bundi &A one restricted range species of Giant River Prawn is also reported in IBAT, however this species is neither Endangered, Critical Endangered or Vulnerable as per IUCN Status. All proposed drains are located within town's municipality area, the nearest protected area is Ramgarh Vishdhari wildlife sanctuary, about 350 m from proposed rehabilitation of existing Jait Sagar drain, starting from Jait Sagar lake. The works will be conducted within the existing ROW of drain. Drain and wildlife sanctuary are separated by each other with urban settlement, houses, roads and mountains and no negative impact of proposed works are anticipated on wildlife sanctuary. IBAT assessment shows three Key biodiversity areas Bandha Dam, Jawahar Sagar Sanctuary & Ramsagar lake are located about 50 km far from proposed projects locations**.** However, the Ramgarh Vishdhari wildlife Sanctuary is located about 2 km in north. which is not reflected in IBAT checklist.

D. Economic Development.

100. **Land Use:** Municipal area of Bundi encompasses 21.85 sq. km. About one fifth of the land area is urbanized and the rest consists of hills, water bodies and agricultural land. Even within a contiguous urbanized area, only 65% is developed and the remaining are water bodies, agricultural land, and pockets of vacant land. About 44% of developed area is under residential use and 23% under public and semi-public. The high percentage of public and semi-public uses is due to spacious parade and play fields attached to schools.

Table 12: Existing Land Use of Bundi

S.No.	Land Use	Area	% of developed area	% of urban area
1.	Residential	310	41.38	32.62
2.	Commercial	60	7.48	5.90
3.	Industrial	35	19.03	15.00

S.No.	Land Use	Area	% of developed area	% of urban area
4.	Government	20	1.68	1.31
5.	Recreation	20	3.02	2.38
6.	Public / semi public	160	9.14	7.20
7.	Circulation	95	18.27	14.40
8.	Total developed area	1280	100	78.81
9.	Vacant and agricultural land	205		21.19
10.	**Total urban Area**	**2185**		**100.00**

*****Source: *Bundi Master Plan 2009-2031*

101. **MAJOR CORPS**: The main crops grown in the Kharif are rice, Jowar, Maize, Seasamum and other Kharif pulses, Soyabeen and Groundnut. The main Rabi crops are wheat, gram, other rabi pulses, rape & mustard, taramira, coriander in recent years there has been substantial increase in the areaunder rice, soyabeen and rape & mustard.

102. **Industrial Area:** Rajasthan state industries development & investment corporation Ltd. RIICO is developing industrial areas in the state. There are 6 industrial areas at present in the district. There are located at Bundi by pass road. Bundi Nainwa Road Bundi. Chittorgarh road, Govindpur Bawari, Indergarh and Hattipura. Total Industrial area in Bundi is 208.37 acre. District has 7 Operational large scale industries, 3 operational mediaum scale industries and 6665 small scale and Micro Enterprises filed memorandum upto March 2019 is in which 22992 persons are employed and fixed Investment in total Enterprises is 35794.24 Lakh.

103. Industrial Effluents: Industries exist under Rajasthan State Industrial Development & Investment Corporation Ltd (RIICO), which are outside the town area and small amount of effluent disposed scattered in local *nallahs*. As reported by the local MC, the responsibility of effluent disposal is under RIICO's own and its connected with existing sewer network. The individual industry should treat their effluent to bring it to the required standard before final disposal.

104. **Solid Waste management:** Bundi Nagar Parishad practices door-to-door waste collection in the part of the town, and in other parts waste is collected through community dust bins located in various places. Regular sweeping is carried out by Bundi Nagar Parishad . Waste from houses, dust bins and other areas is collected, and transported to Kanjri Silore landfill site 4 km from Bundi. Landfill site is owned and managed by Nagar Nigam Bundi

105. **Power Supply**. In Bundi district, the distribution of power is controlled through 8 Big 132 K.V. sub-stations. These sub stations are located in Bundi and Lakheri from these substaions 33 K.V. line has been erected 77 sub- substations for supplying electricity. To strengthen and make regular power supply, a new substation is being constructed at village Namana, panchayat samiti Talera.

Transport: Bundi is well connected through air, rail and road network.

106. **By Air:** Nearest airport to Bundi town is Kota airport about 45 km from Bundi which

operates only form medical or VIP services. The Sanganer Airport of Jaipur is the nearest commercial airport to Bundi. The Sanganer airport is at approximately 200 kilometres from Bundi. Taxi services are available between Bundi to Sanganer airport. This airport is well connected with various major cities of India through frequent flights.

107. **By Rail:** Kota Railway Station is the nearest railway station to the city. It is at a distance of 35 kilometres. Various trains play between Kota railway station and other railway stations of major Indian cities. One can take taxi or bus to reach Kota railway station.

108. **By Road:** Bundi is well connected through a network of roads. It is at a distance of 35 kilometres from Kota and nearly 200 kilometres from Jaipur. Other important cities that are accessible from here include Jaipur, Ajmer, Agra and New Delhi, which are situated at a distance of 170 KM, 155 KM, 310 KM and 390 KM respectively. The state transport buses connect the city with major cities in the state of Rajasthan. The total length of road in district in 2019-20was 2841.7 Kms.

E. Socio Cultural Resources

1. Demography

109. The Bundi city is in Rajasthan state of India. As per provisional reports of Census India, population of Bundi in 2011 is 103,286; of which male and female are 53,628 and 49,658 respectively. Although Bundi city has population of 103,286; its urban / metropolitan population is 104,919 of which 54,485 are males and 50,434 are females. Males constituted 52% of the population, while females made up 48%. Bundi had an average literacy rate of 82%, higher than the national average of 73%, with male literacy of 89.77% and female literacy of 73.77%. 12% of the population was under 6 years of age.

2. History, Culture and Tourism

110. Bundi is the ancient capital of the legendary Hada dynasty of rulers. It is described as the heart of Hadoti and it was founded sometime in the 13th century. It was vested by Rudyard Kipling. It is the first destination, in Hadoti that is reached from Jaipur by road. Set in a narrow encircling gorge, the palaces and fortress of Bundi have a fairy tale like quality about them. Few other palaces in India have such a picturesque location. Isolated and independent, the entire township arrears like a miniature painting, frozen in time for the traveller.

111. The Bundi palace, built of locally quarried stone, presents one of the finest examples of Rajput architecture. Intricately carved brackets, pillars and balconies and sculpted elephants are used liberally. Of special interest here are the Diwan-I-Am, Hathi Pol and the Naubat Khana. Also located in the palace is the famous Chitra Shala which provides a colourful glimpse of history - the walls and ceiling of this palace are completely covered with paintings of the Bundi school. Hunting and court scenes, festivals, processions, animal and bird life and scenes from Lord Krishna's life are still in very good condition.

112. Bundi has other palaces and hunting lodges like the Phool Sagar Palace, Sukh Mahal and Shikar Burj. Each palace has its own historical importance Phool Sagar houses a collection of murals: done by the Italian prisoners of war who were held here; Sukh Niwas Palace evokes memories of Rudyard Kipling who not only stayed here but is believe to have found inspiration for his famous work Kim from the scenes that he saw here. Kshar Bagh, though not a palace, is interesting for its locations as well as the carvings on the 66 royal cenotaphs.

113. Bundi is also known for its Baories or step-wells. Unique to Rajasthan and Gujarat, the step-wells served as water reservoirs for the months of summer when there was a scarcity of drinking water.
114. At one time, there were over fifty such wells in Bundi but most of them have suffered the ravages of time. One very good example still to be found in the heart of the town is called Raniji-ki-Baori. It has exquisitely carved pillars and ornate archways - even the simple function of drawing water from the well became a special occasion for the womenfolk, they dressed up in their finery to visit these elaborate structures. On the road to Kota is a splendid 17th century monument - the 84 pillared chhatri still in extremely good condition and worth a visit.

115. The Bundi district of Rajasthan has been an important tourist destination for both the foreign and domestic tourists. The place offers a unique culture with baoris, palaces & forts, lakes and the beautiful natural surroundings. The apparent tourism potential of this place inspired many to organise fairs and festivals to give a boost to the tourism resources. Efforts were made for vital efforts to streamline tourism and make it an important agent for the growth and development of this area. Unfortunately this could not take the shape of a people's movement and the zeal and enthusiasm faded out slowly and the inputs more or less could not be sustained. At the same time the place needs efforts on our parts if we want to make it and important tourist destination .The rainy season is very special with the Kajli Teej Festival. The weather is generally pleasant except for a patch of the hot summer. During the monsoons in Bundi a local festival called Kajli Teej is uniquely celebrated here. A local fair is also held on this occasion exhibiting lot of local handicraft items including Katar (dagger), paintings and bangles etc. Both the urban and the rural people join this festive occasion. Besides the Kajli Teej a drive into the countryside all across with the water streams crossing at innumerable places, camels grazing the green pastures and the peacock hanging around makes it a special monsoon drive. The cool temperament of this pollution free destination makes it a wonderful experience. A taste of the local maize (Bhutta) roasted in coal oven and served with salt n lemon gives a special delight in the monsoons. Although the local Kuttha Baati (food) is quite popular in the region. The Bundi miniature paintings attracts the traveller and from the highway it seems as if the town itself is a miniature painting frozen in time.

116. Bundi has moderate tourist inflows with main attractions being Ratan –Daulat , Chhatra Mahal, Chitra Shala, Char Bhujaji , Jain Temple at Naharji Ka Chauhatta, Laxminath Temple in Sadar Bazar, Damdame ki Maszid.

3. Tourist attractions and Historical places in Bundi

117. The tourist attractions in Bundi include glorious medieval forts, temples, havelis and magnificent palaces. The tourists will love to visit Bundi because of its serene atmosphere and strikingly expressive landscape. Bundi is located at the foothills of a large hill with a splendid lake at the center of city.

118. **Taragarh Fort** is the prime attraction in the city of Bundi. This fort was constructed in the 14th century. The visitors will find a large battlement (Bhim Burj) inside the fort. One will also see a cannon and a large reservoir. The reservoir was carved by a single piece of rock.

119. **The Bundi Palace** is another place of attraction, located in close proximity to the Taragarh Fort. One will see some exquisite murals that typify the glorious era of Indian royalty.

120. Bundi is also famous for its large number of age old step-wells (locally called Baoris). The step-wells that have been maintained till today are the Nagar Sagar Kund, Raniji ki Baori,

and Nawal Sagar.

121. One of the prominent tourist attractions is a temple of Lord Varuna (God of Rains), half submerged in the water of the **Nawal Sagar lake**. The visitors, uses boat to reach temple.

122. **Dabhai Kund** in Bundi is considered to be one of the largest kunds in Bundi. It is one of the most popular and frequented places of attractions in the city. These kunds are nothing but steep wells that were constructed by the Rajput royal kings.

123. Prithviraj Chauhan constructed Dabhai Kund in Bundi. The steep wells stand evidence to the glory of such Rajput kings and royal members. Also known as the Jail Kund, this is a must visit destination for tourists frequenting Bundi.

124. The level of the water in the steep wells was quite deep. There are many steps that lead to the Dabhai Kund at Bundi. There are many intricate carvings that can be seen on the staircases that ultimately lead to the Dabhai Kund, Bundi. Apart from Dabhai Kund you can also visit other famous tourist attractions of the city such as Sukh Mahal, Taragarh Fort, Nawal Sagar Lake,

125. **Ratan Daulat** is a major spot of attraction in the small yet elegant city of Bundi . The grand monument in Bundi stands as a testimonial to the chivalry and grand achievements of the great Rajput rulers. Raja Rao Ratan Singh, who was one of the noble and brave Rajput kings, constructed Ratan Daulat in Bundi.

126. Ratan Daulat at Bundi stands as an exceptional monument for the innovation that is involved in its construction and design. The Rajput king had immense talent and vision and that is reflected in the architecture of the structure.

127. Ratan Daulat, Bundi has a stable that can accommodate nine horses. A royal look had been imparted to the entire structure. There are beautiful and complex carvings on the coaches in the stable, with a horse in front of each of them. The Hatia Pol is another important feature of the Ratan Daulat of Bundi.

4. Other important places in Bundi

128. **City Gates (7 nos)** - Situated at the entrance of the different locations of Bundi town and popular with tourists and locals for its view of Bundi town.

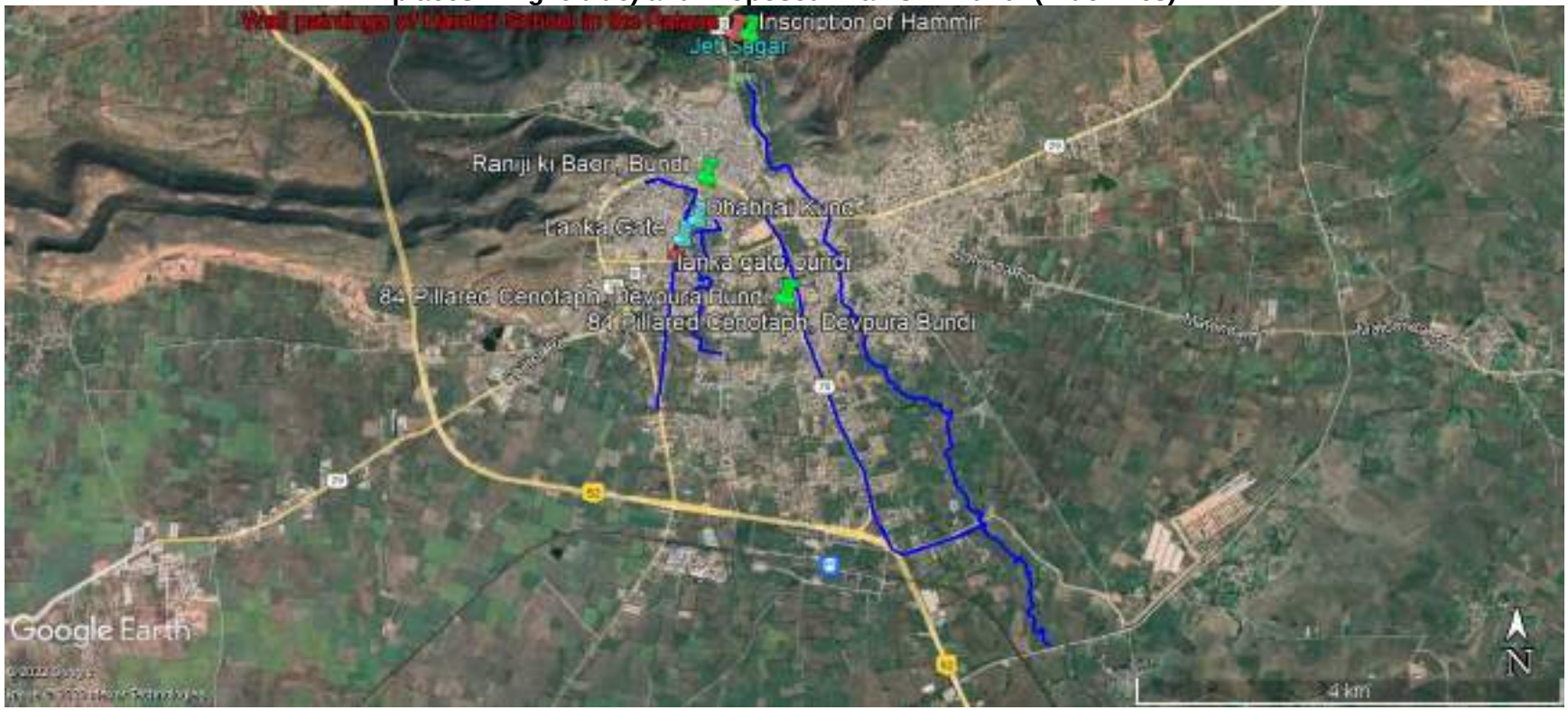
129. **Nagar Sagar Kund** - The kunds (pair of matching step wells) are located near to Indira Market and Azad Park - Nagar Sagar is an artificial lake which tends to dry up if the monsoon is poor. In the centre of the lake is a temple for the Aryan god of water.

130. **Naruki Baori** - The Baori is located in the heart of mohallas in ward no.36 in the northern part of the city and Shukl Baori gate is the closest heritage structure to the baori

131. **Nahardhos ki Baori** - located in the southern part of the town near Khoja Gate, the closest heritage structure to the baori

Naval Sagar Lake - The lake is located on the right side to the approach road of Taragarh Fort in the western part of the city.

Figure 13: Google earth imagery showing ASI protect monument (Red) State protected in (Green), Other important tourist places in light blue) and Proposed Drains in Bundi (Blue lines)



5. Protected monuments

132. Bundi town has three state Protected Monuments, Raniji Ki Bawari (step well), 84 Pillared Cenotaph (Shiv temple) and Inscription of Hammir and one ASI monument (Wall Paintings of Hardoti School in the Palace). All project components are located outside the subproject component area. List of ASI and State protected monuments in Bundi town is provided in **Appendix 2**.

133. **Wall Paintings of Hardoti School in the Palace**: Is one ASI protected monument in Bundi town, The nearest components is Jait Sagar Drain located about 300 m form this protected monument. Some of the old wall paintings (murals) in the Garh Palace of Bundi form a Monument of National Importance. They are examples for one of the Rajput painting art schools, which is named after the historical Hadoti region, especially for the Bundi style. Located Inside the fort is a small palace named Dudh Mahal which has beautiful frescoes and a portion of the palace changed into a Rang Shala (art gallery). For centuries, Bundi remained an important school of the Rajasthani style of miniature paintings. The site is one of the rock art sites discovered in the Bundi-Bhilwara-Tonk region of Rajasthan and Rock paintings discovered are from various eras such as the Mesolithic, Chalcolithic, Metal Age and even prehistoric.

134. Raniji ki Baori, Shiv Temple and Chaurasi Khambon ki Chhatri & Inscription of Hammir are state protected monuments in Bundi and all subproject components are located outside these monument boundaries. The nearest drain is located about 50 m form Rani ji ki Bauri.

135. **Raniji ki Baori :** The town of Bundi is renowned for its baoris, or stepwells. Raniji ki Baori (Queen's stepwell) is the largest among the over 50 baoris of the town. Baoris were commissioned by the ruling royalty to take care of water needs during the months of drought. This baori was constructed in 1699 by Rani Nathavati Ji, the younger queen of the ruling Maharao Raja Anirudh Singh of Bundi. 46 metre deep, this stepped well is a multi-storeyed structure decorated with brilliantly carved pillars and a high-arched gate. Each floor has dedicated places of worship for the people to pay homage. One can enter the baori through a narrow doorway marked by four pillars. Lifelike elephant statues made of stone guard the corners. The baori is a medieval marvel of construction and design. Baoris also worked as social assembly areas in those times since local townsfolk gathered here often.

136. **Shiv Temple and Chaurasi Khambon ki Chhatri** or 84 Pillared Cenotaph is a famous temple type structure which is devoted to Shiva and was built by Maharaha Anirudh Singh or as they call in Hadoti language Rao Raja Anirudh Singh.

137. The structure is as tall as a three-storey house and built in the year 1683 AD. The main attraction of this site is its 84 pillars. It is said that a soul gets 84, 00,000 chances to take birth on planet Earth as got created the same amount of species.

Figure 14: Google earth Imagery Showing ASI Protected Wall paintings and State Protected Inscription of Hammir

Figure 15: Google earth Imagery Showing State Protected Rani ji KI Baori and nearby area

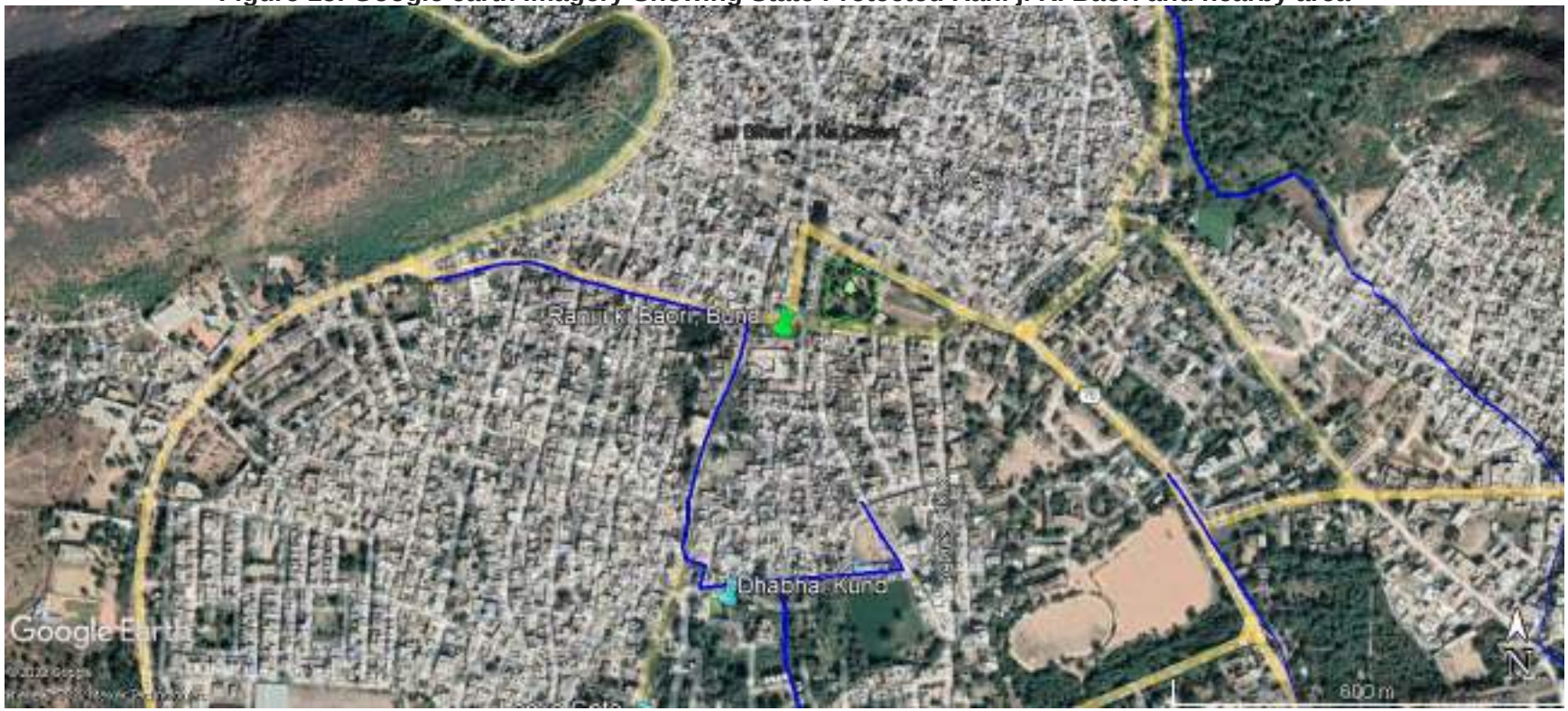


Figure 16: Google earth Imagery Showing State Protected 84 Pillered Cenotaph and nearby area

Table 13: Distance of nearest protected monument and proposed components

	Monument	Jait Sagar Drain	Jaipur Bypass to FCI godam along with Rani ji ki Bawadi	Khoja Gate Ganesh ji to Ice Factory	Gurudwara Devpura to Nanak Puliya Tiraha	Silor Road (Agarwal Dharamshala to highway nalla on Silor road)
ASI Protected	Wall paintings of Hardoti School in the Palace	300 m	1400 m	1630 m	2120 m	1580 m
State protected	Raniji ki Baori	720 m	50 m	60 m	630 m	715 m
	84 Pillared Cenotaph, Devpura Bundi	670 m	780 m	1350 m	200 m	1000m
	Inscription of hammir	300 m	1440 m	1640	2150 m	1570 m

138. In Tranche 3 of Phase II of RUIDP works for restoration and preservation of the following heritage structures were conducted in Bundi town: the city gates (7nos), Nagar-Sagar Kund, Nawal Sagar lake with Chattri and temple inside the lake, Nahar Dhos ki Baori, Naruki Baori and 84 Pillared Cenotaph, which includes (a) Covering of the existing drains and nallah; (b) Construction of walkways; (c) Improvement of road surfaces by paving; (d) Construction of storm water drains; (e) Repair of damaged walls; (f) Up gradation of toilet facilities; (g) Construction/Up gradation of drinking water hut; (h) construction of platforms; (i) Creating open parking spaces; and (j) Provision of benches, dustbins, lights, signages etc.

6. Fairs and Festivals:

139. **Teej -** Teej is a fasting festival for Hindu women. It takes place on the third day of the Shukla Paksha of the Sawan month of the Hindu which normally falls between late July to early September. This festival is dedicated to Goddess Parvati and celebrates her return to Lord Shiva. Teej is in praise of marital bliss and the well-being of spouse and children. Falling in the Hindu month of Bhado, Teej also celebrates the arrival of the long-awaited monsoon after a brutally hot summer. The festival is a three-day celebration which includes both rigid fasting and scrumptious feasting. According to Hindu mythology, after the self-immolation of Sati, Lord Shiva became grief-stricken and went into a meditative state. It is believed, it took Sati 108 subsequent births to bring Lord Shiva out of his meditative state. Her 108th birth was in the form of Parvati. Thus, married women seek the blessings of Goddess Parvati on Teej Festival for marital bliss.

140. On the occasion of Teej Festival, women observe a fast and pray through the night. In the morning, they bathe and dress in red sarees and fine jewellery to worship Goddess Parvati. The major attractions of Teej Festival are the swings that are fixed to the branches of large trees, on which the women take turns to enjoy swinging. Special songs are sung, and the women decorate their hands with henna. Married daughters are presented with sweets and clothes by their mothers. The girls engaged to be married receive gifts of henna, bangles, clothes, and sweets from the in-laws.

141. Though Teej is celebrated all through the state but in Bundi it is celebrated on the 3rd day of Bhadra whereas at the other it is celebrated on the third day of Sharavana in other places. The

festival starts with the traditional procession of goddess Teej in a decorated palanquin from the Naval Sagar. The procession has decorated elephants, camels' bands artistes and cultural groups depicting the place.

142. **Lohri -** Lohri marks the culmination of winter and is celebrated on the 13th day of January in the month of Paush or Magh, a day before Makar Sankranti. Lohri celebrates fertility and the spark of life. People gather around bonfires, throw sweets, puffed rice and popcorn into the flames, sing popular songs and exchange greetings.

143. On this day children go from door to door to collect funds for community bonfires which are lit up in the evening. The gatherings and celebrations make Lohri a community festival. An extremely auspicious day, Lohri marks the sun's entry into the 'Makar Rashi' (northern hemisphere). The period, beginning from 14 January lasting till 14 July, is known as Uttarayan. It is also the last day of the month of Maargazhi, the ninth month of the lunar calendar. The festival marks the winter solstice and is the day of celebrations. Astronomically after Lohri, the length of days starts increasing as the sun begins to progress northwards. The Bhagawad Gita deems it an extremely sacred and auspicious time when Lord Krishna manifests himself most tangibly.

144. The festival though connected to Punjabi roots is seen to widen its presence and is celebrated with all the joy and fervour in Rajasthan. It's a nice warm way to say goodbye to the harsh winters of North India**.**

145. **Makar Sankranti** (**The Kite flying festival**) - Makara Sankranti is one of the few ancient Indian festivals that has been observed according to solar cycles, while most festivals are set by the lunar cycle of the lunisolar (चंद्र – सौर) Hindu calendar. Being a festival that celebrates the solar cycle, it almost always falls on the same Gregorian date every year (January 14/15).

146. "Makar Sankranti" or "Sakraat" in the Rajasthani language is one of the major festivals in the state of Rajasthan. The day is celebrated with special Rajasthani delicacies and sweets such as pheeni (either with sweet milk or sugar syrup dipped), til-paati, gajak, kheer, ghevar, pakodi, puwa, and til- laddoo.

147. Especially, the women of this region observe a ritual in which they give any type of object (related to household, make-up or food) to 13 married women. The first Sankranti experienced by a married woman is of significance as she is invited by her parents and brothers to their houses with her husband for a big feast. People invite friends and relatives (especially their sisters and daughters) to their home for special festival meals (called as "Sankrant Bhoj"). People give out small gifts such as til-gud (jaggery), fruits, dry khichadi, etc. to Brahmins or the needy ones.

148. **Vasant Panchami** - Vasant Panchami is an important Indian festival celebrated every year in the month of Magh according to the Hindu calendar. Celebrated on the Fifth day of Magh, the day falls somewhere in February or March according to the Gregorian calendar. The significance of the day lies in the worship of Goddess Saraswati, the symbol of wisdom and also the onset of the spring season. According to the popular belief, the origins of this festival lie in the Aryan period. Aryans came and settled in India through Khyber Pass, crossing the Saraswati River among many others. Being a primitive civilization, most of their development took place along the banks of the River Saraswati. Thus. River Saraswati began to be associated with fertility and knowledge. It is then that the day began to be celebrated. According to mythology, After Kalidasa was married off to a beautiful princess through trickery, the princess kicked him out of her bed as she learned that he was foolish. Following this, Kalidasa went to commit suicide, upon which

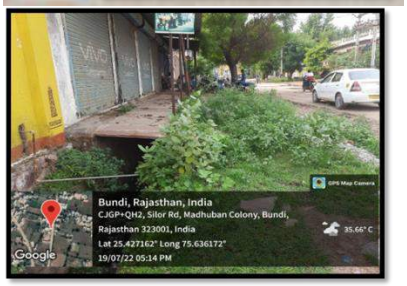
Saraswati emerged from the waters and asked him to take a dip there. After taking a dip in the holy waters, Kalidasa became knowledgeable and began writing poetry. Thus, Vasant Panchami is celebrated to venerate Goddess Saraswati, the goddess of education and learning. In today's times. the festival is celebrated by farmers as the on-coming of the spring season. The day is largely celebrated in northern parts of India. Here, people offer food to the Brahmins and organize rituals in the name of Goddess Saraswati. The colour yellow is the predominant colour associated with the festival, the origins of which are supposed to be the fields of mustard which can be seen in Punjab and Haryana during this period. Kite Flying is also commonly associated with this Festival. Children, as well as adults, fly kites on this day to celebrate freedom and enjoyment. Another tradition associated with this day is that of initiating studies in the young. Young children often begin learning on this day, which is believed to be the reason why the school sessions start in March. Sweets with a yellow hue are also distributed on this day and people can also be seen donating books and other literary material to the poor. Section wise photos of drains are attached in **Appendix 5**

Table 14: Environmental Features of Proposed Alignment

S. No	Subproject component	Environmental Features of the Site	Photographs
1	Jaipur Bypass to FCI Godown along with Rani ji ki Bawadi Start Point: Lat 25°26'28.06"N End Point: Long 75°38'2.97"E **Total Length: 2.693 Km**	• It is the main drain, which is not lined at present. • Earthen open drain is covered by Arandi (castor oil plant). • Mostly shrubs of *Prosopis juliflora* and 17 tree of *Acacia nilotica* required cutting • Blackish water in running condition is observed. • This drain runs along the Kota Road in its initial stretch of half kilometre then turns in south direction and runs along the city main road for about 375 meters. The drain then turns in east direction with alignment along the city major road. Major land use around the alignment is residential. • The drain again turns in south direction and joins kuchha drain and area along alignment is predominantly agricultural in this section with residential land use in patches. The drain finally meets another existing kuchha drain at Chatarpura road. • The drain finally discharges in Mangli river and no intervention beyond the point (Chatarpura road to Mangli River) are proposed in this unlined drain and major land use beyond this point to Mangli river is agricultural. • Section 0.60 m x 0.60 m to 2.00 m x 1.50 m, Length 2.693 Km. (RCC Box/ RCC Cast in Situ) and Municipality land is available for construction of required section.	 Jaipur bypass drain before FCI Godown

S. No	Subproject component	Environmental Features of the Site	Photographs
			 End point of FCI Godown drain  Drain receiving discharge from FCI Godown drain
2.	Jait Sagar to Devpura Nala Start Point: Lat 25.450137° End Point: Long 75.643877° **Total Length: 5.90 Km**	• Jait Sagar drain starts below Jait Sagar Lake ends at Devpura and is also the only drain which carries the excess water of Jait Sagar Lake to Mangli river • The drain is not lined capacity is not sufficient to hold excess water from Jait Sagar lake in rainy season, results in inundation of roads and other city areas. • Dense shrubs are present at both sides of the drains. Earthen open drain is covered	

S. No	Subproject component	Environmental Features of the Site	Photographs
		by Arandi (castor oil plant), Shrubs of *Prosopis juliflora* along the drain on landside and 39 trees of *Acacia nelotica* which required to cut. • Drain is full of running blackish water • The drain runs amid agricultural area in its initial stretch and runs in north to south direction. After about 1 km of initial stretch of drain it runs along the area having major land use as residential up to Police Parade Ground. After Police Parade ground it again aligned in areas having mix land use with dominant agricultural and patchy residential. The drain in its major length is not aligned with any road as it is a major city drain with larger discharge section (primarily width). Lining of drain is proposed from starting point (below Jait Sagar Dam) till New Mandi road. Beyond this point up to Mangli River the drain travels in area with major land use as agricultural and no lining is proposed for this distal section. • Section 5.0 m x 4.5 m to 6.5 m x 3.5 m, Length 5.900 Km traverses through the entire city. • It passes through open land (uninhabited) in the initial stretch (less than 1 km), then through the colonies, and finally again through the open land (about 2.6 km). • The layout of the drain is mostly of cross-country nature and its ROW falls within the jurisdiction of the municipality	Jait Sagar Spillway  Jait Sagar Drain tail end  Jait Sagar Drain to Mangli River
3.	Gurudwara Devpura to Nanak Puliya Tiraha Drain Start Point: Lat:25.436163° End Point: Long:75.64672° Existing Length – 2.0 Km Extension Proposed – 2.08 Km Total Length – 4.008 Km	• This drain starts at Gurudwara Devpura and ends at Nanak Puliya Tiraha Drain. • 4 tree of *Acacia nelotica* required to be cut. • This drain from Gurudwara Devpura to Tiraha Drain is aligned along the Bundi Road (Major City Road) to its most of length. Major land use in initial stretches in predominately residential, while agricultural land use is observed in few patches. The drain turns toward east direction near Ajmer Kota Road and runs about 800 m to fall in Jait Sagar Drain, which finally discharges in Mangli river . In its last 800 m stretch it runs along New Mandi Road and land use around the	

S. No	Subproject component	Environmental Features of the Site	Photographs
		alignment is predominantly agricultural in this section. • Section of the drain is proposed to be 1.5x1.5 m to 2.0x2.0 m increasing in downstream. • The available section is sufficient enough for construction. The drain is proposed to be RCC box type (3.2 Km) in proximal sections while stone pitching is proposed in downstream stretch of 838 m.	
4.	Agarwal Dharam Shaala to Highway Nallah Start Point: Lat:25.433928° End Point: Long:75.63716° Existing Length – 600 m Extension Proposed – 600 m Total Length – 1.210 Km	• Proposed drain Starting point from Agarwal Dharamasla to Highway Nallah to Silor road. • This drain passes through market area and 80% of drain is damaged and overflows during rains. • This drain is aligned along the Seelor Road (Major City Road) and major land use along the drain is residential in its initial stretch (700 m), while in reaming part the major land use is agricultural with few residential build-ups. This drain joins a kuchha drain at Highway Nallah and finally discharges in Gurudwara Devpura to Nanak Puliya Tiraha Drain, which finally discharged in Mangli River through an existing unlined drain. • Section of the drain is proposed to have a section varying from 1.0 x1.0 m to 1.5x 1.5 m. • The drain is proposed to be RCC Box type. Land is available for construction of required section as the proposed width decreased owing to increase in depth.. The land belongs to Municipal Council, Bundi. • No tree cutting is required.	   Silore road drain outfall into FCI Outfall drain

S. No	Subproject component	Environmental Features of the Site	Photographs
5.	Khoja Gate Ganesh Ji to Ice Factory Length 0.407 km Start Point: Lat:25.437095° End Point: Long:75.641531° Total Length – 0.407Km	• This drain starts at Khoja Gate and runs north to south direction aligned with Major city road. The drain turns in west direction after travelling 120 metres and aligned in major city road till it falls in Jaipur Bypass to FCI Godam drain. Land use in the proximity of drain is residential and no trees are observed in the alignment of the drain. Blackish water flows drain. • Section of the drain varies (increases from initial point to outfall points Section 0.60 m x 0.60 m to 0.75 m x 0.75 m, Length 0.407 Km. (RCC Box) and land is available for construction of required section. The land belongs to Municipal Council, Bundi. • No tree cutting is required.	 

VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. Introduction

149. Potential environmental impacts of the proposed infrastructure components are presented in this section. Mitigation measures to minimize/mitigate negative impacts, if any, are recommended along with the agency responsible for implementation. Monitoring actions to be conducted during the implementation phase is also recommended to reduce the impact.

150. Screening of potential environmental impacts are categorized into four categories considering subproject phases: location impacts and design impacts (pre-construction phase), construction phase impacts and operations and maintenance phase impacts.

(i) Location impacts include impacts associated with site selection and include loss of on-site biophysical array and encroachment either directly or indirectly on adjacent environments. It also includes impacts on people who will lose their livelihood or any other structures by the development of that site.

(ii) Design impacts include impacts arising from Investment Program design, including technology used, scale of operation/throughput, waste production, discharge specifications, pollution sources and ancillary services.

(iii) Pre-construction impacts include impacts which are anticipated during construction works but planning are required for proposed mitigation measures before start of construction works i.e. during SIP period such as taking consents from various departments, planning for construction and workers camps,

deployment of safety officer, arrangement of required barricades and caution boards etc.

(iv) Construction impacts include impacts caused by site clearing, earthworks, machinery, vehicles and workers. Construction site impacts include erosion, dust, noise, traffic congestion and waste production.

(v) O&M impacts include impacts arising from the operation and maintenance activities of the infrastructure facility. These include routine management of operational waste streams, and occupational health and safety issues.

151. Screening of environmental impacts has been based on the impact magnitude (negligible/moderate/severe - in the order of increasing degree) and impact duration (temporary/permanent).

152. This section of the IEE reviews possible project-related impacts, in order to identify issues requiring further attention and screen out issues of no relevance. ADB SPS (2009) require that impacts and risks will be analyzed during pre-construction, construction, and operational stages in the context of the project's area of influence. The ADB Rapid Environmental Assessment Checklist has been used to screen the project for environmental impacts and to determine the scope of the IEE.

153. In the case of this project (i) most of the individual elements are relatively small and involve straight forward construction and operation, so impacts will be mainly localized and not greatly significant; (ii) most of the predicted impacts are associated with the construction process, and are produced because that process is invasive, involving excavation and earth movements; and (iii) being located in an urban area, will not cause direct impact on biodiversity values. The project will be in properties held by the local government body (Nagar Parishad) and access to the project location is through public rights-of-way and existing roads hence, land acquisition and encroachment on private property will not occur. The nearest protected area is Ramgarh Vishdhari wildlife sanctuary, about 350 m from proposed rehabilitation of existing Jait Sagar drain, starting from Jait Sagar lake. The works will be conducted within the existing ROW of drain. Drain and wildlife sanctuary are separated by each other with urban settlement, houses, roads and mountains and no negative impact of proposed works are anticipated on wildlife sanctuary. Appendix 7 provides Integrated Biodiversity Assessment Report (IBAT analysis) for Bundi.

1. Tree Cutting

154. There are several shrubs (like Vilayati Babool (*Prosophis Juliflora)* , Ber (*Ziziphus sps.*), Mandar (*Calotropis gigantea*) and small trees (having less than 25 cm girth) on vacant lands/ROW on the alignment of proposed drains, which grow commonly on vacant lands and therefore not considered in preliminary survey. As per preliminary survey, it is accessed that a 60 number of trees of *Acacia nelotica* may be affected due to proposed drain works along proposed drains.

155. During service improvement plan before construction begins, this alignment will be again reviewed and tree cutting will be minimised as much as possible. Maximum possible tree will be transplanted to minimise the negative impact of tree cutting. Tree which required to be cut after taking permission from tree authority, will be replaced by planting 3 times or as suggested by tree authority (which ever in maximum).

156. Following measures need to be implemented to minimize and/or compensate for the loss

of tree cover.

(i) Minimize removal of trees by adopting to site condition and with appropriate layout design of proposed drains;
(ii) Tree with less than 50 cm girth will be transplanted to other locations
(iii) Obtain prior permission for tree cutting at any site that may require tree cutting finalized during service improvement plan; and
(iv) Plant and maintain 3 trees for each tree that is removed.
(v) Community consultation will be conducted before and during tree cutting

B. Pre-construction Impacts

157. **Utilities.** Telephone lines, electric poles and wires, water lines, gas pipe lines within the proposed project locations may require to be shifted in few cases. To mitigate the adverse impacts due to relocation of the utilities, the contractor, in collaboration with ULB will-

- identify the locations and operators of these utilities to prevent unnecessary disruption of services during construction phase;
- take prior permission from/intimation to concerned line agencies for shifting the existing utilities; and
- Instruct construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.

158. **Site selection of construction work camps, stockpile areas, storage areas, and disposal areas.** Construction work camps, stockpile areas, storage areas and disposal sites to be considered so that identified sites should not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems. Residential areas will not be considered for setting up construction camps to protect the human environment (i.e., to curb accident risks, health risks due to air and water pollution and dust and noise and to prevent social conflicts, shortages of amenities and crime). Extreme care will be taken to avoid disposals near forest areas, water bodies, swamps or in areas which will inconvenience the community. Construction sites will be selected by contractor in compliance with these conditions and the same will be reflected in Site Environmental Management Plan (SEMP) which is to be prepared by contractor prior to start of construction and approved by PIU.

159. **Site selection of sources of materials.** Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution. To mitigate the potential environmental impacts, locations of quarry site/s and borrow pit/s (for loose material other than stones) would be assessed by PIU. Priority would be sites already permitted by Mines and Geology Department. If new sites are necessary, these would be located away from population centers, drinking water intakes and streams, cultivable lands, and natural drainage systems; and in structurally stable areas. It will be the construction contractor's responsibility to verify the suitability of all material sources and to obtain the approval of Department of Mines & Geology and local revenue administration. If additional quarries will be required after construction is started, then the construction contractor shall use the mentioned criteria to select new quarry sites, with written approval of PIU. Contractor will identify sources of water for construction purposes and obtain necessary permissions as required, and approval of PIU before the use. Details of material sources and water sources will be provided in SEMP.

160. **Debris and Silt disposal.** Prior to the commencement of works, contractor shall identify a debris disposal site in consultation with the PIU and Consultant. Contractor will follow all the

prescribed rules[7]during construction and adhering to following criteria (including but not limited to)-

- The site shall be selected preferably from barren, infertile lands. In case agricultural land needs to be selected, top-soil stripping, stacking and preservation should be undertaken prior to initiation of any activities.
- The local governing body and community shall be consulted while selecting the site.
- Contractor shall prepare a construction and demolition waste management plan in pre-construction phase for safe disposal of construction and demolition wastes as per applicable rules and submit to Municipality through PIU for approval
- Debris disposal site shall be at least 200 m away from surface water bodies[8].
- No residential areas shall be located within 100 m downwind side of the site.
- The site is minimum 250 m. away from sensitive locations like hospitals, religious places, ponds/lakes or other water bodies.

C. Construction Impacts

161. The civil works for the subproject include earth work excavation for proposed drains. Earth work excavation will be undertaken by machine (backhoe excavator). Subproject includes construction of box type close drains and open drains. Sufficient care will be taken while excavation for proposed drains so that existing utilities and cables are not damaged. Trenches deeper than 1.5 m will be protected by shoring/bracings/step cutting to avoid collapse of trenches, and also to avoid any risk to surrounding buildings. The minimum working hours will be 8 hours daily, the total duration of each stage depends on the soil condition and other local features. Extraneous soil after excavation of drains shall be used for filling low lying area or stored/ dumped in approved soil disposal sites.

162. Although construction of these project components involves quite simple techniques of civil work, the invasive nature of excavation and the project locations in the built-up areas of the town where there are a variety of human activities, will result in impacts to the environment and sensitive receptors such as residents, businesses, and the community in general. The anticipated impacts are temporary and for short duration. A detail survey is needed after finalization of alignment to access the feasibility of the alignment for need of any tree cutting, demolition of any structure, road and railway crossings, construction in any private land, presence of any sensitive receptor along alignment, disturbance to public or business etc. Mitigation measures have been prepared for potential adverse impacts. Prior consent and NOC from land owners (e.g. PWD, Railways, ULB etc.) from concerned departments prior to start of construction works, is required

163. Physical impacts will be reduced by the method of working and scheduling of work, whereby the project components will be (i) constructed by small teams working at a time; (ii) any excavation done near sensitive area like school, religious places and house will be protected as per standard norms etc (iii) finish excavation and construction works at earliest in a strech (iv) provide adequate barricades and road safety signage during proposed works in traffic areas (v) Further if night works are required (however unlikely, applicable only in extreme conditions) all the mitigation measures to reduce impacts of disturbance to minimum level to nearby habitants and road users should be ensured by contractor.

[7]Construction and Demolition Waste Management Rules 2016

[8] In the absence of site meeting the stipulated criteria, an alternate site can be selected specifying the reasons. In such a case, the construction camp management plan should incorporate additional measures specific to the site as suggested by the Construction Manager.

164. Construction of drains will be started from downstream point, which is general practice of gravity system and will be connected to end point of existing drains at last phase at the time of interconnection. New drains will be used to remove water of existing waterlogged area/ drains.

165. **Demolition works.** In the initial stage of project planning it is accessed that there may be requirement of demolition of structures such as CC road, boundary walls, religious structures etc.. Where demolition works are required, proper work plan and Mitigation measures will be required for demolition works. Structures to be demolished should be wetted through water sprinkling to reduce dust emission. Appropriate site for storage and disposal of demolished materials should be selected prior to start of demolition activities with prior permission/approval of PIU/ULB. All the safety measures should be adopted during demolition activities.

166. **Storage and Disposal of excavated earth and silt.** A large quantity of soil and silt will be excavated for construction/strengthening of drains. Some part of this excavated soil will be reused for construction of embankments and/or surface levelling; rest of the soil will need to be disposed in other locations. Proper storage and disposal plan from contractor is required before start of the work. Prior permission from land owner/concerned authority for storage and disposal of excess earth is required. Prior to the commencement of works, Contractor will follow all the prescribed rules[9] and shall identify a soil/debris disposal site in consultation with the PIU/ULB and adhering to following criteria:

- The site shall be selected preferably from barren, infertile lands. In case agricultural land needs to be selected, top-soil stripping, stacking and preservation should be undertaken prior to initiation of any activities.
- Debris disposal site shall be at least 200 m away from any surface water body.
- No residential areas shall be located within 200 m downwind side of the site.
- The site is minimum 250 m. away from sensitive locations like hospitals, religious places, ponds/lakes or other water bodies.
- The local governing body and community shall be consulted while selecting the site.
- Contractor is required to prepare plan for disposal of construction and demolition waste including excavated earth in the designated site/sites and submit the plan in PIU to be approved by Municipal Council as per Construction and Demolition Waste Rules 2016
- Soil storage site should be properly demarcated by fencing and information board should be placed at entrance
- At soil storage site soil should be covered by tarpaulin or regular water sprinkling should be done to reduce dust emission
- At soil disposal site the disposed soil should be levelled on daily basis and no heap or mound should be left at end of the day

167. **Silt and sludge removal** is regular activity conducted by ULB every year before start of monsoon. The Provision are considered in BOQ for 1044 cum silt and 1044 cum sludge clearance from proposed drains. As the silt is mixed with the water, handling and transport of silt/sediment in semi-solid / slurry form will lead to spillage of contaminated water/slurry. Accumulated drain water with silt/sediment, potentially mixed with solid waste / wastewater in some places, may present hazardous conditions for removal of sediment/silt. Following measures are suggested to safely desilt and dispose the desilited material:

[9] Construction and Demolition Waste Management Rules 2016 and Solid Waste Management Rules 2016

- Desilting process of shall be conducted in dry season only
- Prior to desilting process, the drains shall be allowed dry so that there is no standing water on silt / sediment
- Do not conduct manual desilting process, use appropriate equipment / implements
- Desilting process shall be conducted in such a way that water content of the silt/sediment is low, so that contaminated water is not spilled during the loading, transport and unloading process.;
- Workers shall be provided with appropriate PPE's; masks with oxygen cylinders shall be made available at the site, which shall be utilised during emergency
- identify beneficial uses or dispose at suitable disposal site in consultation with the PIU/ULB:

168. **Sources of Materials.** Significant amount of gravel, sand, coarse aggregate, and cement will be required for this project. The construction contractor will be required to:

- Use material sources permitted by government[10];
- Verify suitability of all material sources and obtain approval of PIU;
- Ensure that the loading and unloading of the materials and the transportation of the materials from source to construction site does not cause impact on health and safety of the workers and the community; and
- Submit to PIU on a monthly basis documentation of sources of materials. . If contractor is purchasing ready mix concrete, asphalt/macadam and aggregates from third party, contractor will assure that all the parties/ suppliers are having CTE/CTO from RSPCB and will collect the copy of these certificates and submit to PIU/consultants

169. **Air Quality.** Emissions from construction vehicles, equipment, and machinery used for excavation and construction will induce impacts on the air quality in the construction sites. Anticipated impacts include dusts and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons. These however will be temporary limiting to construction activities only. To mitigate the impacts, construction contractors will be required to:

- Consult with PIU/on the designated areas for stockpiling of soils, gravel, and other construction materials;
- Damp down exposed soil and any stockpiled material on site by water sprinkling;
- Use tarpaulins to cover sand and other loose material when transported by trucks;
- Clean wheels and undercarriage of haul trucks prior to leaving construction site
- Don't allow access in the work area except workers to limit soil disturbance and prevent access by barricading and security personnel
- Fit all heavy equipment and machinery with air pollution control devices which are operating correctly, DGs should have proper stake height as per norms;
- Ensure all the equipment are having PUC certificates
- Do regular water sprinkling in dusty areas to reduce dust emission during works
- Damp down the structures before demolishing to reduce dust emission
- Damp down on regular basis all the access ways

[10]CTE and CTO will be required for batching plant, hot mix plant, crushers etc. if specifically established for this project. If contractor is purchasing raw material or ready mix concrete, asphalt/macadam and aggregates from third party, he has to be assured that third party is having CTE/CTO from RSPCB and should collect the copy of these and submit to PIU/consultants. Quarry sites should also have the desired permissions.

- Maintain all the equipment and vehicles to reduce emission of smoke and keep pollution under control and keep records of periodic maintenance
- Conduct ambient air quality monitoring periodically as per Environmental Management Plan EMP

170. **Surface Water Quality.** There is no any surface water source near the proposed site, which can be polluted due to construction activities, however, run-off from stockpiled materials and chemical contamination from fuels and lubricants during construction works can contaminate the drainage system of town. These potential impacts are temporary and short-term duration only. However, to ensure that these are mitigated, construction contractor will be required to:

- Prepare and implement a spoils management plan;
- Avoid to construct any construction camps and labour camps near to any water body and do not allow to dispose any waste or sullage in to any water body
- Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;
- Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with PIU on designated disposal areas;
- Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies;
- Place storage areas for fuels and lubricants away from any drainage leading to water bodies and provide impermeable lining under the storage yard of fuels and lubricants
- Dispose any wastes generated by construction activities in designated sites;
- Keep oil tray or pans under the DG set or during maintenance of mechanical equipment to avoid oil spillage resulting soil and water pollution, and
- Conduct surface water quality Monitoring according to the Environmental Management Plan (EMP)

171. **Noise and Vibration Levels.** Construction works will be conducted along the roads ROW and vacant lands in Bundi urban area, where there are majorly houses, commercial activities, few religious places and small-scale businesses. The sensitive receptors are the schools, religious places, hospitals in these areas. Increase in noise level may be caused by excavation, particularly breaking of cement concrete or bitumen roads, operation of construction equipment like concrete mixers, and the transportation of equipment, materials, and people. Vibration generated from construction activity, for instance from the use of pneumatic drills, will have impact on nearly buildings. This impact is negative but short-term, and reversible by mitigation measures. The construction contractor will be required to:

- Plan activities in consultation with PIU so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance;
- Use road cutters instead of breaker/hammer for cutting the road before excavation on roads
- Horns should not be used unless it is necessary to warn other road users or animals of the vehicle’s approach;
- Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimize sound impact to surrounding sensitive receptor;
- DGs being used at site should have sound reducing (acoustic) enclosures, preferably silent DGs should be used at site;

- Maintain maximum sound levels not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the vehicle/s and equipment;
- Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity;
- Consult the custodians of important buildings, cultural and tourism authorities and local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals, exams of students etc.;
- Provide all workers appropriate PPEs like ear plug/muff, working in high noise conditions;
- Keep all vehicles and equipment in good conditions to avoid excessive noise generation;
- Provide noise barriers near sensitive receptors like schools, hospitals, temples, courts etc and consult in advance with sensitive receptors about the working hours (specially schools, hospitals, offices, courts etc) and avoid noisy works in those hours;
- Avoid noisy works in nights in inhabited areas to avoid any disturbance to habitants; and
- Consult in advance with habitants and inform them about the nature and duration of works
- Conduct noise monitoring according to the Environmental Management Plan (EMP)

172. **Management Plan for Night works (if required).** Following requirements should be fulfilled for construction works at night hours-

- Night works should be avoided at construction sites specially in residential areas and should be performed only when day works are not possible due to excessive traffic/public/pedestrian movement, site of cultural or religious importance, where there is huge crowd during day hours or any other unavoidable circumstances.
- Contractor should plan for night works only after directions from PMU/PIU/CMSC
- Contractor should submit plan for night works for approval from PIU.
- PIU should ensure that prior written information should be given to local authorities such as district administration, Police/traffic police, line agencies concerned, residents welfare association/business association/vyapar of the affected areas and their consents/permissions should be taken prior to start of night works.
- PIU/CMSC engineers should check and ensure that all the preparation as per management plan is done by contractor and contractor is having all the necessary equipment and materials for night works.
- Contractor is required to have following equipment/arrangements for night works-
    - ✓ Contractors should have hand held noise level meter for measurement of noise during night hours
    - ✓ Contractors should have hand held lux meter for the measurement of illumination during night hours
    - ✓ Preferably electrical connections is available for running equipment otherwise sound proof/super silent Diesel Generator set should be available
- Sound level should not increase as per following-

Type of area of work	Maximum noise level dB(A)
Industrial	70
Commercial	55
Residential	45
Silence zone	40

- Illumination should be as follows-

Minimum illumination (lx)	Areas to be illuminated	Type of work activity
54	Illumination throughout the work area	General work area lighting, and performance of visual tasks of large size, or medium contrast, or low require accuracy
108	Illumination of work area and areas adjacent to equipment	Performance of visual tasks of medium size, or low to medium contrast, or medium required accuracy
216	Illumination of task	Performance of visual tasks of small size, or low contrast or high required accuracy or fine finish

- As far as possible ready mix concrete from batching plant to be used, otherwise the concrete should be prepared away from residential areas and brought to the site
- All the noise activity like hammering, cutting, crushing, running of heavy equipment should be done in day time and avoided in night time
- Workers engaged in night works should have adequate rest/sleep in day time before start of night works
- Worker engaged for night works should have previous experience of night works and should be physically fit for such works including clear vision in night
- All the necessary provisions of traffic aids such as traffic signals, road signage, barricades, cautions boards, traffic diversion boards etc. should be available with fluorescent/retro-reflective arrangements
- Workers should be trained before start of night works about risks and hazards of night works and their mitigation measures and should be provided all the protective aids (PPEs) including fluorescent/retro-reflective vests
- Horns should not be permitted by equipment and vehicles
- Workers should not shout and create noise
- First aid and emergency vehicles should be available at site
- Emergency preparedness plan should be operative during night works
- Old persons and pregnant women and women having small kids should not work in night time
- All the vehicles and equipment being used at night works should have adequate type of silencers/enclosures/mufflers to reduce noise
- All the vehicles should be checked for working head lamps, tail lamps, inner lights etc. before start of night works
- PIU/CMSC site engineers and contractors' safety personnel should closely monitor the safety of works continuously and noise and illumination levels on hourly basis and maintain photographic and videographic records as well as register the observations
- Night works should be stopped early in the morning at least one hour before start of pedestrian/traffic movement
- After completion of night works all the site should be cleaned and maintained obstruction free for day time movement of vehicles and pedestrians
- Drivers and workers should be alert and responsive during night works
- All the wages to workers working in night hours should be as per the applicable labour acts
- Avoid any nuisance which may create problems to nearby habitants and work peacefully during night hours

- Night works should not be conducted near hospitals and during peak seasons such as peak tourist season, students' exam times etc.

173. **Landscape and Aesthetics.** The construction works may require cutting of trees and also will produce excess excavated earth, excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items. Unplanned disposal of these will have negative impacts on Landscape and overall aesthetics. These impacts are negative but are of short-term and reversible by mitigation measures. The construction contractor will be required to:

- Prepare and implement spoils management plan;
- Avoid stockpiling of excess excavated soils;
- Coordinate with ULB for beneficial uses of excess excavated soils or immediately dispose to designated areas;
- Recover used oil and lubricants and reuse or remove from the sites;
- Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;
- Minimize removal of vegetation and minimize cutting of trees;
- If tree-removal will be required, obtain tree-cutting permit from the Revenue Department; and
- Plant three native trees for every one that is removed.
- Remove all wreckage, rubbish, or temporary structures which are no longer required; and
- Request PIU to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.

174. **Groundwater Quality**. Another physical impact that is often associated with excavation is the effect on drainage and the local water table if groundwater and surface water collect in the voids. Although, groundwater is much deeper than the proposed trenching depth, and rains are scarce and limited to very short duration during monsoon, to ensure that water will not pond in pits and voids near project location, the construction contractor will be required to conduct excavation works in non-monsoon season to the maximum extent possible. These potential impacts are temporary and short-term duration only. However, to ensure that these are mitigated, construction contractor will be required to:

- Prepare and implement a spoils management plan (**Appendix C-13**);
- Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;
- Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with PIU on designated disposal areas;
- Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies;
- Place storage areas for fuels and lubricants away from any drainage leading to water bodies;
- Dispose any wastes generated by construction activities in designated sites; and
- Conduct periodical ground water quality monitoring according to the Environmental Management Plan (EMP).

175. **Accessibility.** Excavation along the roads, hauling of construction materials and operation of equipment on-site can cause traffic problems. During construction traffic on these

roads will require diversion and temporary closer. Potential impact is negative but short term and reversible by mitigation measures. The construction contractor will be required to:

- Prepare and implement a Traffic Management Plan **(Appendix C-14**)
- Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites;
- Schedule transport and hauling activities during non-peak hours;
- Locate entry and exit points in areas where there is low potential for traffic congestion;
- Keep the site free from all unnecessary obstructions;
- Drive vehicles in a considerate manner;
- Coordinate with Traffic Police for temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours; and
- Notify affected sensitive receptors by providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.
- Excavated roads to be wetted through water sprinkling to reduce dust emission
- Providing and fixing Barricading using 40 mm dia M.S. pipe vertical and horizontal posts
- Providing and fixing OPEN including strutting, shoring and packing cavities (wherever required)
- Providing and fixing CLOSE timbering including strutting, shoring and packing cavities (wherever required)

176. **Socio-Economic - Income.** The project components will be located in government land and there is no requirement for land acquisition or any resettlement. Construction works will impede the access of residents to specific site in limited cases. The potential impacts are negative and moderate but short-term and temporary. The construction contractor will be required to:

- Prepare and implement spoils management plan (**Appendix C-13**);
- Leave spaces for access between mounds of soil;
- Provide walkways and metal sheets where required to maintain access across for people and vehicles;
- Increase workforce in the areas with predominantly institutions, place of worship, business establishment, hospitals, and schools;
- Consult businesses and institutions regarding operating hours and factoring this in work schedules; and
- Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.
- Notify community/ water users in advance about likely interruptions in water supply.
- Provide alternate sources of clean water until water supply is restored.
- Provide all mitigation measures as given in resettlement plan (RP) prepared for the project to mitigate impacts on vendors and shopkeepers

177. **Socio-Economic-Employment.** Manpower will be required during the 36-months construction stage. This can result in generation of temporary employment and increase in local revenue. Thus potential impact is positive and long-term. The construction contractor will be required to:

- Employ at least 50% of the labour force, or to the maximum extent, local persons within the 2-km immediate area if manpower is available; and
- Secure construction materials from local market.

178. **Occupational Health and Safety.** Workers need to be mindful of the occupational hazards which can arise from working on roads, in height and excavation works. Potential impacts are negative and long-term but reversible by mitigation measures. Construction contractor will depute experienced EHS personnel and will be required to:

- Comply with all national, state and local labor laws (see **Appendix C-12**);
- Develop and implement site-specific occupational health and safety (OH&S) Plan which will include measures such as: (a) excluding public from the site; (b)ensuring all workers are provided with and use personal protective equipment;(c) OH&S Training11 for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents;
- Ensure that qualified first-aid is provided at all times. Equipped first-aid stations shall be easily accessible throughout the site;
- Provide medical insurance coverage for workers;
- Secure all installations from unauthorized intrusion and accident risks;
- Implement necessary structural safety and site safety measures to prevent collapse of trenches, and damage / structural failure / collapse of adjacent buildings, boundary walls and other structures; provide proper braces, struts, anchors as required in the trench and for protecting the adjoining structures; avoid placing of material, equipment, waste, close to the trench edges
- The project area experiences extreme temperature during summer months of April and May, which may affect the health of workers engaged in construction work. Contractor should take necessary measures during summers including the following:
    a. Work schedule should be adjusted to avoid peak temperature hours (12 -3 PM)
    b. Provide appropriate shade near the work place; allow periodic resting and provide adequate water
    c. Provide necessary medicine and facilities to take care of dehydration related health issues
- Provide supplies of potable drinking water;
- Provide clean eating areas where workers are not exposed to hazardous or noxious substances.
- Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers;
- Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;
- Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;
- Ensure moving equipment is outfitted with audible back-up alarms;

[11] Some of the key areas that may be covered during training as they relate to the primary causes of accidents include (i) slips, trips and falls; (ii) personal protective equipment; (iii) ergonomics, repetitive motion, and manual handling; (iv) workplace transport; and (v) legislation and responsibilities. Training can provide the foundations of competence but it does not necessarily result in a competent worker. Therefore, it is essential to assess staff competence to ensure that the training provided is relevant and effective. Supervision and monitoring arrangements shall be in place to ensure that training has been effective and the worker is competent at their job. The level of supervision and monitoring required is a management decision that shall be based on the risks associated with the job, the level of competence required, the experience of the individual and whether the worker works as part of a team or is a lone worker.

- Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate; and
- Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.

179. **Community Health and Safety.** Hazards posed to the public, specifically in high-pedestrian areas may include traffic accidents and vehicle collision with pedestrians. Potential impact is negative but short-term and reversible by mitigation measures The construction contractor will be required to:

- Plan routes to avoid times of peak-pedestrian activities.
- Liaise with PIU in identifying risk areas on route cards/maps.
- Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure.
- Provide road signs and flag persons to warn of on-going trenching activities.
- Survey the surrounding vulnerable buildings for likely issues in structural stability/ differential settlement during the excavation works;
- Implement necessary structural safety and site safety measures to prevent collapse of trenches, and damage / structural failure / collapse of adjacent buildings, boundary walls and other structures; provide proper braces, struts, anchors as required in the trench and for protecting the adjoining structures; avoid placing of material, equipment, waste, close to the trench edges
- Provide prior information to the local people about the nature and duration of work;
- Provide hard barricades and deploy security personnel to ensure safe movement of people and also to prevent unnecessary entry and to avoid accidental fall into open trenches.
- Do not park heavy construction machinery on roads
- Avoid storing excavated material on road.

180. **Work Camps.** Operation of work camps can cause temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants. Potential impacts are negative but short-term and reversible by mitigation measures. The construction contractor will be required to:

- Consult PIU before locating project offices, sheds, and construction plants;
- Minimize removal of vegetation and disallow cutting of trees;
- Provide drinking water, water for other uses, and sanitation facilities for employees;
- Provide temporary rest and eating area at all work sites;
- Ensure conditions of liveability at work camps are maintained at the highest standards possible at all times; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be used as accommodation for workers; accommodation shall

meet the IFC standards for workers accommodation12 which include: provision of safe housing, availability of electricity, plumbing, water and sanitation, adequate fire protection and dormitory/room facilities; accommodation shall be in the range from 10 to 12.5 cubic meter (m3) (volume) or 4 to 5.5 square meters (m2) (surface) per worker, a minimum ceiling height of 2.10 m; a reasonable number of workers are allowed to share the same room–(standards range from 2 to 8 workers); workers with accompanying families shall be provided with a proper and safe accommodation (Suggested guidelines based on IFC benchmark standards for workers accommodation is provided in **Appendix C-21**);

- Prohibit employees from poaching wildlife and cutting of trees for firewood;
- Train employees in the storage and handling of materials which can potentially cause soil contamination;
- Recover used oil and lubricants and reuse or remove from the site;
- Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;
- Remove all wreckage, rubbish, or temporary structures which are no longer required; and
- Report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.

181. **Social and Cultural Resources.** For this project, excavation will occur at locations not known to have archaeological values, so there is no risk of such impacts. Religious places such as temples are present nearby the proposed alignment of Nala and contractor will require to follow the mitigation measures as given below-

- Consult with concerned religious authorities, nearby people and devotees in pre-construction phase and explain the work method and duration of proposed works, take their suggestions and comments and incorporate in design the mitigation measures required
- Adjacent to religious/social/historic sites, undertake excavation and construction work in such a way that no structural damage is caused to the religious building.
- Observe the local rituals and important dates of festivals, weekly/monthly/annual religious occasions in the religious places and do not make any disturbance/hindrance/obstacles during such time to the religious places,
- provide proper signage, barricades etc. to protect public and devotees from dangers of construction works.

182. **Physical Cultural Resources.** Rani ji ki Baori an ASI protected monuments comes under the proposed drain (Bundi Bypass-ice factory via raniji ki baori. Therefore, no impacts envisaged but risk of uncovering archeological remains, given the long history of town, during the excavations cannot be ruled out completely. Construction contractors therefore should follow the below measures in conducting any excavation work:

(i) Create awareness among the workers, supervisors and engineers about the chance finds during excavation work;
(ii) Stop work immediately to allow further investigation if any finds are suspected;
(iii) Inform local Archaeological Department / Museum office if a find is suspected and take any action, they require to ensure its removal or protection in situ; and

[12] https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_gpn_workersaccommodation

(iv) Prepare a chance find protocol (**Appendix C-26**)

183. **Traffic diversion and/or road closure-** If traffic diversion and/or road closure is required for the proposed works, prior consent from traffic department will be required and prior information to affected areas and public should be disseminated through consultations by CAPC. Proper road signage and traffic aids should be provided at site. Excavation along the roads, hauling of construction materials and operation of equipment on-site can cause traffic problems. Potential impact is negative but short term and reversible by mitigation measures. The construction contractor will be required to:

- Prepare and implement a Traffic Management Plan
- Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites;
- Schedule transport and hauling activities during non-peak hours Locate entry and exit points in areas where there is low potential for traffic congestion;
- Keep the site free from all unnecessary obstructions;
- Drive vehicles in a considerate manner;
- Coordinate with Traffic Police for temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours; and
- Notify affected sensitive receptors by providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.
- Maintain sufficient access to houses and shopkeepers (commercial establishments) during construction work through metal sheets and temporary bridges
- Locate entry and exit points in areas where there is low potential for traffic congestion;

D. Operation and Maintenance Impacts

184. **Proposed Drainage System:** The system has a design life of 15/30 years, during which shall not require major repairs or refurbishments and should operate with little maintenance beyond routine actions required to keep the system in working order. The stability and integrity of the system will be monitored periodically to detect any problems and allow remedial action if required. Any repairs will be small-scale involving manual, temporary, and short-term works involving regular checking and recording of performance for signs of deterioration and repairing.

185. Regular cleaning of drains, specially before start of monsoon season is required to avoid any blockage and overflow of drains, which may ultimately create public nuisance such as ponding in nearby places. Identify the suitable place for disposal of silt and solid waste, away from habitation and dispose the silt and solid waste after cleaning of drains; in a scientific manner so that it may not cause public nuisance or any harm to stray animals.

186. The new drains will contribute to an improvement in the physical appearance and condition of the town by helping to remove the large and unsightly pools of water that are an almost permanent feature of the town. The new drains should also help to ensure that similar pools do not re-form in the future. With these projects implemented the quality of the town environment would then improve significantly. Removal of blockages in the drain, if left stockpiled alongside the drains, will have adverse impacts on the appearance of the area. Not only is this unhygienic, but it is also inefficient, as much of this material inevitably returns to the drains, where it may cause further blockage. Local body will also ensure that no wastewater and sewage enter in to proposed drains. Local body will also conduct awareness programs to prevent disposal of solid waste into drains.

187. Community Safety: All drains are proposed in Bundi town within colonies and less populated area. RCC Box type of drains will be laid in populated area within road & for road crossing and open type and stone pitching of drains will be laid in less populated area on wide roads on corner of roads within ROW. In each section, parapet walls on both sides of open drains are proposed in design for public safety

188. **Project Benefits**. The citizens of the Bundi city will be the major beneficiaries of the improved drainage system, as the unsightly and unhygienic pools of standing wastewater will gradually disappear and should not recur in future. This should then improve the appearance and environment of the town, as well as protecting the ancient buildings and sites from the water damage they are exposed to at present. If, as expected, this ultimately brings more tourists into the town, then the citizens could benefit socio-economically from the related growth in the economy apart from improved environmental conditions of city.

VII. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. Overview

189. The active participation of stakeholders including local community, NGOs/CBOs, and the media in all stages of project preparation and implementation is essential for successful implementation as well as operation of the project. It will ensure that the subprojects are designed, constructed, and operated with utmost consideration to local needs, ensures community acceptance, and will bring maximum benefits to the people. Public consultation and information disclosure is a must as per the ADB policy.

190. A three-tier consultation process has been adopted for RSTDSP project: focus group discussions, primary household sample surveys and a town-level public consultation workshop. Most of the main stakeholders have already been identified and consulted during preparation of preliminary design and IEE, and any others that are identified during project implementation will be brought into the process in the future. Primary stakeholders of the subproject are: residents, shopkeepers and businesspeople who live and work alongside the roads in which network improvements will be provided, and government and utility agencies responsible for provision of services, Bundi Nagar Nigam, Public Health Engineering Department, and Rajasthan Pollution Control Board. Secondary stakeholder are: NGOs and CBOs working in the area, community representatives, beneficiary community in general, government agencies, the executing and implementing agencies (LSGD and RUDSICO-EAP), Government of India and the ADB.

B. Public Consultation

191. The public consultation and disclosure program is a continuous process throughout the project implementation, including project planning, design and construction. Informal and formal consultations at different locations were also conducted during social and environmental impact assessment in Bundi in July 2022. (**Appendix 4**).

1. Consultation during Project Preparation

192. Institutional consultations were conducted with the Governmental Departments such as Local Self Government Department (Municipal Corporation, Bundi), Pollution Control Board, Nagar Parishad , etc. The project proposals are formulated in consultation with Bundi Nagar

Parishad and the proposals have been finalized only after certification of both the authorities that the proposals suit the requirements of the City.

193. Focus-group discussions with residents and other stakeholders were conducted to learn their views and concerns. A social and environmental impact assessment has been conducted in the town, covering sample households and nearby vendors to understand the basic characteristics of town, health status, and the infrastructure service levels, and also the demand for infrastructure services.

194. Informal and formal consultation are conducted with local population of the area, about at 8 places along with proposed alignment with about 100 persons (90 male and 10 females) in the month of January and July 2022. Discussions were held about proposed project components, EMP measures, ownership of land, tree cutting, water logging problems and general people perception for proposed project. Project information was given to participants and their suggestions and comments were enquired about. People were agreed with proposed drainage works as they were suffering with poor drainage conditions in these locations. It was noted that people are willing to extend their cooperation as the proposed activities are supposed to enhance the environmental conditions and the living standard of the public. The public expressed their concern regarding the nuisance and disturbance (dust, road closure and traffic management activities) during the construction stage which can have impact on their day-to-day activities. Public opined that an appropriate operation and maintenance system should be in place, for proposed drainage system, for its best functioning and to have the maximum health and aesthetic benefits. Details of public consultations are given in **Appendix 4**.

195. A town-level City Level Committee (CLC) has been formed in Bundi district by Government orders. City Level Committee meeting was organized during the detailed design stage to which representatives of primary and secondary stakeholders were invited. City Level Stakeholder committee meeting was organized for Bundi in District Head Quarter, Bundi on dtd. 20.10.2021 to discuss the matter of proposed Sewerage and Drainage works in Bundi under the chairmanship of District Collector, Bundi. DPR consultants, RUDSICO-EAP officials, PHED officials, Municipal Corporation, Bundi -North and South officials, Bundi Nagar Parishad officials, Water Resource Department, PWD and other invitee members. Proposed scope of works and technology of proposed sewerage and drainage works in Bundi was discussed in the meeting and approval was given for proposed works by Committee in this meeting. The project was agreed by the committee for further course of action by RUDSICO-EAP. Details of CLC meeting, minutes and photographs are attached in **Appendix 4**.

2. Consultation During Construction

196. Prior to start of construction, Bundi Nagar Parishad and PIU with the assistance of Consultants will conduct information dissemination sessions at major intersections and solicit the help of the local community leaders/prominent citizens to encourage the participation of the people to discuss various social and environmental issues. At town level, focus group meetings will be conducted to discuss and plan construction work with local communities to reduce disturbance and other impacts, and provide a mechanism through which stakeholders can participate in project monitoring and evaluation.

197. A constant communication will be established with the affected communities to redress the environmental issues likely to surface during construction and operational phases and also regarding the grievance redress mechanism. PIU with the help of Community Awareness and Participation Consultant (CAPC) will organize public meetings and will appraise the communities

about the progress on the implementation of EMP. Meeting will also be organized at the potential hotspots/sensitive locations before and during the construction.

C. Information Disclosure

198. Executive summary of the IEE will be translated in the local language and made available at the offices of Bundi Nagar Parishad , RUDSICO-EAP- PMU and PIU. Copies of summary will be provided to participants of city level workshop to be organized in Bundi. Hard copies of the IEE will be accessible to citizens as a means to disclose the document and at the same time creating wider public awareness. Electronic version of the IEE in English and Executive Summary in Hindi will be placed in the official website of the Nagar Parishad /RUDSICO-EAP after approval of the IEE by Government and ADB. Stakeholders will also be made aware of grievance register and redress mechanism.

199. Public information campaigns via newspaper/radio/TV, to explain the project details to a wider population will be conducted. Public disclosure meetings will be conducted at key project stages to inform the public about the progress and future plans. Prior to start of construction, the PIU will issue Notification on the start date of implementation in local newspapers A board showing the details of the project will be displayed at the construction site for the information of general public.

200. Local communities will be continuously consulted regarding location of construction camps, access and hauling routes and other likely disturbances during construction. The road closure together with the proposed detours will be communicated via advertising, pamphlets, radio broadcasts, road signage, etc.

VIII. GRIEVANCE REDRESS MECHANISM

A. Project Specific Grievance Redress Mechanism

201. A project-specific, three-tier grievance redress mechanism (GRM) covers both environment and social issues. The GRM will be established to receive, evaluate, and facilitate the resolution of affected persons' concerns, complaints, and grievances about the social and environmental performance at project level. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns related to the project. Assessment of the GRM designed and implemented for Rajasthan Urban Sector Development Program (RUSDP)[13] the system was effective in timely resolution of grievances in a transparent manner.[14] The multichannel, project-specific, three-tier GRM is functional at

[13] The procedures followed for grievance redress during implementation of RSTDSP Phase III included the project GRM and the pilot GRM software application (smart check) in Pali, the Sampark portal of Government of Rajasthan, and the Chief Minister's helpline. Complaints received through various channels were mostly minor and pertained to damage to existing water supply pipelines and disruption of water supply during construction, delays in road restoration, and pending new connections. Complaints related to damage to private property (compound walls/steps, etc.) were less in number. The grievances were mostly possible to resolve in coordination with the contractors. Complaints received were immediately referred by the CAPC/PMDSC supervision staff to the PIU Nodal officer (safeguards) and concerned engineer at PIU, who advised them on further action. Follow up with the contractor on complaint resolution was undertaken by PIU Nodal officer CAPC and PMDSC and final feedback sought from complainant upon resolution. Complaints requiring inter-departmental coordination were referred to the PMU for resolution, and feedback provided to complainant. The PMU kept regular track of grievances through WhatsApp and email alerts, ensuring registration and follow-up until resolution.

[14] Town-level grievance registration data indicates that a large number of grievances were registered, pointing to the

RUSDP, hence the design of GRM for RSTDSP takes into account the proposed institutional structure for RSTDSP and the positive features and learnings from the previous GRM.[15]

202. **Common Grievance Redress Mechanism.** A common GRM will be in place for social, environmental, or any other grievances related to the project. Implementation of the resettlement plans/RIPPs/DDRs/IEEs will follow the GRM described below. The GRM will provide an accessible and trusted platform for receiving and facilitating resolution of affected persons' grievances related to the project.

203. Public awareness campaigns within entire ULB/Municipal area will ensure that awareness on grievance redress procedures is generated. The nodal officer-social/environment at field level through community awareness and public participation consultant (CAPPC) will conduct ULB/Municipal area-based awareness campaigns to ensure that poor and vulnerable households are made aware of grievance redress procedures and entitlements. Contractors will provide pamphlets to communities prior to start of works and billboards during construction. The pamphlets and billboards will include relevant environmental and social safeguards, GRM information, and contact details of key personnel from PIU and contractors.

B. Grievance Redress Process

204. Affected persons will have the flexibility of conveying grievances/suggestions by dropping grievance redress/suggestion forms in complaint/suggestion boxes that will be installed by project PIUs or by e-mail, by post, or by writing in a complaints register in ULB offices/complaints register at contractor's work site[16] or by sending a WhatsApp message to the PIU[17] or by dialling the phone number of town level PIU/CAPPC or by dialling a toll-free number.[18] Any aggrieved person can also avail the facilities of online grievance monitoring system 'Rajasthan Sampark' portal to register their grievances which are a parallel mechanism of grievance registration, in addition to the project GRM.[19] Careful documentation of the name of the complainant, date of receipt of the complaint, address/contact details of the person, location of the problem area, and how the problem was resolved will be undertaken and feedback provided to the complainant on action/decision taken. The Safeguard and safety officer of town/city level PIU will have the overall responsibility for timely grievance redressal on environmental and social safeguards issues and for registration of grievances, related disclosure, with the assistance of project consultants. In case of grievances that are immediate and urgent in the perception of the complainant, the

effectiveness of the multi-channel GRM. No major grievance was received for RUSDP Phase III. The GRM helped smoothen the process of project implementation, hence the proposed architecture for the RSTDSP GRM remains similar, with some refinement, taking into account the changes in institutional setup proposed for project implementation.

[15] Continued logistics support at field level will be key to successful management of grievance redress under RSTDSP. The target date for establishment of the first level (PIU level) and second level (Zonal level) of GRM is before loan negotiation.

[16] RUSDP piloted an online application based live GRM counter for resolution of public grievances over and above the usual process of grievance registration and redressal. This app based GRM - "RUIDP Smart Check" is available at Google play store (free of cost) and is operational. The RUIDP Smart Check "app" was launched in Pali town in July 2017 and is proposed to be scaled up in RSTDSP project towns. For persons without access to the application, the traditional channels will continue to be available.

[17] It is suggested for each PIU to have a dedicated WhatsApp group for registration of grievances and receipt of quick feedback, to be followed by more formal communication.

[18] Project contractors in all project towns will have a toll-free number with specific working hours for registration of grievances related to RSTDSP.

[19] http://www.sampark.rajasthan.gov.in/RajSamWelcome.aspx

contractor, and officials of PIU with assistance from CMSC and CAPPC on-site will provide the most easily accessible or first level of contact for quick resolution of grievances. Contact numbers and names of the concerned PIU safeguard and safety officer, contractors, CAPPC and CMSC personal will be posted at all construction sites at visible locations.

(i) **1st level grievance.** The contractors, PIU executive engineer/assistant engineer designated as safeguard and safety officer (social and environment), CMSC (safeguard staff) and CAPPC can immediately resolve issues on-site, in consultation with each other and will be required to do so within 7 days of receipt of a complaint/grievance. If required, city level monitoring committee (CLMC)[20] will be involved in resolution of grievances at the 1st level;

(ii) **2nd level grievance.** All grievances that cannot be redressed within 7 days at field/PIU level will be brought to the notice of Zonal PIU headed by Additional Chief Engineer (ACE). The ACE at zonal PIU will resolve the grievance within 7 days of receipt of compliant/grievance in discussion with the ASO, field level PIU, CMSC, CAPPC and the contractor; and

(iii) **3rd level grievance.** All the grievances that are not addressed by Zonal PIU within 7 days of receipt will be brought to the notice of the PMU. Depending on the nature of grievance, the project officer (social/environment) at PMU will resolve the grievance within 15 days of receipt of grievance with necessary coordination of Zonal PIU and CMSC and guidance/instruction of additional project director (APD-PMU)..

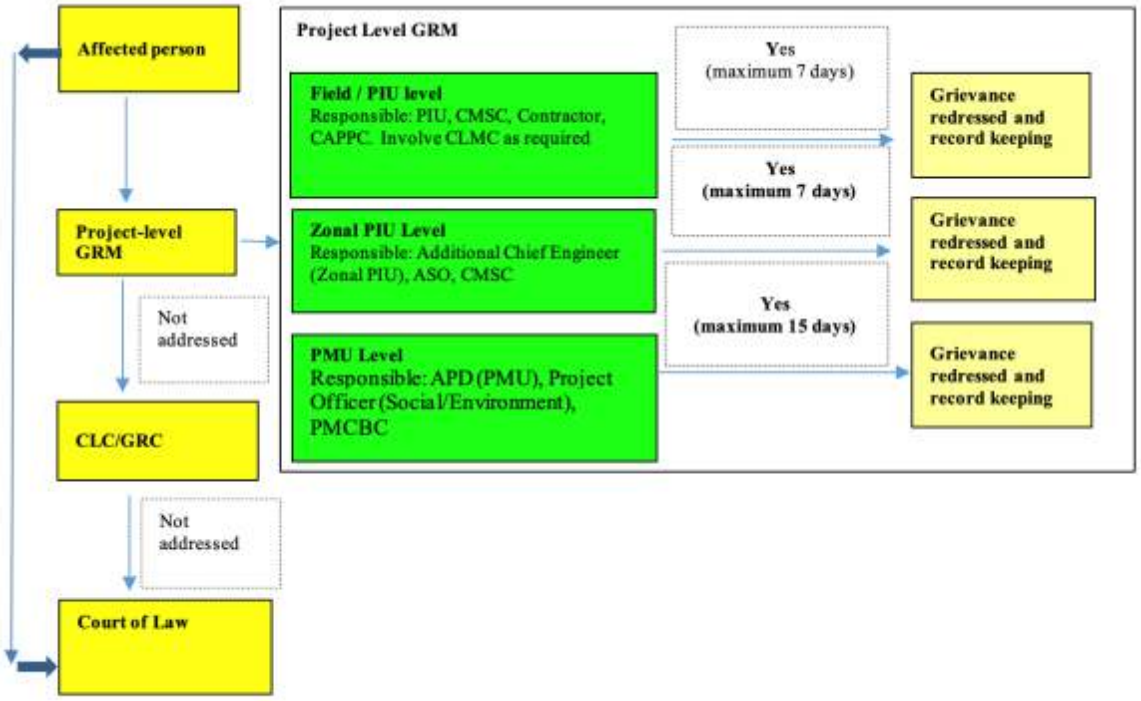
(iv) Grievances not redressed through this process within/at the project level within stipulated time period will be referred to the CLC/GRC, which has been set up.[21] In its role as a GRC, the CLC will meet whenever there is an urgent, pending grievance. Other grievances can be discussed during its regular meetings. Zonal PIU will inform the CLC regarding any grievances required to be resolved urgently. The GRC will resolve the grievance within 15 days of receiving the complaint. In case of any indigenous peoples impacts in subprojects, the CLC/GRC must have representation of the affected indigenous people community, the chief of the tribe or a member of the tribal council as traditional arbitrator (to ensure that traditional grievance redress systems are integrated) and an NGO working with indigenous people groups.

(v) The multi-tier GRM for the project is outlined below (**Figure 17**), each tier having time-bound schedules and with responsible persons identified to address grievances and seek appropriate persons' advice at each stage, as required. The GRC will continue to function throughout the project duration.

[20] The CLMC has been formed at the town/city level for planning and monitoring of work, resolve issues related to departmental coordination etc. It is headed by Commissioner/Executive Officer ULB (Chairman) and city engineer of public health engineering department (PHED), public works department (PWD) and head of PIU acting as Member Secretary.

[21] City Level Committee (CLC)/grievance redress committees (GRCs) has been constituted for each town/city under the Chairmanship of District Collector to provide overall subproject guidance and “to sort out issues and remove hindrances, if any”. CLC formed at city-level/district level with members composed of: District Collector as Chairperson, and following as members: ULB Commissioner/Mayor/Chairman; Deputy Mayor/Vice Chairman ULB; Chairman/Secretary Urban Improvement Trust (UIT); Head of Zonal/field level PIU as Member Secretary; one representative each from relevant government departments as appropriate (PWD/PHED/Town Planning Department etc.). All CLCs in their role as GRCs will have at least one-woman member/chairperson. In addition, for project-related grievances, representatives of affected persons, community-based organizations (CBOs), and eminent citizens will be invited as observers in GRC meetings. The concerned Member of Parliament (MP) and Member of Legislative Assembly are also part of the CLC.

Figure 17: Grievance Redress Process



APD = Additional Project Director, ASO = Assistant Safeguards Officer, CAPPC = community awareness and public participation consultant, CMSC = construction management and supervision consultants, CLC = city level committee, CLMC = city level monitoring committee, GRC = grievance redress committee, PIU = project implementation unit, PMU = program management unit, PMCBC = project management and capacity building consultant.

205. The project GRM not with standing, an aggrieved person shall have access to the country's legal system at any stage and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM. In case of grievance related to land acquisition, resettlement and rehabilitation, the affected persons will have to approach a legal body/court specially proposed under the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act (RFCTLARRA), 2013.[22]

206. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism[23].

207. **Record-keeping.** The PIU of each town and PMU will both keep records of grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were affected and final outcome. The

[22]The Authority admits grievance only with reference to the Land Acquisition and R&R issues under the RFCTLARRA, 2013.

[23] Accountability Mechanism. http://www.adb.org/Accountability-Mechanism/default.asp

number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the PMU office, PIU offices, and on the web, as well as reported in monitoring reports submitted to ADB on a semi-annual basis.

208. **Periodic review and documentation of lessons learned.** The PMU Project Officer (Environment) will periodically review the functioning of the GRM in each town and record information on the effectiveness of the mechanism, especially on the project's ability to prevent and address grievances.

209. **Costs.** Contractors are required to allocated budget for pamphlets and billboards as part of the EMP. Costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by the concerned PIU at town level while costs related to escalated grievances will be met by the PMU. Cost estimates for grievance redress are included in resettlement cost estimates.

210. Presently GRC in 14 ongoing project towns are functional as per RSTDSP's Grievance Redress Mechanism (GRM). Therefore 2nd and 3rd level GRC are already functional at Zonal PIUs (at Jaipur and Bundi) and PMU levels. PIU level GRC shall be formed in upcoming project towns after PIUs in new towns are established through office order from PMU for the same.

IX. ENVIRONMENTAL MANAGEMENT PLAN

A. Environmental Management Plan

211. The purpose of the environmental management plan (EMP) is to ensure that the activities are undertaken in a responsible, non-detrimental manner with the objectives of: (i)providing a proactive, feasible, and practical working tool to enable the measurement and monitoring of environmental performance on-site; (ii) guiding and controlling the implementation of findings and recommendations of the environmental assessment conducted for the project;(iii) detailing specific actions deemed necessary to assist in mitigating the environmental impact of the project; and (iv) ensuring that safety recommendations are complied with.

212. A copy of the EMP must be kept at work sites at all times. This EMP will be included in the bid documents and will be further reviewed and updated during implementation. The EMP will be made binding on all contractors operating on the site and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

213. For civil works, the contractor will be required to (i) establish an operational system for managing environmental impacts (ii) carry out all of the monitoring and mitigation measures set forth in the EMP; and (iii) implement any corrective or preventative actions set out in safeguards monitoring reports that the employer will prepare from time to time to monitor implementation of this IEE and EMP. The contractor shall allocate budget for compliance with these EMP measures, requirements and actions.

214. Tables for Environment Management Plan during Design, Pre-construction, Construction and Operation phases are given below-

Table 15: Design Stage Environmental Management Plan

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Implementation/ Monitoring	Cost and Source of Funds
Location impacts of proposed components	Nearby community may be affected due to increased pollution during construction and operation	(v) Work method should be prepared so that nearby community may have no or minimum impact due to proposed works (ii) Mitigation measures are prepared and included in design and EMP is attached with contract documents	List of pre-approved sites for -construction work camps, areas for stockpile, storage and disposal -Waste management plan	Consultants/PMU	No cost required
Requirement of tree cutting	Tree cutting may result loss of aesthetics and increase in air pollution	(i) project designs should be done so that minimum tree cutting is required (ii) project documents should include the minimum tree cutting provisions (iii) Provision for Compensatory plantations should be included in contract documents	As per RUDSICO-EAP policy; Tree Cutting Approvals; Compensatory Afforestation Plan;	Consultants/PIU/PMU	No cost required
Energy Efficiency	Loss of natural resources	(vi) Use energy efficient electrical equipment (vii) Provision of use of energy efficient equipment in contract agreements and BOQ	As per BEE norms	Consultants/PMU	No cost required
Incorporating EMP and Health and Safety requirements into Contractor Bid Document	Implementation of the EMP	The EMP should be included in the Bid Document so that the selected Contractor understands the issues and makes necessary plans to prepare and implement the EMP	EMP included in Bid Document	PMU	Project Costs
	Implementation of the Health and Safety measures by contractor	Health and safety requirements should be incorporated as part of the contract bid document so that the selected Contractor understands the issues and makes necessary plans to prepare and implement the health and safety requirements.	EMP included in Bid Document	PMU	Project Costs

Table 16: Environmental Management Plan of Anticipated Impacts during Pre-Construction

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Implementation	Monitoring of Mitigation	Cost and Source of Funds
Compliance with environmental subproject selection criteria	Environmental impacts due to subproject	Compliance with environmental subproject selection criteria A compliance checklist is appended to this report (**Appendix 3**)	Consents, permits, clearance, NOCs, etc.	PIU and Bundi Nagar Parishad	PMU	No costs required
Legal compliance	Environmental legal noncompliance may attract legal actions Failure to obtain necessary consents, permits, NOCs etc. can result to design revisions and/or stoppage of works	(i) Obtain all consents, clearances (CTE/CTO from RSPCB), permits NOCs etc. before start of construction works (ii) Ensure that all necessary approvals for construction to be obtained by contractor are in place before start of construction	Consents, permits, clearance, NOCs, etc.	PIU/Consultants in coordination of Bundi Development Authority	PMU	Cost of obtaining all consents, permits, clearance, NOCs etc. prior to start of civil works responsibility of PIU.
Environmental monitoring of baseline conditions of air, noise, water and soil	To establish base line environmental conditions	Environmental monitoring through NABL approved laboratory	Environmental Monitoring Report of Air, noise, soil and water quality	Construction contractor	Consultants/PIU	Contractor
Utilities	Telephone lines, electric poles and wires, water lines and gas pipe line within proposed project area	(i) Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary	-List and maps showing utilities to be shifted (i) List of affected utilities and operators; (ii) Bid document to include requirement	Contractor in collaboration with PIU and with approval of PMU	Consultant / PIU	No cost required. Mitigation measures are part of TOR of

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Implementation	Monitoring of Mitigation	Cost and Source of Funds
		disruption of services during construction phase; and (ii) Require construction contractors to prepare a contingency plan to include actions to be taken in case of unintentional interruption of services. (iii) Require contractors to prepare spoils management plan (**Appendix C-13**) and traffic management plan (**Appendix C-14**)	for a contingency plan for service interruptions (example provision of water if disruption is more than 24 hours), spoil management plan (**Appendix C-13**), and traffic management plan (**Appendix C-14**)			PMU, PIU and Consultants
Construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas.	Disruption to traffic flow and sensitive receptors	(i) Prioritize areas within or nearest possible vacant space in the project location; (ii) If it is deemed necessary to locate elsewhere, consider sites that will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems;	-List of pre-approved sites for construction work camps, areas for stockpile, storage and disposal -Waste management plan - Written consent of landowner/s (not lessee/s) for reuse of excess spoils to agricultural land	Contractor to finalize locations in consultation and approval of PIU	Consultant / PIU	No cost required. Mitigation measures are part of TOR of PIU and Consultants and also part of contractual terms

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Implementation	Monitoring of Mitigation	Cost and Source of Funds
		(iii) Do not consider residential areas; (iv) Take extreme care in selecting sites to avoid direct disposal to water body which will inconvenience the community. (v) For excess spoil disposal, ensure (a) site shall be selected preferably from barren, infertile lands. In case agricultural land needs to be selected, written consent from landowners (not lessees) will be obtained; (b) debris disposal site shall be at least 200 m away from surface water bodies; (c) no residential areas shall be located within 50 m downwind side of the site; and (d) site is minimum 250 m away from sensitive locations like settlements, ponds/lakes or other water bodies.				

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Implementation	Monitoring of Mitigation	Cost and Source of Funds
Sources of Materials	Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution.	(i) Prioritize sites already permitted by the Department of Mines and Geology (ii) If other sites are necessary, inform construction contractor that it is their responsibility to verify the suitability of all material sources and to obtain the approval of PMU and (iii) If additional quarries will be required after construction is started, inform construction contractor to obtain a written approval from PIU.	(i) List of approved quarry sites and sources of materials; (ii) Bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary.	Contractor to prepare list of approved quarry sites and sources of materials with the approval of PIU	PMU	No cost required. Mitigation measures are part of TOR of PIU and Consultants and also part of contractual terms
Consents, permits, clearances, NOCs, etc.	Failure to obtain necessary consents, permits, NOCs, etc. can result to design revisions and/or stoppage of works	(i) Obtain all necessary consents, permits, clearance, NOCs, etc. prior to award of civil works. (ii) Following consents are required- Tree cutting- local authority Storage, handling and transport of hazardous materials- RSPCB	Consents, permits, clearance, NOCs, etc. Incorporated in final design and communicated to contractors.	PIU and Consultants	PIU	No cost required. Cost of obtaining all consents, permits, clearance, NOCs, etc. prior to start of civil works responsibility of PIU. Mitigation measures are

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Implementation	Monitoring of Mitigation	Cost and Source of Funds
		Sand mining, quarries, borrow areas- Department of mines and Geology Traffic diversion/road cutting- local authority, traffic police (ii) Ensure that all necessary approvals for construction to be obtained by contractor are in place before start of construction (iii) Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc. (iv) Include in detailed design drawings and documents all conditions and provisions if necessary				part of TOR of PIU and Consultants

Table 17: Environmental Management Plan of Anticipated Impacts during Construction

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
EMP Implementation Training	Irreversible impact to the environment, workers, and community	(i) Project manager and all key workers will be required to undergo EMP implementation including spoils management, Standard operating procedures (SOP) for construction works; occupational health and safety (OH&S), core labor laws, applicable environmental laws, etc. (ii) Contractor has to depute a qualified EHS personnel in the start of the project to conduct training to all the personnel and effective monitoring of mitigation measures during construction	(i) Certificate of Completion (Safeguards Compliance Orientation) (ii) Posting of Certification of Completion at worksites (iii) Posting of EMP at worksites	Construction Contractor	CMSC/ PIU	Cost of EMP Implementation Orientation Training to contractor is responsibility of PMU. Other costs responsibility of contractor.
Air Quality	Emissions from construction vehicles, equipment, and machinery used for construction resulting to dusts and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulphur oxides,	(i) Consult with PIU on the designated areas for stockpiling of clay, soils, gravel, and other construction materials; (iii) Damp down exposed soil and any stockpiled material on site by water sprinkling necessary during dry weather; (iv) Use tarpaulins to cover sand and other loose material when transported by trucks; and (v) Fit all heavy equipment and machinery with air pollution control devices which are operating correctly. (vi) Quarterly environmental monitoring for ambient air as per EMP	(i) Location of stockpiles; (ii) Complaints from sensitive receptors; (iii) Heavy equipment and machinery with air pollution control devices; (iv) Certification that vehicles are compliant with Air Act (v) Quarterly environmental monitoring report for ambient air, noise, water and soil	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
	particulate matter, nitrous oxides, and hydrocarbons.					
Water quality	Mobilization of settled silt materials, and chemical contamination from fuels and lubricants during construction can contaminate nearby surface water quality.	(i) Prepare and implement a spoils management plan (ii) Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets; (ii) Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies; (iii) Place storage areas for fuels and lubricants away from any drainage leading to water bodies; (iv) Dispose any wastes generated by work in designated sites; and (v) Conduct surface quality Monitoring according to the Environmental Management Plan (EMP)	(i) Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) Number of silt traps installed along trenches leading to water bodies; (iii) Records of surface water quality Monitoring; (iv)Effectiveness of water management measures; (v) No visible degradation to nearby drainages, Nalas or waterbodies due to civil works	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.
Noise Levels	Increase in noise level due to earth-moving and excavation equipment, and the transportation of equipment, materials, and people	(i) Plan activities in consultation with PIU/Consultants so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance; (ii) Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach;	(i) Complaints from sensitive receptors; (ii) Use of silencers in noise-producing equipment and sound barriers; (iii) Equivalent day and night time noise levels (see **Appendix C-7** of this IEE)-	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(iii) Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and portable street barriers the sound impact to surrounding sensitive receptor; and (iv) Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s. (v) Quarterly environmental monitoring for ambient noise as per EMP	No complaints from sensitive receptors;			
Ground Water Quality	Contamination of ground water quality due to spillage of oil and lubricants	Prepare and implement a spills management plan; Provide impermeable liner on the ground and place layer of mortar or concrete over it in the oil and lubricants storage areas, provide spillage trap in oil and lubricant store, use dip tray and pump to pour oil from oil and lubricant drums; Dispose any oil contaminated wastes generated by construction activities in scientific manner; and Conduct ground water quality monitoring according to the EMP	(i) Areas for storage of fuels and lubricants and waste materials; (ii) Number of oil traps installed in oil and lubricant storage areas; -Complaints from sensitive receptors; -CTO and CTE compliance; Monitoring Reports;	Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.
Drain desilting	Contamination of land, surface and groundwater; occupational and	(i) Desilting process of shall be conducted in dry season only (ii) Prior to desilting process, the drains shall be allowed dry so that there is no standing water on silt / sediment	(i) desilting schedule and proposed method (ii) PPEs to workers	Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
	community heath and safety	(iii) Do not conduct manual desilting process, use appropriate equipment / implements (iv) Desilting process shall be conducted in such a way that water content of the silt/sediment is low, so that contaminated water is not spilled during the loading, transport and unloading process.; (v) Workers shall be provided with appropriate PPE's; masks with oxygen cylinders shall be made available at the site, which shall be utilised during emergency (vi) identify beneficial uses or dispose at suitable disposal site in consultation with the PIU/ULB:	(iii) Reuse or disposal site identification			
Landscape and aesthetics	Impacts due to excess excavated earth, excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items.	(i) Prepare and implement spoils management plan (**Appendix C-13**); (ii) Avoid stockpiling of excess excavated soils; (iii) Coordinate with ULB/PIU for beneficial uses of excess excavated soils or immediately dispose to designated areas; (iv) Recover used oil and lubricants and reuse or remove from the sites; (v) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; (vi) Remove all wreckage, rubbish, or temporary structures which are no longer required; and	(i) Complaints from sensitive receptors; (ii) Worksite clear of hazardous wastes such as oil/fuel (iiv) Worksite clear of any excess excavated earth, excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers As per Appendix C-13.	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(vii) Request PIU to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.				
Existing Infrastructure and Facilities	Disruption of service and damage to existing infrastructure at specified project location	(i) Obtain from PIU the list of affected utilities and operators if any; (ii) Prepare a contingency plan to include actions to be done in case of unintentional interruption of service (iii) Take prior permission from concerned departments for shifting/removing the utilities (iv) inform nearby community in advance about the nature and timings of disturbance	As per contingency plan	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.
Ecological Resources – Terrestrial	Loss of vegetation and tree cover	(i) Minimize removal of vegetation and disallow cutting of trees; (ii) If tree-removal will be required, obtain tree-cutting permit from the Revenue Department; and (iii) Plant three native trees for every one that is removed.	-Records -Plant native tree species as per RUDSICO-EAP Policy	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.
Land use	Environmental Issues due to land use change	The impact due to change in land use will be negligible due to this project.	-Latest land use records	Not applicable	PMU	Not applicable
Accessibility	Traffic problems and conflicts near project locations and haul road	(i) Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites; (ii) Schedule transport and hauling activities during non-peak hours;	(i) Traffic route during construction works including number of permanent signages, barricades and flagmen on worksite	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(iii) Locate entry and exit points in areas where there is low potential for traffic congestion; (iv) Keep the site free from all unnecessary obstructions; (v) Drive vehicles in a considerate manner; (vi) Coordinate with Traffic Police for temporary road diversions and with for provision of traffic aids if transportation activities cannot be avoided during peak hours; (vii) Notify affected sensitive receptors 1-week in advance through consultations and by providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints. (viii) Plan and execute the work in such a way that the period of disturbance/ loss of access are minimum. (ix) Provide pedestrian access in all the locations until normalcy is restored.	(ii) Complaints from sensitive receptors; (iii) Number of signages placed at project location. As per Traffic Management Plan given in **Appendix C-14.**			
Socio-Economic – Income.	Impede the access of residents and customers to nearby shops	(i) Prepare and implement spoils management plan (**Appendix C-13**). Contractor to Implement RP and to follow mitigation measures prescribed such as- (ii) Leave spaces for access between mounds of soil; (ii) Provide walkways and metal sheets where required for people; (iii) Increase workforce in front of critical areas such as institutions,	(i) Complaints from sensitive receptors; (ii) Spoils management plan (iii) Number of walkways, signages, and metal sheets placed at project location.	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		place of worship, business establishment, hospitals, and schools; (iv) Consult businesses and institutions regarding operating hours and factoring this in work schedules; and (v) Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.				
Socio-Economic - Employment	Generation of temporary employment and increase in local revenue	(i) Employ at least 50% of the labour force, or to the maximum extent, local persons within the 2-km immediate area if manpower is available; (ii) Secure construction materials from local market. (iii) Comply with labor laws	(i) Employment records; (ii) Records of sources of materials (iii) Compliance to labor laws (see **Appendix C-12** of this IEE)	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.
Occupational Health and Safety	Occupational hazards which can arise during work	(A) Comply with all national, state and local core labor laws (see **Appendix C-12** of this IEE) (B) Ensure that qualified EHS personnel is deputed to look the H&S matter, EHS personnel should ensure to comply following- (i) Develop and implement site-specific occupational health and safety (OH&S) Plan which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use personal protective equipment like helmet, gumboot, safety belt, gloves, nose musk	(i) Site-specific OH&S Plan; (ii) Equipped first-aid stations; (iii) Medical insurance coverage for workers; (iv) Number of accidents; (v) Supplies of potable drinking water; (vi) Clean eating areas where workers are not exposed to hazardous or	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		and ear plugs; (c) OH&S Training for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents; (ii) Ensure that qualified first-aid can be provided at all times. Equipped first-aid stations shall be easily accessible throughout the site; (iii) Provide medical insurance coverage for workers; (iv) Secure all installations from unauthorized intrusion and accident risks; (v) Implement necessary structural safety and site safety measures to prevent collapse of trenches, and damage / structural failure / collapse of adjacent buildings, boundary walls and other structures; provide proper braces, struts, anchors as required in the trench and for protecting the adjoining structures; avoid placing of material, equipment, waste, close to the trench edges (v) The project area experiences extreme temperature during summer months of April and May, which may affect the health of workers engaged in construction work. Contractor should take necessary measures during summers including the following:	noxious substances; (vii) record of H&S orientation trainings (viii) personal protective equipment; (ix) % of moving equipment outfitted with audible back-up alarms; (xi) permanent sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. (xii) Compliance to core labor laws (see **Appendix C-12** of this IEE)			

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(a) work schedule should be adjusted to avoid peak temperature hours (12 – 3 PM); (b) provide appropriate shade near the work place; allow periodic resting and provide adequate water, and (c) provide necessary medicine and facilities to take care of dehydration related health issues (v) Provide supplies of potable drinking water; (vi) Provide clean eating areas where workers are not exposed to hazardous or noxious substances; (vii) Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; (viii) Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted; (ix) Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;				

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		(x) Ensure moving equipment is outfitted with audible back-up alarms; (xi) Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate; and (xii) Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively. (xiii) Provide proper solid and liquid waste management program in workers' campsite, separate from spoils and debris disposal, as their presence can add to existing waste volume at the project sites.				
Community Health and Safety.	Traffic accidents and vehicle collision with pedestrians during material and waste transportation	(i) Plan routes to avoid times of peak-pedestrian activities. (ii) Liaise with PIU/ULB in identifying high-risk areas on route cards/maps. (iii) Maintain regularly the vehicles and use of manufacturer-approved parts to minimize	(i) Traffic Management Plan (**Appendix C-14**); (ii) Complaints from sensitive receptors	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		potentially serious accidents caused by equipment malfunction or premature failure. (iv) Implement necessary structural safety and site safety measures to prevent collapse of trenches, and damage / structural failure / collapse of adjacent buildings, boundary walls and other structures; provide proper braces, struts, anchors as required in the trench and for protecting the adjoining structures; avoid placing of material, equipment, waste, close to the trench edges (v) Provide road signs and flag persons to warn of on-going trenching activities.				
Safety requirements for deep trench works	Accidents, and risk hazard	Complete information on the underground structures (such as water pipelines, sewers, gas mains, electrical conduit system and other civic facilities) should be collected before doing the excavation work. Proper precautions shall be taken to prevent accident to the workmen engaged in excavation work and for the general public All trenches in soil more than 1.5 m deep shall be securely shored and timbered. All trenches in friable or unstable rock exceeding 1.5 m in depth	Contractor's method statement for excavations On-site verification	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		shall be securely shored and timbered Where the sides of trenches are sloped but not within 1.5 m of the bottom, the vertical sides shall be shored and the shoring shall extend at least 30 cm above the vertical sides. When open spaced sheathing is used, a toe board shall be provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls. Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences. Approved quality of material with adequate structural strength shall be used for shoring and timbering a trench. Workers shall be instructed to use safety devices and appliances provided to them whenever it is necessary to do so Workers who are not aware of the hazards specific to the work shall not be permitted to proceed with the work without being properly instructed. Safety helmets shall be worn by all persons entering trench where hazards from falling stones, timber or other materials exist				

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		Appropriate safety footwear (rubber boots, protective covers, etc.,) shall be worn by labours who are engaged in work requiring such protection Sides of excavation shall be inspected by PIU/PMDSC during the course of excavation from time to time and after every rain, storm or other hazard-increasing occurrence and protection against slides and cavings shall be increased, if necessary				
Safety of sensitive groups (children, elders etc.) and others pedestrians in narrow streets	Trench excavation in in narrow streets will pose high risk to children and elders in the locality	(i) Provide prior information to the local people about the nature and duration of work (ii) Conduct awareness program on safety during the construction work (iii) Undertake the construction work stretch-wise; (iv) Provide barricades, and deploy security personnel to ensure safe movement of people and also to prevent unnecessary entry and to avoid accidental fall into open trenches	-H&S plan including appropriate signs for each hazard present -Construction vehicles condition in H&S plan. Complaints from neighbourhood and monitoring of accidents	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.
Work Camps and work sites	Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils,	(i) Consult with PIU before locating project offices, sheds, and construction plants; (ii) Minimize removal of vegetation and disallow cutting of trees; (iii) Provide drinking water, water for other uses, and sanitation facilities for employees; (iv) Ensure conditions of livability at work camps are maintained at	(i) Complaints from sensitive receptors; (ii) Drinking water and sanitation facilities for employees – (iii)Condition in list of preapproved sites for construction work camps, areas	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
	solvents, and lubricants Unsanitary and poor living conditions for workers	the highest standards possible at all times; (v) Train employees in the storage and handling of materials which can potentially cause soil contamination; (vi) Recover used oil and lubricants and reuse or remove from the site; (vii) Manage solid waste according to the preference hierarchy: reuse, recycling and disposal to designated areas; (viii) Ensure unauthorized persons especially children are not allowed in any worksite at any given time.	for stockpile, storage and disposal prepared by the Contractor.			
Impacts due to night works (if required as per nature of works and feasibility at site)	Occupational hazards which can arise during work at night in extreme and unavoidable cases	(i) Contractors should have hand held noise level meter for measurement of noise during night hours (ii) Contractors should have hand held lux meter for the measurement of illumination during night hours (iii) Preferably electrical connections is available for running equipment otherwise sound proof/super silent Diesel Generator set should be available (iv) Sound level should not increase as per EMP (v) Illumination should be adequate as required according to nature of works (vi) As far as possible ready	As per Management Plan for night works (**Appendix C-18**).	Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		mix concrete from batching plant to be used, otherwise the concrete should be prepared away from residential areas and brought to the site (vii) All the noise activity like hammering, cutting, crushing, running of heavy equipment should be done in day time and avoided in night time (viii) Workers engaged in night works should have adequate rest/sleep in day time before start of night works (ix) Worker engaged for night works should have previous experience of night works and should be physically fit for such works including clear vision in night (x) All the necessary provisions of traffic aids such as traffic signals, road signage, barricades, cautions boards, traffic diversion boards etc. should be available with fluorescent/retro-reflective arrangements (xi) Workers should be trained before start of night works about risks and hazards of night works and their mitigation measures and should be provided all the protective aids (PPEs) including fluorescent/retro-reflective vests (xii) Horns should not be permitted by equipment's and				

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		vehicles (xiii) Workers should not shout and create noise (xiv) First aid and emergency vehicles should be available at site (xv) Emergency preparedness plan should be operative during night works (xvi) Old persons and pregnant women and women having small kids should not work in night time (xvii) All the vehicles and equipment's being used at night works should have adequate type of silencers/enclosures/mufflers to reduce noise (xviii) All the vehicles should be checked for working head lamps, tail lamps, inner lights etc. before start of night works				
Social and Cultural Resources	Risk of archaeological chance finds	(i) Consult with concerned religious authorities, nearby people and devotees in pre-construction phase and explain the work method and duration of proposed works, take their suggestions and comments and incorporate in design the mitigation measures required (ii) Adjacent to religious/social sites, undertake excavation and construction work in such a way that no	Chance find protocol (Appendix C-26)	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		structural damage is caused to the religious building. (iii) Observe the local rituals and important dates of festivals, weekly/monthly/annual religious occasions in the religious places and do not make any disturbance/hindrance/obstacles during such time to the religious places, (iv) provide proper signage, barricades etc. to protect public and devotees from dangers of construction works.				
Monsoon preparedness	Disruption of utilities and water logging in trenches	(i) As for a possible avoid trench works and excavation works during monsoon season to avoid any water logging and accident due to it (ii) if open trenches are not avoidable during monsoon, keep ready all the mitigations measures to avoid water logging such as dewatering pumps and sufficient pipes, traffic assistance, barricades etc. (iii) Guidelines for safety during monsoon is attached as **Appendix C-19**	As per monsoon preparedness plan& as per **Appendix C-19** "Guidelines for Safety during Monsoon/Heavy Rainfall"	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.
Submission of EMP implementation report	Unsatisfactory compliance to EMP	(i) Appointment of supervisor to ensure EMP implementation (ii) Timely submission of monitoring reports including pictures	Availability and competency of appointed supervisor Monthly report	Construction contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
COVID-19 prevention and control during construction works	Health risk to workers due to COVID-19 virus	(i) provide face mask, hand gloves and sanitizers to workers during works (ii) Keep social distancing (iii) Educate workers about risks of COVID-19 (iv) Health check-up of workers suffering with symptoms of COVID-19 and test for same (v) isolation of workers suspected/suffering with COVID-19 and due medical care (vi) follow guidelines of WHO/Central/State/Local government and RUDSICO-EAP regarding COVID-19 (refer **Appendix C-23&24**)	Compliance of COVID-19 protocol and guidelines	Construction contractor	CMSC/ PIU	Contractor
Post-construction clean-up	Damage due to debris, spoils, excess construction materials	(i) Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and (ii) All excavated roads shall be reinstated to original condition. (iii) All disrupted utilities restored (iv) All affected structures rehabilitated/compensated (v) The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. (vi) All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using	PIU/Consultant report in writing that (i)worksite is restored to original conditions; (ii)camp has been vacated and restored to pre-project conditions; (iii)All construction related structures not relevant to O&M are removed; and (iv) worksite clean-up is satisfactory.	Construction Contractor	CMSC/ PIU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
		the guidelines set out in the revegetation specification that forms part of this document. (vii) The contractor must arrange the cancellation of all temporary services. (viii) Request PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.				

Table 18: Environmental Management Plan of Anticipated Impacts during Operation

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
Cleaning of drainage	All work sites- Cleaning of drains may cause traffic disturbances, nuisances, public & worker safety	Remove the silts and other solid waste after cleaning the drains from site and dispose at approved dumping site in scientific manner Ensure traffic management during cleaning of drains and transportation of silt and solid waste	Site inspection will be done as per checklist is given in **Appendix C-16**.	Weekly during construction	Supervising staff and safeguards specialists	No costs required
Illegal discharge of wastewater and solid waste into to drains	Contamination and creating insanitary conditions	Local body to ensure that no wastewater outlets are connected to or discharging into drains Create awareness, and conduct IEC activities on solid waste disposal into drains; display boards carrying the messages of DO's and Don'ts	Visual inspection	Municipal Council Bundi	Municipal Council Bundi	Municipal Council Bundi

Field	Anticipated Impact	Mitigation Measures	Indicator of Compliance	Responsible for Mitigation	Monitoring of Mitigation	Cost and Source of Funds
Check the blockages, overflow problem in drains	It may affect the draining system, overflow problem may contaminate land, water and create public health issues	Regular cleaning of drains, specially before start of monsoon to avoid blockages Implementation of regular O&M schedules	Follows regular O & M schedule	Municipal Council Bundi	Municipal Council Bundi	Municipal Council Bundi
Disposal of silt and solid waste	Unsafe disposal of silt and solid waste may cause public nuisance and health issues	Identify the suitable place for disposal of silt and solid waste, away from habitation, in a scientific manner so that it may not cause public nuisance	Disposal site at suitable location	Municipal Council Bundi	Municipal Council Bundi	Municipal Council Bundi
Safety precautions during drainage cleaning	Health and safety risk to workers engaged in drainage cleaning	Ensure all the safety equipment are available during manual cleaning As for as possible, use mechanical cleaning for cleaning of drains	-Training and Awareness campaign for Occupational, Health & Safety to ensure the use of PPE's.	Municipal Council Bundi	Municipal Council Bundi	Municipal Council Bundi

Table 19: Environmental Monitoring Plan of ambient air, noise, water and soil quality and other during Construction

Monitoring field	Monitoring location	Monitoring parameters	Frequency	Responsibility	Cost & Source of Funds
Construction disturbances, nuisances, public & worker safety	All work sites	Implementation of dust control, noise control, traffic management, & safety measures. Site inspection checklist to review implementation is appended at **Appendix C-16**	Weekly during construction	Supervising staff, EHS officer and safeguards specialists	No costs required
Tree cutting	Alignment of all five drains	Tree cutting permit taken, Tree cutting done (If required)	Continuous	Supervising staff, EHS officer and safeguards specialists	Contractor
Construction, Labour Camp, storage yard Management	Construction, Labour Camp, storage yard Management	As per SEMP	Weekly	EHS officer, Environment Specialist of consultant	contractor
Solid waste management	Construction, Labour Camp, storage yard Management	As per SEMP	Weekly	EHS officer, Environment Specialist of consultant	contractor
Construction and demolition waste management	All construction site	As per SEMP and applicable rules and regulations	Weekly	EHS officer, Environment Specialist of consultant	contractor
Consent to establish of batching plants, crusher, hot mix plant. DG sets etc.	Batching plants, crusher, hot mix plants etc	Copies of Consents	Periodically	EHS officer, Environment Specialist of consultant	No cost required for monitoring cost for obtaining CTE/CTO from Contractor
Ambient air quality	12 locations Bundi Bypass-Ice factory nala- 2 nos. Khoja gate-ice factory Nala-2 Nos Gurudwara Devpura – Nanak puliya Nala- 2 nos Jait sagar – devpura nala-2 Nos Agarwal Dharmsala to	PM_{10}, $PM_{2.5}$, NO_2, SO_2, CO	Quarterly except Monsoon period	Contractor	Contractor

Monitoring field	Monitoring location	Monitoring parameters	Frequency	Responsibility	Cost & Source of Funds
	highway nallaor-2 Nos				
Ambient noise	12 locations Bundi Byepass-Icefactory nala-2 nos. Khoja gate-ice factory Nala-2 Nos Gurudwara devpura – Nanak puliya Nala- 2 nos Jait sagar – devpura nala-2 Nos Agarwal Dharmsala to highway nallaor-2 Nos	Day time and night time noise levels	Quarterly	Contractor	Contractor

Table 20: Environmental Monitoring Plan of Anticipated Impacts during Operation

Monitoring field	Monitoring location	Monitoring parameters	Frequency	Responsibility	Cost & Source of Funds
Monitoring of drain conditions	Full length of both the drains	Cracks, blockage, leakages etc.	Monthly	Municipal Council Bundi	Municipal Council Bundi
Monitoring of plantations	Plantations locations	Nos. of tree survived	monthly	Municipal Council Bundi	Municipal Council Bundi
Disposal of silt and solid waste after cleaning of drains	Full length of both the drains	Identify suitable site and disposal of silt and solid waste in scientific manner	Monthly/ when required	Municipal Council Bundi	Municipal Council Bundi

B. Institutional Arrangements

215. The Local Self Government Department (LGSD) is the executing agency which is responsible for the overall strategic guidance and ensures the compliance with ADB loan covenants. RUDSICO is the implementing agency responsible for the technical supervision and project implementation. The RUDSICO Board (under the chairmanship of the Honourable Minister), the LGSD and the City Level Monitoring Committees (CLMCs, under the chairmanship of their respective commissioner/executive officer) is proposed to monitor the project implementation. The PMU is already established at state-level (Jaipur) and headed by a dedicated Project Director. The PIUs have two zonal offices (1 in Jaipur and 1 in Jodhpur). Each zonal office is headed by an additional chief engineer. Urban Local Bodies (ULBs) will be the final custodian and user of the created infrastructure. As primary stakeholders, the ULBs will be involved and engaged in the day-to-day monitoring and implementation.

216. At the PMU level, the Project Director is being supported by Additional Project Director (Chief Engineer-level) and a Chief Engineer, who are being supported by Dy Project Directors (Technical and Administration) and a financial advisor. There is one project officer for Social and another project officer for Environmental aspects within PMU.

217. The PMU is being supported by the Project Management and Capacity Building Consultants (PMCBC). The PMCBC shall manage preparation/vetting design documents, tendering of contracts, implementation of resettlement, environmental management and gender action plans; setting and managing project performance monitoring systems, planning and managing implementation of training and capacity building as well as institutional strengthening activities besides preparing reports as per ADB requirements. PMCBC has engaged a social safeguard specialist and environmental safeguard specialist at the PMU level for managing all social and environmental safeguard related support services as envisaged in its scope of work. They will be assisted by concerned field level safeguard support staffs of CMSCs and PIU.

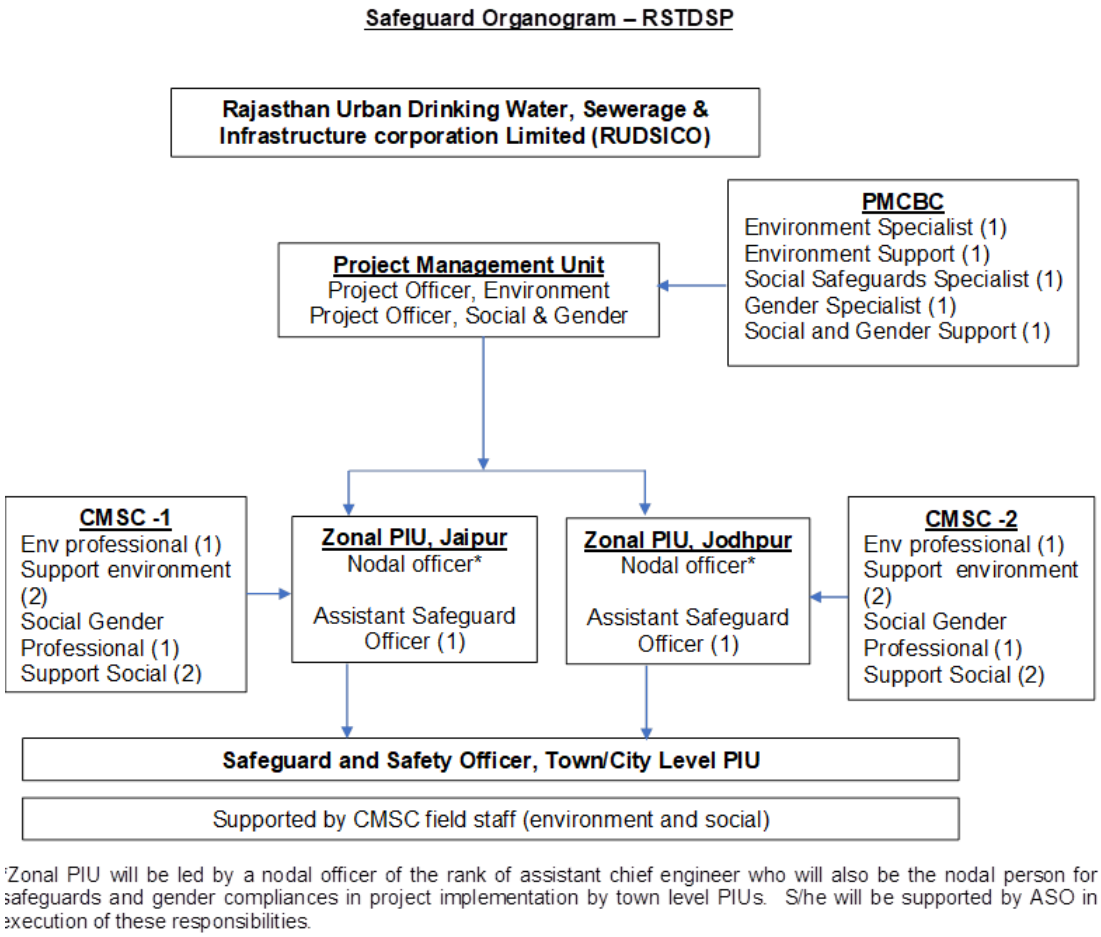
218. There are two zonal PIUs already established in Jaipur and Jodhpur. One PIU shall be established at every town before award of new projects. PIUs at the town-level shall be headed by a Superintending Engineer / Executive Engineer, who shall work as Project Manager and shall sign the contract documents, manage the contract and disburse payments as Drawing and Disbursing Officer.

219. **Construction management and supervision consultants (CMSCs) -** 2 nos. of CMSCs catering to Jaipur and Jodhpur units are already established. They shall directly support PIUs in day-to-day contract management, construction supervision including quality management of ongoing works etc. This shall include work measurement, quantities, verification of bills of contractors etc. In compliance with the EMP, the CMSCs shall develop a strategy to overcome the difficulties of construction/traffic management in narrow streets and also prepare detailed plans for detour of traffic during excavation. The CMSC will propose and implement mechanism for coordination among all stakeholders such as traffic police, roads department, user committees, etc., for smooth construction execution. Adequate measures shall be taken for working near physical cultural resources involving close coordination with the Department of Archaeology. The CMSC will lead design of surveys and investigations required for the protection of archaeological sites/heritage areas and prepare Archaeological Impact Assessments, or other agreed upon document to be approved by the Department of Archaeology for the archaeologically sensitive locations.

220. **Community awareness and public participation consultants (CAPPC)-** CAPC core unit is already established at PMU, Jaipur and at fields in ongoing 6 project towns. CAPC field team will be established in upcoming project towns after PIUs are formed in new towns. CAPC will closely work in the field (with PIUs) to facilitate creation of project awareness and ensuring public participation for all project works at the community level. This shall mainly involve house connections for water supply, sewerage and metering. CAPPC shall also undertake various IEC activities to promote and pursue health and hygiene among the communities Bundi.

221. **Figure 18** shows Environmental Safeguards Implementation Arrangements within RUDSICO-EAP and **Table 21** summarize the institutional responsibility of environmental safeguards implementation at all stages of the project.

Figure 18: Environmental Safeguards Implementation Arrangement



222. **Project Management Unit.** RUDSICO will establish a state-level PMU, headed by dedicated project director, and housed in EAP division of RUDSICO. For the purpose of project implementation, 2 Zonal project implementation units (Zonal PIUs), at Jaipur and Bundi, headed by additional chief engineers (ACE) will be established. At PMU, there will be two dedicated project officers (i) project officer (Environment) and (ii) project officer (Social and Gender), who will be responsible for compliance with the environmental, social safeguards and gender in program implementation. Key responsibilities of the project officer (Environment) are enumerated in **Table 21**.

223. The PMU will be supported by 3 institutional consultants under the supervision and control of PD, PMU: (i) the project management and capacity building consultants (PMCBC) will support the PMU; (ii) 2 CMSC will support the 2 zonal PIUs and town-level PIUs; and (iii) CAPPC, will support the zonal PIUs and town-level PIUs.

224. **Zonal Project implementation units (Zonal PIUs).** There are 2 zonal level PIUs at Jaipur and Jodhpur. Under each zonal PIU, there will be city/town level PIUs, for ease of day-to-day monitoring and management at local level. The additional chief engineer at each Zonal PIU will serve as the Nodal Officer, Safeguards and Gender. Each Zonal PIU will be staffed with an assistant safeguards officer (ASO Environmental and Social Safeguards) who will assist PMU

project officer (environment/social) in implementation of the environmental/social safeguards and GESI action plan in PIUs under its jurisdiction. Zonal PIUs will undertake internal monitoring and supervision and record observations throughout the project period to ensure that the safeguards and mitigation measures are provided as intended.

225. The zonal level ASO will oversee safeguards implementation by the city/town level PIUs, coordinate public consultations, information disclosure, regulatory clearances and approvals, implementation of resettlement plans, EMP implementation, and grievance redressal. Key safeguard tasks and responsibilities of the zonal PIU ASO (Environment) are enumerated in **Table 21**.

226. **Town/City Level Project Implementation Unit.** The town-level PIUs shall be responsible for the quality of works executed under the project and will be guided by the zonal PIUs. The city/town PIUs will be responsible for implementation of the IEE. The town-level PIUs will be headed by a project manager (executive engineer or assistant engineer) and supported by CMSC field staff. Environment Safeguard Professional of CMSCs will assist PIUs in implementation of environmental safeguard. At each PIU, the Assistant Project Manager will be given additional responsibilities of safeguard tasks and will be designated as safeguard and safety officer (SSO). The SSO will be assisted by the social and gender specialist and environment specialist of CMSC in reviewing updated/revised IEEs, etc. They will also be responsible for coordination of field level activities related to safeguards conducted by the contractor and CMSC. Key responsibilities of the town-level environment specialist are enumerated in **Table 21**.

227. **Contractors.** The contractor will be required to update the IEE and will be responsible for providing final design verification to the supervision consultant for finalization/updating of resettlement plan. The contractor shall appoint an environment, health and safety (EHS) engineer who will be responsible on a day-to-day basis for (i) ensuring implementation of EMP, (ii) coordinating with the town-level PIUs and environment specialists of project consultant teams; (iii) community liaison[24] consultations with interested/affected people, (iv) field-level grievance redress; and (iv) reporting.

228. The Contractor has required to submitted to RUDSICO-EAP, for review and approval, a SEMP including (i) proposed sites or locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; (iii) monitoring program per SEMP; (iv) budget for SEMP implementation. No works can commence prior to approval of SEMP.

229. A copy of the EMP or approved SEMP will be kept on-site during the construction period at all times. Non-compliance with, or any deviation from, the conditions set out in the EMP or SEMP constitutes a failure in compliance and will require corrective actions. The EARF and the IEEs specify responsibilities in EMP implementation during design, construction and O&M phases.

230. RUDSICO-EAP will ensure that bidding and contract documents include specific provision requiring Contractors to comply with: (i) all applicable labour laws and core labour standards on (a) prohibition of child labour as defined in national legislation for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste and

[24] Reasonable size social outreach team (SOT) to be appointed by contractor to facilitate community liaison, consultations and R&R implementation (including resolution of grievances). Requirement of SOT will be included in bid document.

(c) elimination of forced labour; and (ii) the requirement to disseminate information on sexually transmitted diseases including HIV/AIDS, to employees and local communities surrounding the project sites.

Table 21: Institutional Roles and Responsibilities for Environmental Safeguards Implementation

Responsible Agency	Responsibility		
	Pre-Construction Stage	**Construction Stage**	**Post-Construction**
PMU (Project Officer; Environment),	(i) Review REA checklists and assign categorization based on ADB SPS 2009 (ii) Review and approve EIA/IEE (iii) Submit EIA/IEE to ADB for approval and disclosure in ADB website (iv) Ensure approved IEEs are disclosed in RSTDSP/PMU websites and summary posted in public areas accessible and understandable by local people. (v) Ensure environmental management plans (EMPs) are included in the bid documents and contracts (vi) Organize an orientation workshop for PMU, PIU, ULB and all staff involved in the project implementation on (a) ADB SPS, (b) Government of India national, state, and local environmental laws and regulations, (c) core labour standards, (d) OH&S, (e) EMP implementation especially spoil management, working in congested areas, public relations and ongoing consultations, grievance redress, etc. (vii) Assist in addressing any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs (viii) Organize an induction course for the training of contractors preparing them on EMP implementation, environmental monitoring requirements related to mitigation measures; and taking immediate actions to	(i) Over-all environmental safeguards compliance of the project (iii) Monitor and ensure compliance of EMPs as well as any other environmental provisions and conditions. (i) Review monthly monitoring report (ii) Prepare and submit to ADB semi-annual monitoring reports (iv) If necessary, prepare Corrective Action Plan and ensure implementation of corrective actions to ensure no environmental impacts; (iii) Review and submit Corrective Action Plans to ADB (iv) Organize capacity building programs on environmental safeguards (iv) Coordinate with national and state level government agencies (vi) Assist in addressing any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs (ix) Coordinate PIUs, consultants and contractors on mitigation measures involving the community and affected persons and ensure that environmental concerns and suggestions are incorporated and implemented	Compliance monitoring to review the environmental performance of project component, if required and as specified in EMP

Responsible Agency	Responsibility		
	Pre-Construction Stage	**Construction Stage**	**Post-Construction**
	remedy unexpected adverse impacts or ineffective mitigation measures found during the course of implementation. (ix) Ensure compliance with all government rules and regulations regarding site and environmental clearances as well as any other environmental requirements (x) Assist PMU, PIUs, and project NGOs to document and develop good practice construction guidelines to assist the contractors in implementing the provisions of IEE. (xi) Assist in the review of the contractors' implementation plans to ensure compliance with the IEE.		
PIU, Safeguard and Safety Officer (SSO)	(i) Ensure IEE is included in bid documents and contract agreements. Ensure cost of EMP implementation is provided. (iv) Disclose of approved EIAs/IEEs. (v) Obtain all necessary clearances, permits, consents, NOCs, etc. Ensure compliance to the provisions and conditions. (vi) EMP implementation regarding sites for disposal of wastes, camps, storage areas, quarry sites, etc. (vii) Organize an induction course for the training of contractors, preparing them on EMP implementation, environmental monitoring requirements related to mitigation measures, and on taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of implementation.	(i) oversee day-to-day implementation of EMPs by contractors, including compliance with all government rules and regulations. (ii) take necessary action for obtaining rights of way; (iii) oversee implementation of EMPs, including environmental monitoring by contractors; (iv) take corrective actions when necessary to ensure no environmental impacts; (v) submit monthly environmental monitoring reports to PMU, (vi) conduct continuous public consultation and awareness; (vii) address any grievances brought about through the grievance redress mechanism in a timely manner as per the IEEs; and	(i) Conducting environmental monitoring, as specified in the EMP. (ii) Issuance of clearance for contractor's post-construction activities as specified in the EMP.
Consultant – 1.PMCBC-Environmental	(i) Review IEE/EMP submitted by CMSC and	(i) Monitor EMP implementation	

Responsible Agency	Responsibility		
	Pre-Construction Stage	**Construction Stage**	**Post-Construction**
Safeguard Specialist – 1 no.	revise report to submit to PMU (ii) Assist PMU and PIU in obtaining all necessary clearances, permits, consents, NOCs, etc. Ensure provisions and conditions are incorporated in the IEE and detailed design documents. (iii) Assist in ensuring IEE is included in bid documents and contract agreements. (iv) Assist in determining adequacy of cost for EMP implementation. (v) Assist in addressing any concern related to IEE and EMP. (vi). Conduct specific assessment requirements	(ii) Assist in addressing any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs.	
Consultant- 2. CMSC- 2 nos. Environmental safeguards professional	(i) Update initial environmental assessment for proposed project using REA checklists and submit to PIU/PMCBC (ii) Assist in summarizing IEE and translating to language understood by local people.	Monitoring of Implementation of EMP at site by contractor Recommend corrective action measures for non-compliance by contractors Assist in the review of monitoring reports submitted by contractors (iv) Assist in the preparation of monthly monitoring reports conduct continuous public consultation and awareness;	(i) Assist in the inspection and verification of contractor's post-construction activities.
Contractors (EHS Engineer)	(i) Review the IEE and provide information about changes needed as per revised design and scope of works to ESS of PMCBC for final revision of IEE (ii)Prepare EHS plan and take approval from CMSC/PIU and Ensure EMP implementation cost is included in the methodology. (iii) Undergo EMP implementation orientation by ESS of supervision consultant prior to start of works (iv) Provide EMP implementation orientation to all workers prior to deployment to worksites	(i) Implement EMP. (ii) Implement corrective actions if necessary. (iii) Prepare and submit monitoring reports including pictures to PIU (iv) Comply with all applicable legislation, is conversant with the requirements of the EMP; (v) Brief his staff, employees, and labourer about the requirements of the EMP and provide environmental awareness training to staff, employees, and laborers; (vi) Ensure any sub-contractors/ suppliers who are utilized within the context of the contract comply with all requirements of the EMP.	(i) Ensure EMP post-construction requirements are satisfactorily complied (ii) Request certification from PIU

Responsible Agency	Responsibility		
	Pre-Construction Stage	**Construction Stage**	**Post-Construction**
	(v) Seek approval for camp sites and sources of materials. (vi) Ensure copy of IEE is available at worksites. Summary of IEE is translated to language understood by workers and posted at visible places at all times.	The Contractor will be held responsible for non-compliance on their behalf; (vii) Bear the costs of any damages/compensation resulting from non-adherence to the EMP or written site instructions; (viii) Ensure that PIU and ACM/SO are timely informed of any foreseeable activities related to EMP implementation.	

C. Capacity Building and Development

219. Executing and implementing agencies need to have a sustained capacity to manage and monitor environmental safeguards. Although specialist consultants support will be available to PMU and PIUs, it is necessary to mainstream safeguards in day-to-day working. Therefore, PMU and PIUs require capacity building measures for (i) a better understanding of the project-related environmental issues; and (ii) to strengthen their role in preparation of IEE, implementation of mitigation measures, and subsequent monitoring. Trainings and awareness workshops are included in the project with the primary focus of enabling the PMU and PIU staff to understand impact assessments and carry out environmental monitoring and implement EMPs. After participating in such activities, the participants will be able to review environmental assessments, conduct monitoring of EMPs, understand government and ADB requirements for environmental assessment, management, and monitoring (short- and long-term), and incorporate environmental features into future project designs, specifications, and tender documents and carry out necessary checks and balances during project implementation.

220. PMCBC's ESS shall assess the capabilities of the target participants, customize the training modules accordingly and provide the detailed cost.

221. Typical modules would be as follows: (i) sensitization; (ii) introduction to environment and environmental considerations in water supply and wastewater projects; (iii) review of IEEs and integration into the project detailed design; (iv) improved coordination within nodal departments; and (v) monitoring and reporting system. Specific modules customized for the available skill set will be devised after assessing the capabilities of the target participants and the requirements of the project. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites. The proposed training project, along with the frequency of sessions, is presented in Table 22.

Table 22: Capacity Building Program on EMP Implementation

Sl. No.	Description	Target Participants and Venue	Cost and Source of Funds
1	Introduction and Sensitization to Environmental Issues (1 day) - ADB Safeguards Policy Statement -EARF of RSTDSP -Government of India and Rajasthan applicable safeguard laws, regulations and policies	All staff, ULBs and consultants involved in the project At PMU, Jaipur	PMU cost

	including but not limited to core labour standards, OH&S, etc. -Incorporation of EMP into the project design and contracts -Monitoring, reporting and corrective action planning		
2	Treated Effluent Reuse Concepts, Design and Management	All staff at PMU and ULBs	PMU cost
3	Sludge Reuse Concept, Design and Management	All staff at PMU and ULBs	PMU cost
4	EMP implementation (2 days) -Roles and responsibilities -OH&S planning and implementation -Wastes management (water, hazardous, solid, excess construction materials, spoils, etc.) -Working in congested areas, - Public relations - Consultations - Grievance redress -Monitoring and corrective action planning -Reporting and disclosure -Post-construction planning	All staff and consultants involved in the subproject All contractors before start of construction works At PIU	PMU cost
5	Plans and Protocols (1 day) -Construction site standard operating procedures (SOP) - Asbestos Management Plan -Heritage Impact Assessment -Biodiversity and Critical Habitat Assessment - Site-specific EMP -Traffic management plan -Spoils management plan -Waste management plan - Chance find protocol - O&M plans - Post-construction plan	All staff and consultants involved in the project All contractors before start of construction works or during mobilization stage. At PIU	PMU cost Contractors cost as compliance to contract provisions on EMP implementation
6	Experiences and best practices sharing - Experiences on EMP implementation - Issues and challenges - Best practices followed	All staff and consultants involved in the project All contractors All NGOs At PMU Jaipur	PMU Cost
7	Contractors Orientation to Workers on EMP implementation (OH&S, core labour laws, spoils management, etc.)	All workers (including manual laborers) of the contractor prior to dispatch to worksite	Contractors cost as compliance to contract provisions on EMP implementation

D. Monitoring and Reporting

222. Prior to commencement of the work, the contractor will submit a compliance report to PIU ensuring that all identified pre-construction environmental impact mitigation measures as detailed in the EMP will be undertaken. PIU with the assistance of the SO and ESS of PMCBC, consultant will review the report and thereafter PMU will allow commencement of works.

223. During construction, results from internal monitoring by the contractor will be reflected in

their monthly EMP implementation reports to the PIU and ACM, CMSC. Project officer (Environment) and ACM will review and advise contractors for corrective actions if necessary. Monthly report summarizing compliance and corrective measures taken will be prepared by safeguard officer with the assistance of ACM and submitted to PMU. Environmental monitoring plan is depicted in **Appendix 6**.

224. Quarterly report shall be prepared by CMSC and PIU and submitted to PMU for review and further actions.

225. Based on monthly and quarterly reports and measurements, PMCBC will draft semi-annual report and submit PMU for their review and further submission to ADB (**Appendix C-15**). Once concurrence from the ADB is received the report will be disclosed in the Project website.

226. The PMU will submit semi-annual environmental and social safeguards monitoring reports to ADB, which will be reviewed and disclosed on ADB's website. The monitoring reports will be prepared by PMU with assistance from the PMCBC based on inputs from the PIU's safeguard officers, CMSC, contractors and NGOs, where relevant. The status of safeguard implementation, issues, and corrective actions including associated cost and schedule are to be clearly reported to ADB. The status of safeguards implementation will also be discussed at each ADB review mission and with necessary issues and agreed actions recorded in Aide Memoires. ADB will also carry out annual environmental and/or social (including gender) reviews of the Project. The outline of the semi-annual environmental monitoring report is in **Appendix C-15**. ADB's monitoring and supervision activities are carried out on an ongoing basis until a project completion report (PCR) is issued. Thus, semi-annual report, which may cover O&M of completed packages, will be submitted to ADB until PCR is issued.

227. ADB will review project performance against the project commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system.

E. EMP Implementation Cost

Most of the mitigation measures require the contractors to adopt good site practice. contractor being bound to adopt several mitigation measures through various legal obligations (e.g. BOCW Act, Labour acts etc.) such as use of PPEs, provide toilets and potable drinking water, labour camp management, safety at work sites, safety in equipment operations etc. which should be part of their normal procedures; are not included in EMP cost of this project. Mitigation that is the responsibility of PIU/ULB will be provided as part of their management of the project, so this also does not need to be duplicated here. Cost for the capacity building program is included as part of the project. Regardless of these, project specific costs of mitigation by the construction contractors are included in the EMP budget for the civil works are enumerated here (**Table 23**)

Table 23: Cost Estimates to Implement the EMP

	Particulars	Stages	Unit	Total Number	Rate (INR)	Cost (INR)	Costs Covered By
A.	**Mitigation Measures**						
1	Compensatory plantation measures*	Construction	per tree	180	4050	729000	Civil works cost

	Particulars	Stages	Unit	Total Number	Rate (INR)	Cost (INR)	Costs Covered By
	Subtotal (A)					**729000**	
B.	**Monitoring Measures**						
1	Air quality monitoring**	Pre-construction and Construction (quarterly)	per sample	20	4920	98,400	Civil works cost
2	Noise levels monitoring**	Pre-construction and Construction (quarterly)	Per sample	20	1980	39,600	Civil works cost
4.	Ground water Monitoring	Pre-construction and Construction (quarterly)	Per sample	20	6776	134,400	Civil works cost
	Subtotal (B)					**272,400**	
C.	**Capacity Building**						
1.	Introduction and sensitization to environment issues	Pre-construction	lump sum			100,000	PMU
2.	EMP implementation	Construction	lump sum			50,000	PMU
3.	Plans and Protocols	Construction	lump sum			25,000	PMU
			lump sum			25,000	Civil works cost
4.	Experiences and best practices sharing	Construction/ Post-Construction	lump sum			100,000	PMU
5.	Contractors Orientation to Workers on EMP implementation	Prior to dispatch to worksite	Lump sum			25,000	Civil works cost
	Subtotal (C)					**325,000**	
D	**Civil Works**						
1	Water Sprinkling for dust suppression	Construction	KL	3000	111	333000	Civil works cost
E	**Grievance Redressal Mechanism**				Lump sum	350000	Civil works cost
	Sub Total (F)					**6,83,000**	
	Total (A+B+C+D+E+F)				**INR**	**20,09,400**	

* In preliminary design about 60 trees may be required to cut. During service improvement Plan contractor will be required to confirm exact number of tree cutting. Tree cutting requirement for proposed drainage works can be decided only after confirmatory survey of full length of alignment by contractor. In this stage higher side of tree cutting numbers are taken as 60 trees. As per RUDSICO-EAP policy; compensatory plantation in the ratio

of 1:3 is to be followed during construction works. Therefore 180 numbers of trees are taken as compensatory plantation.

Summary of EMP Cost incurred by Institution:

Contractor Cost	- INR 1734,400/-
PMU Cost	- INR 2,75,000/-
Total	- INR 2,009,400/-

(In Words: Rupees Twenty Lacs Nine Thousand Four Hundred Only)

X. CONCLUSION AND RECOMMENDATION

228. The process described in this document has assessed the environmental impacts of all elements of the Bundi Drainage subproject. All potential impacts were identified in relation to pre-construction, construction, and operation phases. Planning principles and design considerations have been reviewed and incorporated into the site planning and design process wherever possible; thus, environmental impacts as being due to the project design or location were not significant. During the construction phase, impacts mainly arise from the construction dust and noise, the need to dispose of large quantities of waste soil due to excavation of proposed drains; and from the disturbance of residents, businesses, traffic and important buildings by the construction work. The social impacts (access disruptions) due to construction activities are unavoidable, as the residential and commercial establishments exist along the roads where drains will be constructed. A resettlement plan has been developed in accordance with ADB SPS 2009 and Government of India laws and regulations.

229. To strengthen the existing drainage system of city and to address gaps in the existing system; drainage works is proposed in Bundi city. Under which proposed works Nagar Parishad said that five drains will be rehabilitated, i) Bundi bypass - Rani ji ki Baori - Lanka gate - ICE factory to UIDSMT Nalla: 2.693 km; ii) Khoja gate to ice factory: 0.407 km; iii) Gurudwara Devpura to Nanak Puliya Tiraha: 4.008 km; iv) Jait Sagar to Devpura: 5.900 km; v) Agarwal Dharamshala to highway nalla on Silor road: 1.210 Km; Total length of proposed drainage is 14.118 Km.

230. The subproject is formulated to address gaps in Drainage infrastructure in a holistic and integrated manner. The Project Components include improvements in drainage infrastructures of all Six drains to discharge the storm water into Mangali River and other specific location. to improve the drainage system of the town and to prevent the stagnant water of both the drains.

231. Anticipated impacts of proposed drainage systems during operation and maintenance will be related to check and repair of blocks, overflows and leakages in all five drains. Regular cleaning of drains and safe disposal of removed silt and solid waste from drains are major area of concern during operation phase and mitigation plans are required for same.

232. The public participation processes undertaken during project design ensured stakeholders are engaged during the preparation of the IEE. The planned information disclosure measures and process for carrying out consultation with affected people will facilitate their participation during implementation. The project's grievance redress mechanism will provide the citizens with a platform for redressing grievances, and describes the channels, timeframe, and mechanisms for resolving complaints about environmental performance.

The Environmental Management Plan proposed in the project includes mitigation measures for identified impacts, training and capacity building activities, a monitoring plan to ensure that the environmental standards are maintained throughout the project construction period and a reporting plan to ensure that the project is implemented as per environmentally sound engineering and construction practices. The budgetary provision for mitigating the anticipated impacts by proposed subproject component is made in the project for effective implementation of the EMP Plan. Total estimated cost for EMP implementation is approx. INR 1,401,400/- (In Words: Rupees Fourteen Lacs One thousand and Four Hundred Only).

233. The EMP will assist the PMU, PIU, Consultants and contractors in mitigating the environmental impacts, and guide them in the environmentally sound execution of the proposed project. The EMP will also ensure efficient lines of communication between PIU/ULB, PMU, consultants and contractor. A copy of the EMP shall be kept on-site during the construction period at all times. The EMP shall be made binding on all contractors operating on the site, and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document shall constitute a failure in compliance.

234. The project will benefit the general public by contributing to the long-term improvement of Drainage system and community liveability in Bundi. The potential adverse environmental impacts are mainly related to the construction period, which can be minimized by the mitigation measures and environmentally sound engineering and construction practices.

235. Therefore, as per ADB SPS, the project is classified as environmental category B and does not require further environmental impact assessment.

236. **Recommendations.** The following are recommendations applicable to the subproject to ensure no significant impacts:

- Obtain all statutory clearances at the earliest time possible and ensure conditions/provisions are incorporated in the detailed design;
- Include this IEE in bid and contract documents;
- Update/revise this IEE based on detailed design and/or if there are unanticipated impacts, change in scope, alignment, or location;
- Commitment from PMU, PIUs, project consultants, and contractors to protect the environment and the people from any impact during project implementation;
- Conduct safeguards induction to the contractor after award of contract;
- Ensure contractor appointed qualified environment, health and safety (EHS) officers prior to start of works;
- Timely disclosure of information and establishment of GRM;
- Involvement of contractors, including subcontractors, in first level GRM;
- Strictly supervise EMP implementation;
- Continuous consultations with stakeholders;
- Urban local body will ensure that no industrial wastewater and sewerage enter in to proposed drains
- Documentation and reporting on a regular basis as indicated in the IEE.

Appendix 1: REA Check list

Instructions:

The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by the Director, RSES and for approval by the Chief Compliance Officer.

This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) involuntary resettlement, (ii) indigenous peoples planning, (iii) poverty reduction, (iv) participation, and (v) gender and development.

Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title: India/Rajasthan Secondary Towns Development Investment Program (RSTDP)/Bundi Drainage subproject, Distt. Bundi, Rajasthan
Sector Division: Urban Development

REA Checklist- Urban Development

SCREENING QUESTIONS	Yes	No	REMARKS
A. **Project Siting** Is the project area…			
Densely populated?	√		Subproject activities are scattered to entire town including the densely populated areas.
Heavy with development activities?	√		Bundi is a developed town with continuous urban expansion, there are several industries and mostly agriculture, business and service are the common occupations
Adjacent to or within any environmentally sensitive areas?		√	There are environmental sensitive areas near the proposed sites. Chambal Gharial Sanctuary is approx. 30 km, Ramgarh Vishdhari 350 m & Jawahar Sagar is almost 27 km from proposed drains components.
Cultural heritage site		√	Bundi town has three state Protected Monuments, Raniji Ki Bawari (step well), 84 Pillared Cenotaph (Shiv temple) and Inscription of Hammir and one ASI monument (Wall Paintings of Hardoti School in the Palace). All project components are located outside the subproject component area.
Protected Area	√		There are environmental sensitive areas near the proposed sites. Chambal Gharial Sanctuary is approx. 30 km, Ramgarh Vishdhari 350 m & Jawahar Sagar is almost 27 km from proposed drains components.
Wetland		√	
Mangrove		√	
Estuarine		√	
Buffer zone of protected area		√	

SCREENING QUESTIONS	Yes	No	REMARKS
Special area for protecting biodiversity	√		Subproject components are located in Bundi City and in its immediate surroundings which were converted into urban use for many years ago, and there is natural habitat live at few areas and most of the drainages area at distance location from the proposed sites. Nearest protected area is Ramgarh Vishdhari Wildlife Sanctuary is located 350 metres from Bundi on the Bundi-Nainwa road.
Bay		√	
B. Potential Environmental Impacts Will the Project cause…			
Impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.		√	No such impacts on existing sanitation and solid waste disposal systems
Deterioration of surrounding environmental conditions due to rapid urban population growth, commercial and industrial activity, and increased waste generation to the point that both manmade and natural systems are overloaded and the capacities to manage these systems are overwhelmed?		√	No such impact is anticipated
Degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		√	No impacts on land and ecosystem is anticipated
dislocation or involuntary resettlement of people		√	Project does not involve land acquisition / involuntary resettlement /displacement. During the drain construction, particularly in narrow streets there may be temporary disruption to household and there will also be temporary loss of livelihood to roadside vendors, the same is addressed in the Resettlement Plan.
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		√	No such impact on vulnerable groups
Degradation of cultural property, and loss of cultural heritage and tourism revenues?		√	Subproject components are not proposed within boundary of any cultural heritage monument
Occupation of low-lying lands, floodplains, and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to polluting industries?		√	No such impact is anticipated
Water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality, and pollution of receiving waters?		√	No such impact is anticipated rather proposed improvements of both drains will improve the environmental conditions of the city

SCREENING QUESTIONS	Yes	No	REMARKS
Air pollution due to urban emissions?		√	No such impact is anticipated
Risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation?	√		Occupational health and safety risks are negligible due to chemical and biological hazards during construction in sewerage works, physical hazards may arise due to safety risks during construction works. During operation of drainage system physical and biological hazards may cause health and safety risks to workers for which mitigation measures will be required
Road blocking and temporary flooding due to land excavation during rainy season?	√		Temporary flooding may occur in excavated trenches during rainy season and mitigation measures will be required to overcome flooding due to construction works
Noise and dust from construction activities?	√		Noise and dust problem may occur during construction activities
Traffic disturbances due to construction material transport and wastes?	√		Traffic disturbances may occur during construction works and traffic management plan will be required
Temporary silt runoff due to construction?	√		Bundi is predominantly dry and rainfall is very limited
Water depletion and/or degradation?		√	No such impact is anticipated
Overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		√	No such impact is anticipated
Contamination of surface and ground waters due to sludge disposal on land?	√		Silt and solid waste emerging from cleaning of drains will create such problem if not addressed
Pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		√	No such impact is anticipated
Large population influx during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)?		√	Most of the unskilled workers will be hired locally, some of skilled workers will be brought from outside but numbers will not so large to have impacts on social infrastructure and services.
Social conflicts if workers from other regions or countries are hired?		√	The contractor will be utilizing the local labour force as far as possible; in case if it is necessary, labour camps and facilities will be provided appropriately. No conflicts envisaged
Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?		√	No explosives shall be used in project. Fuel and other chemicals will be used in very less quantities which will not have significant impact on community health and safety. Safe handling of fuels and chemicals will be ensured by contractor.

SCREENING QUESTIONS	Yes	No	REMARKS
Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?	√		Community safety risk may be there during construction during excavation, equipment and vehicle operation, construction etc. for which mitigation measures will be required by contractor

Checklist for Preliminary Climate Risk Screening

Country/Project Title: India/Rajasthan Secondary Towns Development Investment Program (RSTDP), Bundi Drainage subproject, District - Bundi , Rajasthan
Sector: Urban Development
Subsector: Urban Drainage
Division/Department: SARD/SAUW

Screening Questions		Score	Remarks[25]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	0	No such issue may affect the project
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	No such issue may affect the project
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	No such issues may affect the project
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	0	No such issue may affect the project
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	No problem will be envisaged in future which likely affect the performance of project output

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1

[25] If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High): Low

Other Comments: The proposed subproject activity involves construction of drains and the anticipated environmental impacts are very marginal and the construction activity does not impose any threat to the existing climatic conditions.

Appendix 2: List of ASI and State Protected Monuments in Bundi

A. List of State protected Monuments in Bundi

1.	Raniji Ki Bawari (step well)	Bundi
2.	Shiv Temple	Bundi
3.	Inscription of Hammir	Bundi

B. List of ASI Protected Monuments in Bundi

S.No.	Locality	Name of monument / site
1	Bundi	Wall Paintings of Hardoti School in the Palace

Appendix 3: Compliance with Environmental Criteria for Subproject Selection

Components	Criteria	Compliance
All subprojects		
	Subproject will avoid potentially significant adverse impacts that are diverse, irreversible or unprecedented (ADB SPS Category A for environment).	Complied- Sub project is not having significant adverse impacts; anticipated impacts are temporary and reversible and can be mitigated through mitigation plans suggested in IEE
	Comply with all requirements of ADB SPS 2009 and follow procedures set in this EARF.	Complied- Sub project complies all the requirements of ADB SPS 2009
	Comply with relevant national, and local laws, rules and regulations regarding EIA, environmental protection, pollution prevention (water, air, noise, solid waste, etc.), wildlife protection, core labor standards, physical cultural resources, health and safety, and other laws in specific sectors as indicated below	Complied- Sub project complies all relevant national and local laws, rules and regulations applicable to this type of sub projects
	Reflect inputs from public consultations	Complied- Stakeholder's consultations are conducted in the project planning phase and suggestions are incorporated in project designs
Location	Avoid involuntary resettlement by prioritizing rehabilitation over new construction using vacant government land where possible, and taking all possible measures in design and selection of site or alignment to avoid resettlement impacts	Complied- All components of sub project are planned on government land only. No land acquisition is done to avoid any involuntary resettlement.
	Avoid or minimize the cutting of trees	Will be Complied- Tree cutting will avoided as far as possible and if tree cutting is unavoidable, it has been minimized to lowest level and If any tree cutting is required for construction works, prior permission from local administration for tree cutting will be required and compensatory plantation as per RUDSICO-EAP policy will also be required
Biodiversity	Avoid locating subprojects in critical habitats, such as, but not limited to, wildlife/bird sanctuaries, national parks, tiger reserves, elephant reserves, conservation reserves or core zone of biosphere reserves. **Appendix 7** provides preliminary analysis using the International Biodiversity Assessment Tool (IBAT) key biodiversity areas, protected areas, IUCN red list species and likelihood of critical habitats per town.	Not applicable- There are no any environmentally protected areas, core zones of biosphere reserves and highly valued habitat within the impact area of project components.

	Should not directly affect environmentally protected areas, core zones of biosphere reserves and highly valued habitat	
	If work is proposed with the aim of improving the conservation or management of designated subproject sites (e.g. improved drainage), this must only be undertaken: (i) after a comprehensive study and development of management plans and criteria; and (ii) with the direct involvement and approval of national and local bodies responsible for the subproject site.	Not applicable
Physical Cultural Resources	Should not result in the destruction/damage of or encroachment onto physical cultural resources (PCR) [26] such as archaeological monuments; heritage sites and movable or immovable objects, sites, structures, group of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance.	Being Complied- Wall painting in Palace is about 300 m far in proposed Jait Sagar drain so no prior NOC required from ASI department No other ASI Monuments falls under impact area of any of the component of this project. None of project components falls within the protected areas of any of the state protected monuments. Therefore there will be no adverse impact on any ASI and State protected monuments due to proposed project activity.
Existing Facilities to be rehabilitated or expanded	Conduct environmental audit of existing facilities[33] per ADB SPS	Not applicable to this sub project
Associated Facilities[27]	Analyze environmental impacts and risks to be included in the IEE	Not applicable to this sub project
Asbestos-containing materials (ACM) including, but not limited to, pipes, roofing, ceilings, insulation materials,	Avoid handling or removing any ACM. Ensure asbestos concrete (AC) pipes facilities containing asbestos will not be disturbed and left in-situ. **Appendix C-20** (of EARF) provides asbestos management plan. RUDSICO shall include AMP in all contracts.	Not applicable to this sub project

[26] Physical cultural resources as defined as “movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings and may be above or below ground or under water. Their cultural interest may be at the local, provincial, national, or international level.”

[27] ADB SPS Appendix 1 para 6 defines associated facilities as “not funded as part of the project (funding may be provided separately by the borrower/client or by third parties), and whose viability and existence depend exclusively on the project and whose goods or services are essential for successful operation of the project”

excess pipes stored in PHED campuses, walls, etc.		
	When designing subproject infrastructure that involves excavation in urban areas the relevant authorities must be consulted to ascertain the location of any ACM prior to any subproject activity. Locations of new infrastructure must then be designed to avoid excavating or disturbing any ACM.	Not applicable to this sub project
Right-of-way	Locate water supply pipelines within the right of way (ROW) of other linear structures (roads, irrigation canals) as far as possible, to reduce new land acquisition.	Not applicable to this sub project
	Ensure that pipelines ROW do not require land acquisition from individual farmers that is a significant proportion of their total land holding (>10%).	Not applicable to this sub project

Appendix 4: Stakeholders Consultations Conducted During Project Preparation

A. Consultations during Social and Environmental Impact Assessment

Various consultations were done during social and environmental impact assessment of the project with residents of the town at various locations to understand their level of satisfaction about the present water supply and sewerage conditions in town and also to understand their awareness about the proposed works and their willingness/acceptance of the proposed works under RUSTDIP. Details of these consultations are given below-

S. No	Date of Consultation	Name of persons	Location	Topic Discussed	Outcome
1	5th Jan, 2022	Manish Kumar, Sunil Bhatt, Mohan Lal, Shubhanam, Satnaryan, Suraj Singh, Sonu, Nand Kishor, Jaswant, Manish, Mohit Gujjar, Shubham, Sourabh. **M- 12** **F- 01**	Nawal Sagar; Drainage, Bundi	Status of existing drainage system, Information about project components and feedback about the project, presence of trees at proposed alignment, probable disturbance during construction works, presence of wildlife in drain alignment	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.
2	5th Jan, 2022	Madan Lal, Sonu, Kalayaan, Prithviraj, Khaniya, Manav, Mandhir, **M- 07** **F- 00**	Nawal Sagar; Drainage, Bundi	Status of existing drainage system, Information about project components and feedback about the project, presence of trees at proposed alignment, probable disturbance during construction works, presence of wildlife in drain alignment	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.

S. No	Date of Consultation	Name of persons	Location	Topic Discussed	Outcome
3	5th Jan, 2022	Dasart, Madhav Prasad, Chintan Nawal, Suresh Nawal, Amit Gautam, Madhanir Garg, Satish, Ramesh, Babu. **M- 12** **F- 00**	Nawal Sagar; Drainage, Bundi	Status of existing drainage system, Information about project components and feedback about the project, presence of trees at proposed alignment, probable disturbance during construction works, presence of wildlife in drain alignment	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.
4	19th July, 2022	Ram Pratap, Chetan Rathore, Mathra Lal, Sahid Rahmaan, Mukesh Jain, Nafiz, Hamid. **M- 06** **F- 0**	Jait Sagar Nallah; Bundi	Status of existing drainage system, Information about project components and feedback about the project, presence of trees at proposed alignment, probable disturbance during construction works, presence of wildlife in drain alignment	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.
5	19th July, 2022	Abdul Rataif, Skir Hussian, Fajaan, Mohameed Aslam, Eswar, Sor Ansari. **M- 6** **F- 0**	Ward No. 37 & 53; Bundi	Status of existing drainage system, Information about project components and feedback about the project, presence of trees at proposed alignment, probable disturbance during constructionworks, presence of	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints

S. No	Date of Consultation	Name of persons	Location	Topic Discussed	Outcome
				wildlife in drain alignment	briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.
6	19th July, 2022	Madan Lal, Kalyaan, Babu Lal, Hira Lal, Ismil Habib, Sonam Goyal, Nand Kishor, Dev ram, Kalesh Sharma, Vimal Bhandari, Jitendar Kumar. **M-10** **F-01**	Khatik Bhwan & Aadarsh Clony; Bundi	Status of existing drainage system, Information about project components and feedback about the project, presence of trees at proposed alignment, probable disturbance during construction works, presence of wildlife in drain alignment	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.
7	19th July, 2022	Love Kush, Abdul Salim, Golu, Babu Lal. **M-04** **F-0**	Medical Colny & Chattarpura Village; Bundi.	Status of existing drainage system, Information about project components and feedback about the project, presence of trees at proposed alignment, probable disturbance during construction works, presence of wildlife in drain alignment	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.
8	20th July, 2022	Soji Rathore, Ajaad Singh, Jagdish Prashad, Yogesh, Lodesh Partap, Lokesh, Rohit,	Gurudwara to Nanak Puliya; Bundi	Status of existing drainage system, Information about project components and feedback about the project, presence of trees	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for

S. No	Date of Consultation	Name of persons	Location	Topic Discussed	Outcome
		Dhurgesh, Nishant Handa, Pooja, Laxsmi Naryana, Moti Ram, Ganesh Lal, Mukesh, Dhararaj Saini, Desh raj Saini, Ram Savroop. **M-16** **F-0**		at proposed alignment, probable disturbance during construction works, presence of wildlife in drain alignment	proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.
9	20th July, 2022	Samile Khan, Aman, Sonu, Fazui, Sonu, Lahin, Sakil Khan. **M- 5** **F- 2**	Gurudwara Devepura; Bundi	Status of existing drainage system, Information about project components and feedback about the project, presence of trees at proposed alignment, probable disturbance during construction works, presence of wildlife in drain alignment	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.
10	20th July, 2022	Soji Lal Meena, Nathu Lal, Om Parkash Sharma, Sita RamSharma, Prahlad Meena, Smitra, Golu, Bhupesh, Sunil. **M- 7** **F- 2**	Khoja Gate Ganesh Ji; Bundi	Status of existing drainage system, Information about project components and feedback about the project, presence of trees at proposed alignment, probable disturbance during construction works, presence of wildlife in drain alignment	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.

S. No	Date of Consultation	Name of persons	Location	Topic Discussed	Outcome
11	20th July, 2022	Satinder, Mukesh Kumar, Babu Lal, Dev Kumar Rathore, Satyanarayana, Ashok Kumar, Rohit Kumar, Banti, Satyanarayana. **M-9** **F-0**	Near By FCI Godam; Bundi	Status of existing drainage system, Information about project components and feedback about the project, presence of trees at proposed alignment, probable disturbance during construction works, presence of wildlife in drain alignment	All the participants told that prior information of civil works must be shared so that they can shift to the other side of the road. They agreed that this subproject is urgently required for proper drainage in Bundi town. Participants are happy with proposed project. Grievance mechanism and process of loading complaints briefed with participants. There is not any forest, wildlife or any sensitive /unique environmental, component near the project area.

Photographs of Public Consultations

Public Consultation at Medical Colony (Silor road) drain towards Highway Nallah 200 mtr

Proposed drain from Highway Nallah, Silor road to Agersen Dharamshala 200 mtr

Public Consultation _ Temple stair near Ambedkar Circle, Silor road from Agersen Dharamshala

Public Consultation at Devpura for drain.

Public Consultation at Jait Sagar Nallah for drains

Public Consultation at Khoja Ganesh for drain.

Public Consultation FCI Godam Bundi by pass for drains

Public Consultation at Nanakpura for drains

Extended drain length from, Silor road, Agersen Dharamshala to Ambedkar Circle 600 m @ Ambedkar Circle

Public Consultation at Hakimi Masjid for drain

Public Consultation at Khatik Bhawan for drain

Public Consultation at Devpura for drain

Public Consultation at Aadarsh Colony for drain

Public Consultation at Medical Colony for drain

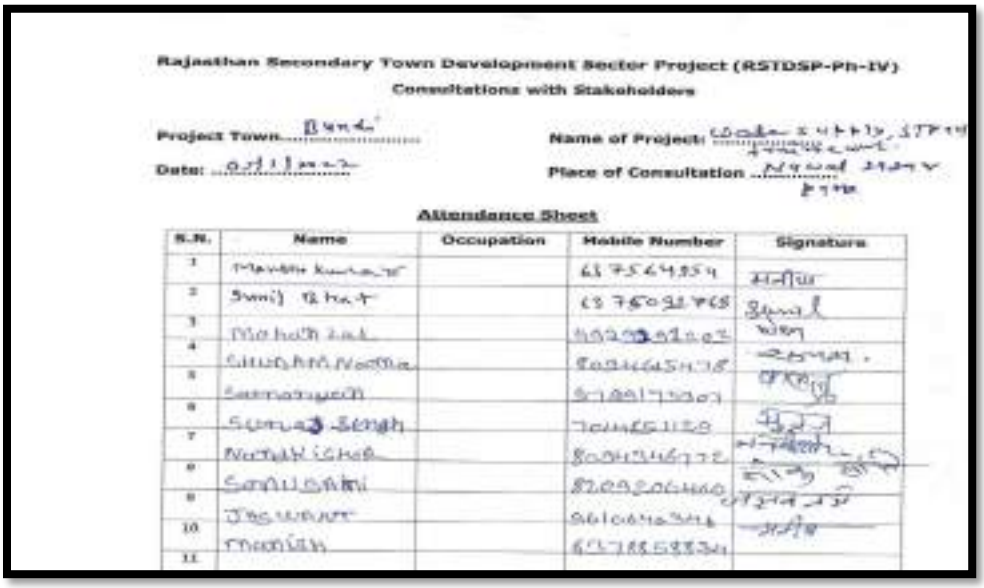
Public Consultation at Chattarpura Village for drain

Public Consultation at ward 37 for drain

Public Consultation at ward 53 for drain

Public Consultation at Gurudwara Devpura for drain

Public Consultation Attendance Sheet



Rajasthan Secondary Town Development Sector Project (RSTDSP-Ph-IV)

Consultations with Stakeholders

Project Town: Bundi

Name of Project:

Date: 07/11/22

Place of Consultation:

Attendance Sheet

S.N.	Name	Occupation	Mobile Number	Signature
1				
2				
3				
4				
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7				
8				
9				
10				
11				

Rajasthan Secondary Town Development Sector Project (RSTDSP-Ph-IV)

Consultations with Stakeholders

Project Town: Bundi

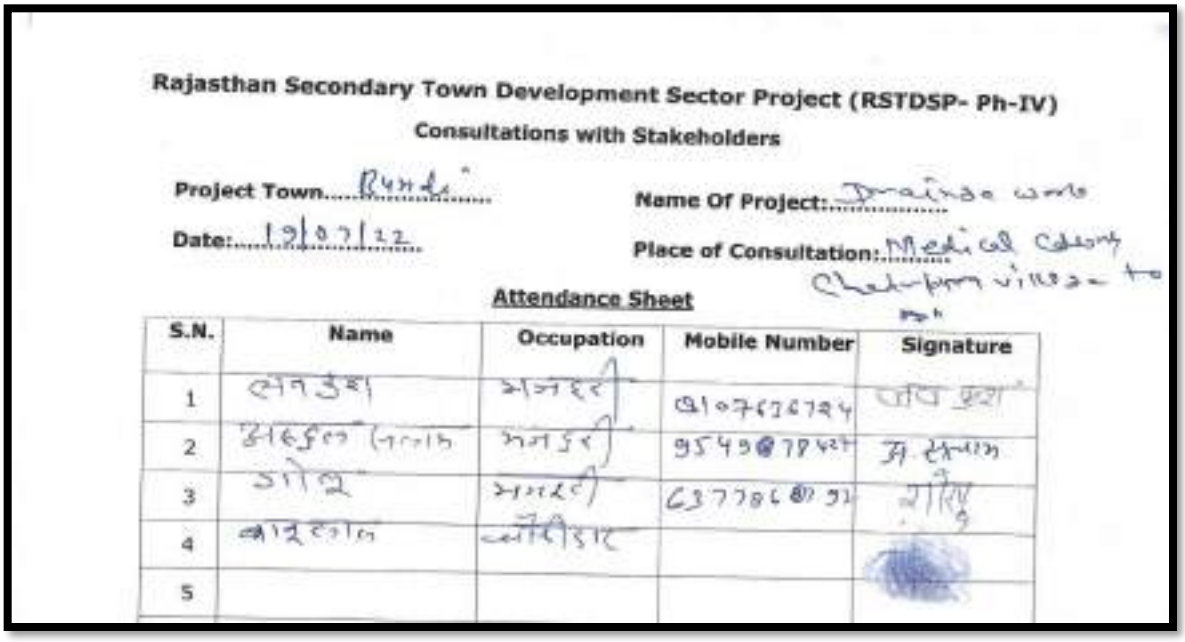
Name of Project:

Date: 07/11/22

Place of Consultation:

Attendance Sheet

S.N.	Name	Occupation	Mobile Number	Signature
1				
2				
3				
4				
5				
6				
7				
8				
9				



Rajasthan Secondary Town Development Sector Project (RSTDSP- Ph-IV)

Consultations with Stakeholders

Project Town: Bundi

Name Of Project: Drainage work

Date: 19/07/22

Place of Consultation: Medical Colony Chhabipura village

Attendance Sheet

S.N.	Name	Occupation	Mobile Number	Signature
1				
2				
3				
4				
5				

Rajasthan Secondary Town Development Sector Project (RSTDSP- Ph-IV)

Consultations with Stakeholders

Project Town: Nimbahera **Name Of Project:** Drainage

Date: 19/07/22 **Place of Consultation:** नगरपालिका सभागार

Attendance Sheet

S.N.	Name	Occupation	Mobile Number	Signature
1	[illegible]	[illegible]		[illegible]
2	[illegible]	[illegible]		[illegible]
3	[illegible]	[illegible]	9588279377	[illegible]
4	[illegible]	[illegible]	8955967116	[illegible]
5	[illegible]	[illegible]	9929229178	[illegible]
6	[illegible]	[illegible]	9983463138	[illegible]
7	[illegible]	[illegible]	7024778128	[illegible]
8	[illegible]	[illegible]		[illegible]
9	[illegible]	[illegible]	9950602131	[illegible]
10	[illegible]	[illegible]		
11	[illegible]	[illegible]	9057535568	[illegible]

Rajasthan Secondary Town Development Sector Project (RSTDSP- Ph-IV)

Consultations with Stakeholders

Project Town: Bune

Name Of Project: Drainage वर्क

Date: 20/07/22

Place of Consultation: डोडवारी मैनाना बूंदा

Attendance Sheet

S.N.	Name	Occupation	Mobile Number	Signature
1	सोनी राठौड़	ठेला	8003864656	सोनिया
2	अवधेश सिंह	रामपुरा	6367986524	अवधेश सिंह
3	जगदीश प्रसाद	चाय पत्ती	9461121735	जगदीश
4	योगेश	फूल बेचना	9680548615	योगेश सैनी
5	लोकेश प्रजापत	E-रिक्शा ड्राइवर	6350500827	lokesh
6	लोकेश		8949087355	लोकेश
7	रोहित		7731049928	रोहित
8	दुर्गेश	ड्राइवर	7720355770	दुर्गेश
9	निशांत हाडा	Job	9549282854	Nishant
10	पूजा	पान की दुकान	9783214640	पूजा
11	लक्ष्मीनारायण	पशुपालन	9929815507	लक्ष्मी नारायण
12	मोती लाल	(टेम्पो) ड्राइवर		मोती लाल
13	गणेश लाल	पानी पताशा	9829354114	गणेश लाल
14	मुकेश	ड्राइवर	9166791620	मुकेश
15	धर्मराज सैनी		8003244206	धर्मराज सैनी
16	मोहन लाल सैनी		9829484054	[illegible]
17	रामनरेश		99286914	रामनरेश

Rajasthan Secondary Town Development Sector Project (RSTDSP-Ph-IV)

Attendance Sheet of Public Consultation

Project Town: Bundi

Date: 20/07/2022

Name of the project: Drainage

Place of consultation: FCI Godam

S.No.	Name and Mobile no.	Occupation and Address	Topics Discussed	Outcome of the consultation	Signature
1	[illegible] 8890506165	[illegible]	1. Awareness about the project 2. Present status of site/project 3. Status of water supply/ SWM/sewerage in town 4. Requirement of any tree cutting due to project 5. Presence/movement of wild fauna at project town/project sites 6. Whether project is beneficial for citizens and increase citizen's convenience 7. Whether project is causing any livelihood impact to someone 8. Any historical or cultural monuments in town/near project sites 9. Any suggestion about the project 10. Any other relevant information found at site	Community people in favour of drainage network	[illegible]
2	[illegible]	[illegible]		" "	[illegible]
3	[illegible] 9828183338	[illegible]		" "	Bablu Lal
4	[illegible]	[illegible]		" "	[illegible]
5	[illegible]	[illegible]		" "	[illegible]
6	[illegible]	[illegible]		" "	[illegible]
7	[illegible]	[illegible]		" "	[illegible]
8	[illegible]	[illegible]		" "	[illegible]
9	[illegible]	[illegible]		" "	

Signature of the person who done consultation: Mani Raman

Rajasthan Secondary Town Development Sector Project (RSTDSP-Ph-IV)

Attendance Sheet of Public Consultation

Project Town: Bundi

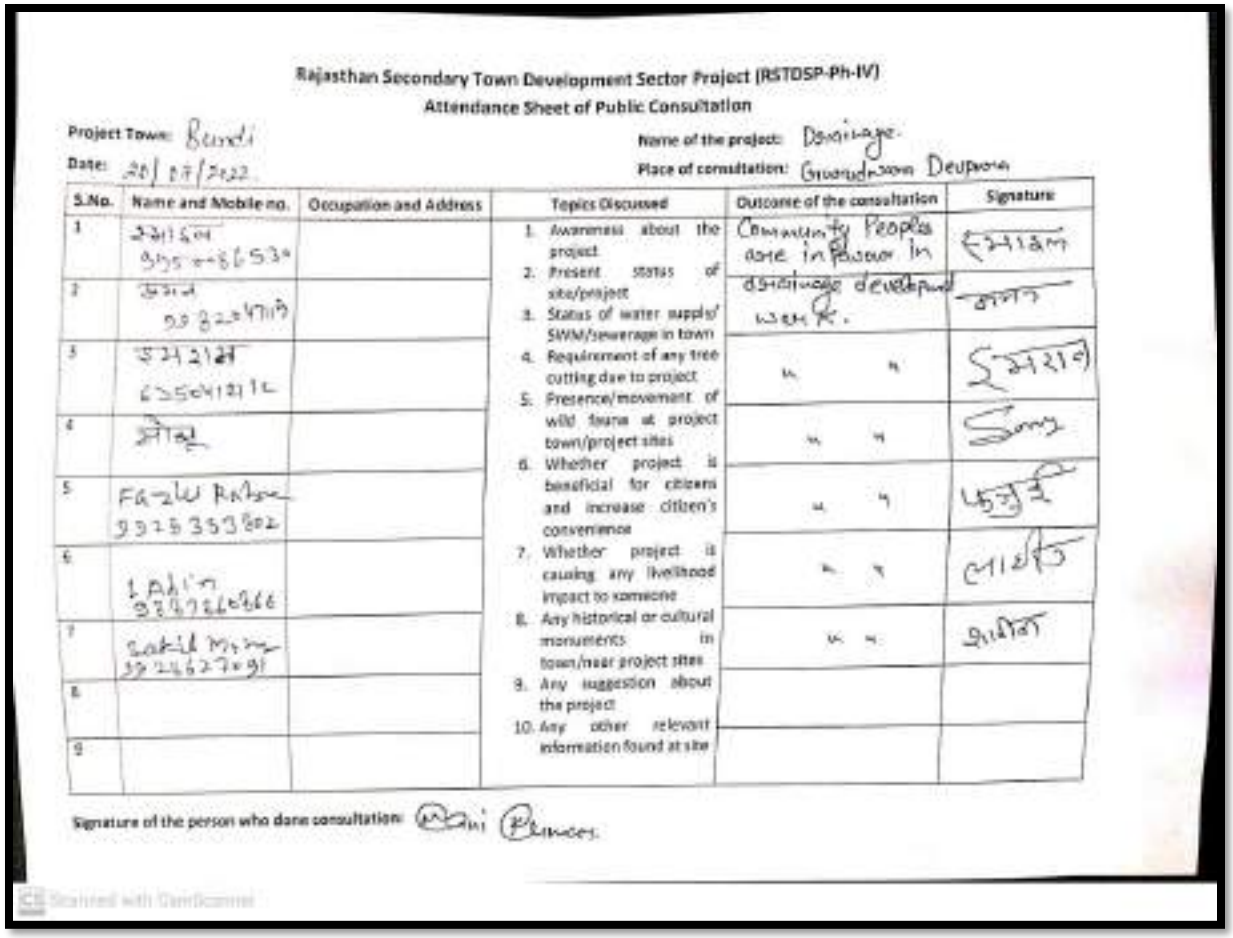
Date: [illegible]

Name of the project: Drainage

Place of consultation: Khaja Gate Ganesh ji

S.No.	Name and Mobile no.	Occupation and Address	Topics Discussed	Outcome of the consultation	Signature
1	[illegible]	[illegible]	1. Awareness about the project 2. Present status of site/project 3. Status of water supply/ SWM/sewerage in town 4. Requirement of any tree cutting due to project 5. Presence/movement of wild fauna at project town/project sites 6. Whether project is beneficial for citizens and increase citizen's convenience 7. Whether project is causing any livelihood impact to someone 8. Any historical or cultural monuments in town/near project sites 9. Any suggestion about the project 10. Any other relevant information found at site	Community People favouring the drainage development Project	[illegible]
2	[illegible]	—		" "	[illegible]
3	[illegible]	—		" "	Omprakash
4	[illegible]	—		" "	[illegible] Sharma
5	[illegible]	—		" "	[illegible]
6	[illegible]	—		" "	
7	[illegible]	[illegible]		" "	[illegible]
8	[illegible]	[illegible]		" "	
9	[illegible]	[illegible]		" "	[illegible]

Signature of the person who done consultation: Mani Raman



Rajasthan Secondary Town Development Sector Project (RSTDSP-Ph-IV)

Attendance Sheet of Public Consultation

Project Town: Bundi

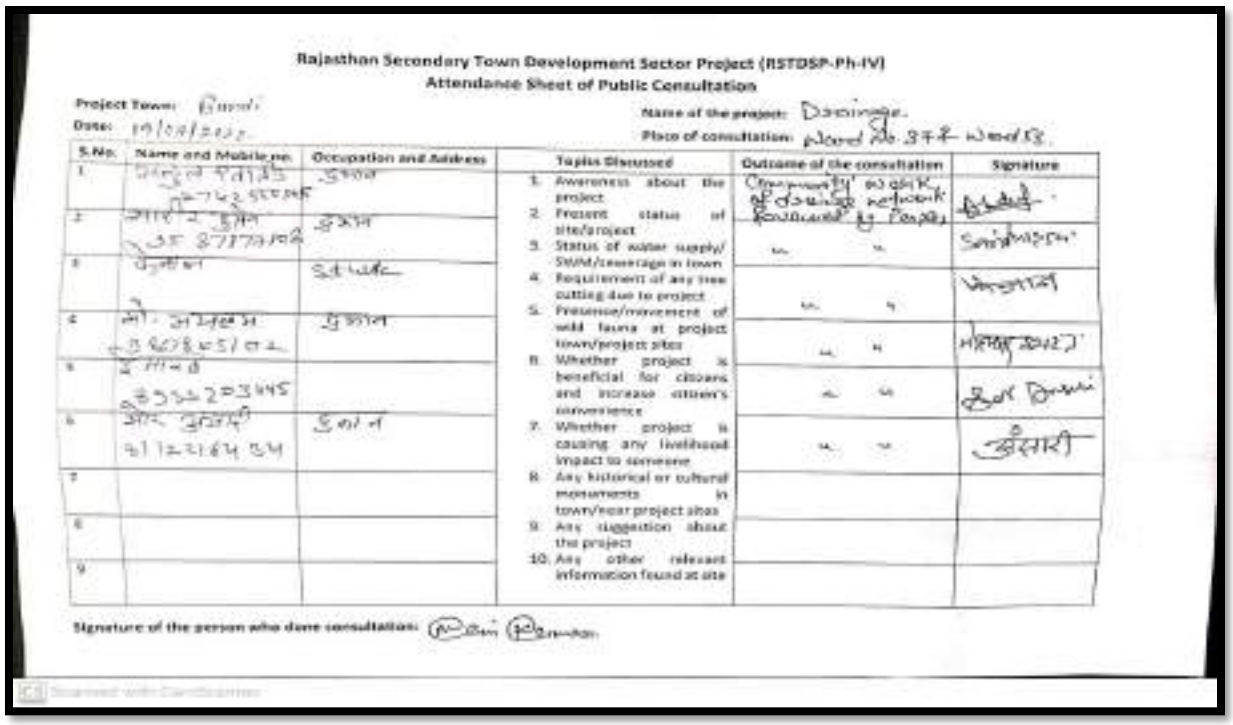
Name of the project: Drainage.

Date: 28/07/2022.

Place of consultation: Gwardwara Deupura

S.No.	Name and Mobile no.	Occupation and Address	Topics Discussed	Outcome of the consultation	Signature
1			1. Awareness about the project 2. Present status of site/project 3. Status of water supply/ SWM/sewerage in town 4. Requirement of any tree cutting due to project 5. Presence/movement of wild fauna at project town/project sites 6. Whether project is beneficial for citizen and increase citizen's convenience 7. Whether project is causing any livelihood impact to someone 8. Any historical or cultural monuments in town/near project sites 9. Any suggestion about the project 10. Any other relevant information found at site	Community Peoples done in favour in drainage development work.	
2				" "	
3				" "	
4				" "	
5				" "	
6				" "	
7				" "	
8					
9					

Signature of the person who done consultation:



Rajasthan Secondary Town Development Sector Project (RSTDSP-Ph-IV)

Attendance Sheet of Public Consultation

Project Town: Bundi

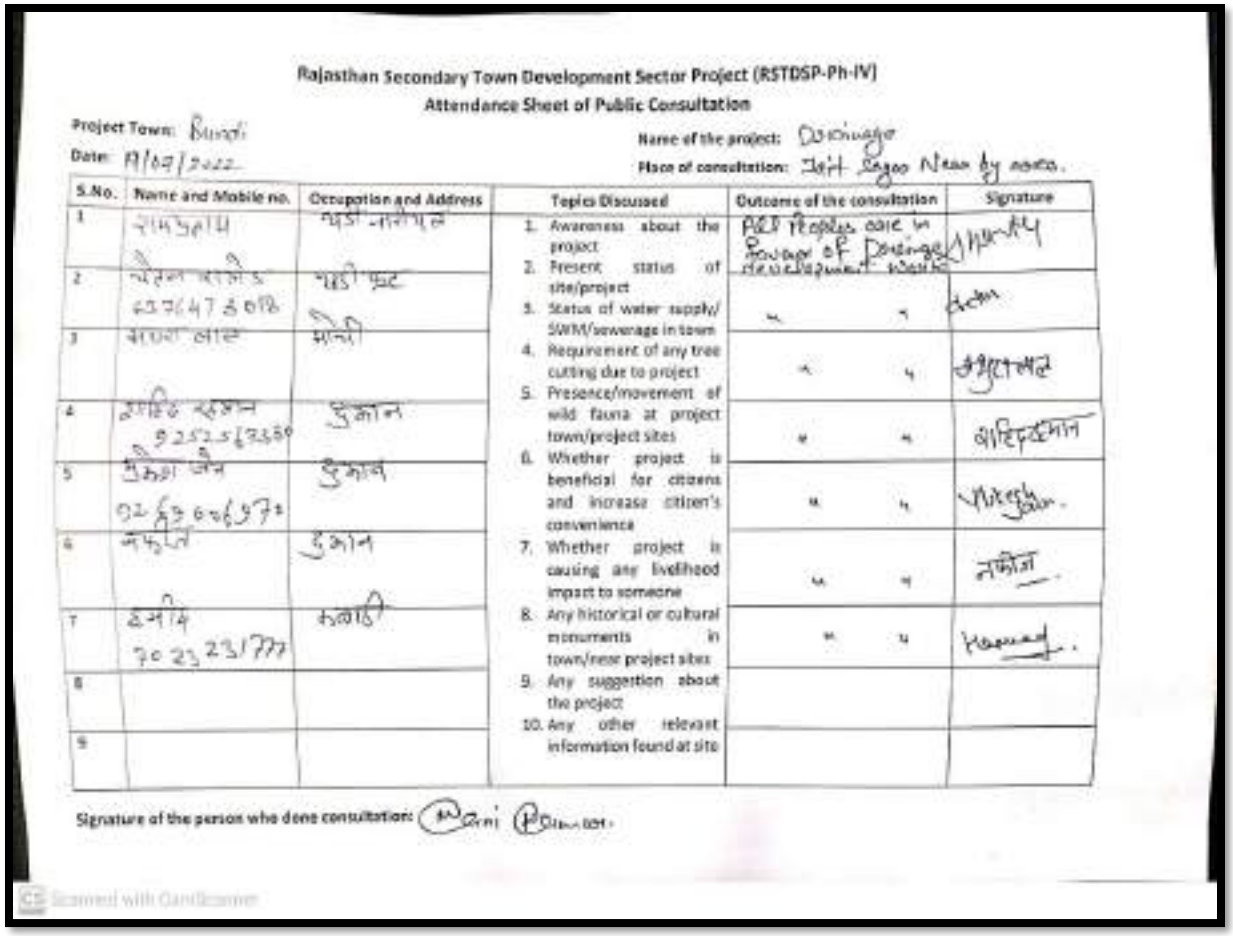
Name of the project: Drainage.

Date: 19/07/2022.

Place of consultation: Ward No. 37 & Ward 38.

S.No.	Name and Mobile no.	Occupation and Address	Topics Discussed	Outcome of the consultation	Signature
1			1. Awareness about the project 2. Present status of site/project 3. Status of water supply/ SWM/sewerage in town 4. Requirement of any tree cutting due to project 5. Presence/movement of wild fauna at project town/project sites 6. Whether project is beneficial for citizen and increase citizen's convenience 7. Whether project is causing any livelihood impact to someone 8. Any historical or cultural monuments in town/near project sites 9. Any suggestion about the project 10. Any other relevant information found at site	Community' ko abhi of drainage network finalized by People	
2				" "	
3				" "	
4				" "	
5				" "	
6				" "	
7					
8					
9					

Signature of the person who done consultation:



Rajasthan Secondary Town Development Sector Project (RSTDSP-Ph-IV)

Attendance Sheet of Public Consultation

Project Town: Bundi

Name of the project: Drainage

Date: 8/07/2022

Place of consultation: Jail Sagar Near by water.

S.No.	Name and Mobile no.	Occupation and Address	Topics Discussed	Outcome of the consultation	Signature
1	[illegible]	[illegible]	1. Awareness about the project 2. Present status of site/project 3. Status of water supply/ SWM/sewerage in town 4. Requirement of any tree cutting due to project 5. Presence/movement of wild fauna at project town/project sites 6. Whether project is beneficial for citizens and increase citizen's convenience 7. Whether project is causing any livelihood impact to someone 8. Any historical or cultural monuments in town/near project sites 9. Any suggestion about the project 10. Any other relevant information found at site	All People are in favour of Drainage	[illegible]
2	[illegible] 6376478018	[illegible]		" "	[illegible]
3	[illegible]	[illegible]		" "	[illegible]
4	[illegible] 9252573350	दुकान		" "	[illegible]
5	[illegible] 9263602978	दुकान		" "	[illegible]
6	[illegible]	दुकान		" "	[illegible]
7	[illegible] 7023231777	[illegible]		" "	[illegible]
8					
9					

Signature of the person who done consultation: [illegible]

B. Stakeholders Consultations in CLC:

City level Stakeholder Committee (CLC) Meeting (dtd. 20.10.2021)- A town-level City Level Committee (CLC) has been formed in Bundi district by Government orders. City Level Committee meeting was organized during the detailed design stage to which representatives of primary and secondary stakeholders were invited. City Level Stakeholder committee meeting was organized for Bundi in District Head Quarter, Bundi on dtd. 20.10.2021 to discuss the matter of proposed Water supply & Sewerage, Drainage, Road and City Beautification works in Bundi under the chairmanship of District Collector, Bundi. DPR consultants, RUDSICO-EAP officials, PHED officials, Municipal Corporation, Bundi -North and South officials, Bundi Nagar Parishad officials, Water Resource Department, PWD and other invitee members. Proposed scope of works and technology of proposed Water supply & Sewerage, Drainage, Road and City Beautification works in Bundi was discussed in the meeting and approval was given for proposed works by Committee in this meeting. The project was agreed by the committee for further course of action by RUDSICO-EAP. Details of CLC meeting, minutes of meeting are given below-

Municipal Council, Bundi

No. ई.ई.6/21/1309 Date: 20.10.2021

Minutes of City Level Committee Meeting

A City Level Committee meeting held on 20.10.2021 under chairmanship of District Collector, Bundi for finalization of Drainage & other development works in Bundi city under RUIDP Phase-IV

List of Officials, public representative & stack holders, who attended the meeting, is enclosed at **Annexure 'A'.**

It was initially briefed out that RUIDP will take up Drainage and other development works in Bundi city. It was apprised that the DPRs of proposed works is being prepared by the Consultant M/s Cadcon Consultants, Jaipur engaged by the Municipal Council, Bundi. It will be considered for Phase-IV project. RUIDP has scrutinized the Draft DPRs and suggestions have already been conveyed to consultants for modifications & revision & the estimates are as per RUIDP SOR-2017.

Provisions under the DPR and basic scope of work were briefed to the committee. The tentative cost of DPR is of Rs. 135crs for works proposed underDrainage & other development works. The brief scope of works are as follows:-

1. **Augmentation of Bundi RUIDP water supply scheme for demand load of 26 MLD to 34 MLD**

Particulars	Proposed works Detail
Upgradation of Intake Well	8.0 MLD
Water Treatment Plant	8.0 MLD
Transmission Main – DI K-9 Pipe Dia ranging from 100mm to 400mm	1.194 Km
Clear Water Reservoir	1 Nos.
OHSR	1 Nos.
Distribution Mains	
HDPE PE -100, PN6, Pipe Dia ranging from 110mm to 400 mm	30.2 Km
House Service Connection (2025)	5038 nos.

2. **Development of main roads and Beautification work of crossings in the city area**

(A) Works related to developoments of CC Roads

S.no.	Road Type	Length (in m)
1.	Category-I (9.0 to upto 15.0 mtr)	1200
2.	Category-II (5.0 to upto 9.0 mtr)	33545
3.	Category-III (3.0 to upto 5.0 mtr)	9110
	Total	**43855**

Minutes of CLC meeting with Outcomes

(B) Works related to Beautification, conservation and bodies

a. Nawalsagar heritage path from Jaipur road Entry Gate to petrol pump tirhaha
b. Development of Petrol Pump Tiraha
c. Development of Ahinsa Circle
d. Construction ENT Gate at Bundi (Jaipur Road)
e. Construction of ENT Gate of Kota Road
f. Conservation of Naru Ki Baori, naagarsagarkund
g. Conservation of City Gates 5 Nos., and provision of Chhatri on circles

3. **Remaining work of Sewerage (STP) of capacity 10.5 MLD based on SBR Technology including FSSM**
4. **Development of NawalSagar Talab and Heritage work.**
5. **Following drainage work are proposed in town:-**

S.no.	Name of Drain	Length(in m)
1	Jaipur Bypass to FCI godam along with Rani JhikiBawadi	2690.00
2	Khoja Gate Ganesh ji to Ice Factory	415.00
3	GurudwaraDevpura to Nanak PuriyaTiraha	2820.00
4	JaitSagarNallah	5800.00
5	Silor Road (Agarwal Dharamshala to highway nalah on Silor road)	610.00
	Total	**12335.00**

Committee decided to approve the detailed project Report the brief of which is mentioned as above.

Meeting ended with vote of thanks to the chair.

Commisioner
Municipal Council, Bundi

District Collector & Chairman CLC
Bundi
Date: 20-.10.2021

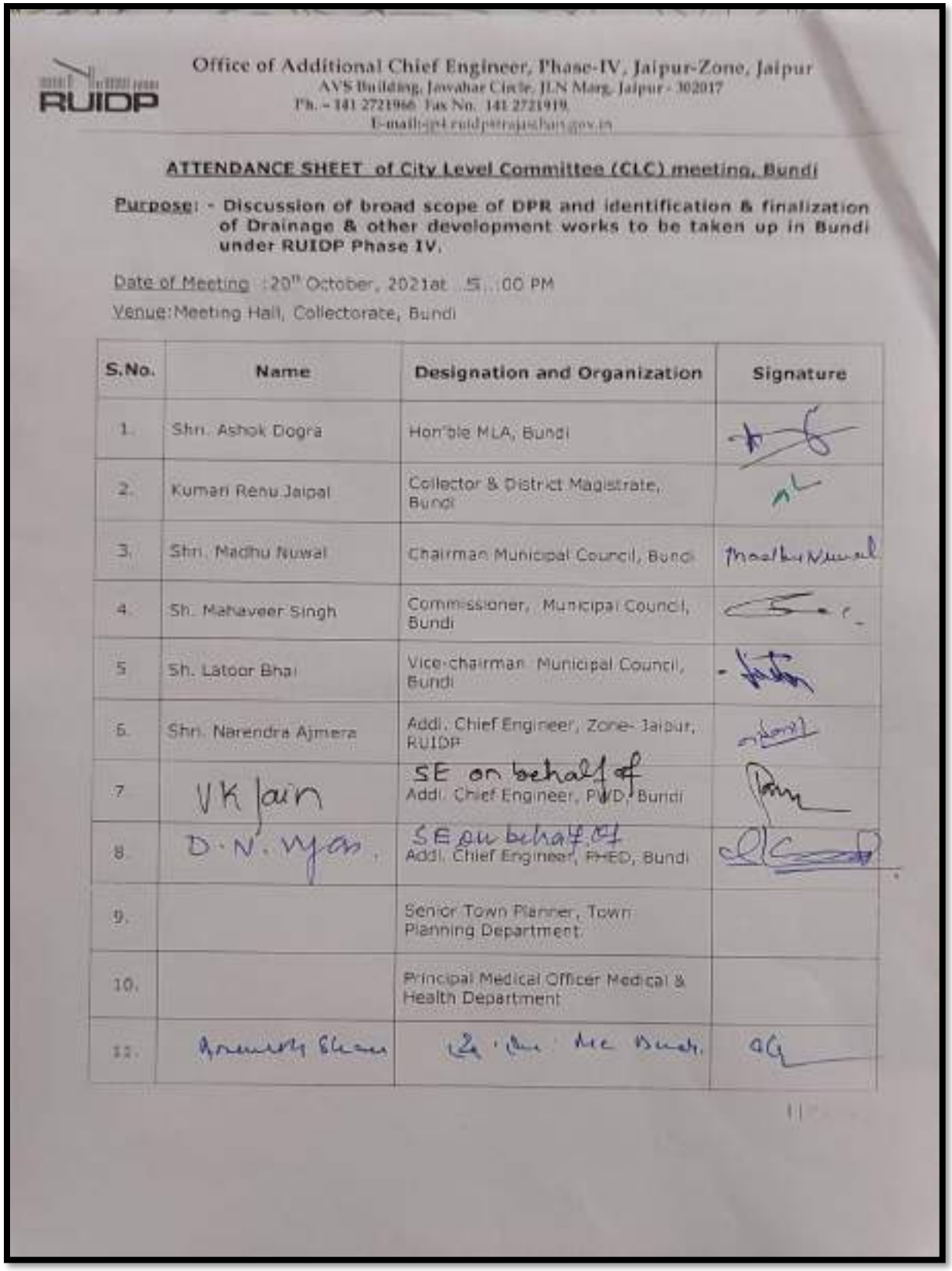
No. F(G)21/1310 to 1322

Copy to the following for information and necessary action:

1. PA to MLA, Bundi.
2. PA to District Collector & Chairman CLC, Bundi.
3. PA to Project Director, RUIDP, Jaipur.
4. Chairman, Municipal Council, Bundi.
5. Commisioner, Municipal Council, Bundi
6. Additional Project Director, RUIDP, Jaipur.
7. Addl. Chief Engineer, RUIDP, Jaipur.
8. Addl. Chief Engineer, RUIDP, Jaipur.
9. Addl. Chief Engineer, PWD/PHED, Bundi, Jaipur
10. Senior Town Planner, Town Planning Department, Bundi
11. Principal Medical Officer, Medical and Health Dept. Bundi
12. Superintending Engineer-1, RUIDP, Jaipur
13. Executive Engineer, Municipal Council, Bundi.

Commisioner
Municipal Council, Bundi

Attendance Sheet of CLC Meeting



RUIDP

Office of Additional Chief Engineer, Phase-IV, Jaipur-Zone, Jaipur
AVS Building, Jawahar Circle, JLN Marg, Jaipur - 302017
Ph. - 141 2721966 Fax No. 141 2721919
E-mail:-jpl.ruidp@rajasthan.gov.in

ATTENDANCE SHEET of City Level Committee (CLC) meeting, Bundi

Purpose: - Discussion of broad scope of DPR and identification & finalization of Drainage & other development works to be taken up in Bundi under RUIDP Phase IV.

Date of Meeting :20th October, 2021at 5:.00 PM

Venue:Meeting Hall, Collectorate, Bundi

S.No.	Name	Designation and Organization	Signature
1.	Shri. Ashok Dogra	Hon'ble MLA, Bundi	
2.	Kumari Renu Jaipal	Collector & District Magistrate, Bundi	
3.	Shri. Madhu Nuwal	Chairman Municipal Council, Bundi	Madhu Nuwal
4.	Sh. Mahaveer Singh	Commissioner, Municipal Council, Bundi	
5	Sh. Latoor Bhai	Vice-chairman Municipal Council, Bundi	
6.	Shri. Narendra Ajmera	Addl. Chief Engineer, Zone- Jaipur, RUIDP	
7	V K Jain	SE on behalf of Addl. Chief Engineer, PWD, Bundi	
8.	D. N. Vyas.	SE on behalf of Addl. Chief Engineer, PHED, Bundi	
9.		Senior Town Planner, Town Planning Department	
10.		Principal Medical Officer Medical & Health Department	
11.	Anuradha Sharma	Executive Engineer, Urban Improvement Trust, Bundi	

Appendix 5: Photographs of Proposed Component Locations

1. Silor Road (Agarwal Dharamshala to Highway Nallah, Silor Road)

Existing Length – 0.6 Km
Extension Proposed – 0.61 Km
Total Length – 1.210 Km

End point Medical Colony to Highway Nallah (300 m)

<table>
<tr>
<td> 

End point Medical Colony (Silor road) drain from Highway Nallah 300 mtr</td>
<td> 

End point Medical Colony (Silor road) drain towards Highway Nallah via- Agarwal Dharam Shala) 300 mtr</td>
</tr>
<tr>
<td> 

From Medical Colony (Silor road) drain towards Highway Nallah via Agarwal Dharam Shala) 200 mtr</td>
<td> 

From Medical Colony (Silor road) drain towards Highway Nallah via Agarwal Dharam Shala) 100 mtr</td>
</tr>
<tr>
<td> 

Public Consultation at Medical Colony (Silor road) drain towards Highway Nallah 200 mtr</td>
<td> 

Starting point from Highway Nallah to Medical Colony (Silor road) drain</td>
</tr>
</table>

Highway Nallah to Agarwal Dharam Shaala (600 m)	
 Proposed drain Starting point from Highway Nallah near Medical Colony (Silor road) towards Agarwal Dharam Shala) 000 mtr	 Proposed drain from Highway Nallah, Silor road to Agarwal Dharamshala 200 mtr
 Proposed drain from Highway Nallah, Silor road to Agarwal Dharamshala 200 mtr crossing road	 Public Consultation Proposed drain from Highway Nallah, Silor road to Agarwal Dharamshala 200 mtr
 Proposed drain from Highway Nallah, Silor road to Agarwal Dharamshala 300 mtr	 Proposed drain from Highway Nallah, Silor road to Agarwal Dharamshala 450 mtr

Proposed drain from Highway Nallah, Silor road to Agarwal Dharamshala 450 mtr-

Proposed drain from Highway Nallah, Silor road to Agarwal Dharamshala 500 mtr

Proposed drain from Highway Nallah, Silor road to Agersen Dharamshala 600 mtr at Agarwal Dharamshala

Proposed drain from Highway Nallah, Silor road to Agarwal Dharamshala 600 mtr @ Agarwal Dharamshala-

Agarwal Dharamshala to Ambedkar Circle (600 m) – Extension Proposed

Extended drain length from, Silor road, Agersen Dharamshala to Ambedkar Circle 100 m

Extended drain length from, Silor road, Agersen Dharamshala to Ambedkar Circle 200 m

Extended drain length from, Silor road, Agersen Dharamshala to Ambedkar Circle 400 m

Extended drain length from, Silor road, Agersen Dharamshala to Ambedkar Circle 500 m

Temple stair near Ambedkar Circle, Silor road from Agersen Dharamshala

Temple stair near Ambedkar Circle, Silor road from Agersen Dharamshala

Public Consultation _ Temple stair near Ambedkar Circle, Silor road from Agersen Dharamshala

Extended drain length from, Silor road, Agersen Dharamshala to Ambedkar Circle 500 m-

2. Gurudwara Devpura to Nanak Puliya Tiraha Drain

Existing Length – 2.0 Km
Extension Proposed – 2.08 Km
Total Length – 4.008 Km

Starting point from Circuit House to Gurudwara – 700 m

Starting point from Circuit House (V.K. Jain House) to Gurudwara 0.000 mtr out of 700 m.

Starting point from Circuit House to Gurudwara 100.000 mtr out of 700 m

Starting point from Circuit House to Gurudwara 300.000 mtr out of 700 m

Starting point from Circuit House to Gurudwara 400.000 mtr out of 700 m

Starting point from Circuit House to Gurudwara 600.000 mtr out of 700 m @ Government college

Starting point from Circuit House to Gurudwara 600.000 mtr out of 700 m @ Government college-

Starting point from Circuit House to Gurudwara 650.000 mtr out of 700 m existing brick drain started from here

End point from Circuit House to Gurudwara 700 mtr out of 700 m @ Gurudwara

Starting point from Gurudwara to Nanakpura Tiraha @ Gurudwara – 2 Km.

Starting point from Gurudwara to Nanakpura Tiraha 000 mtr @ Gurudwara

Starting from Gurudwara to Nanak Tiraha 100 m away

Starting from Gurudwara to Nanak Tiraha 200 m away

Starting from Gurudwara to Nanak Tiraha 250 m away

Starting from Gurudwara to Nanak Tiraha 300 m away

Starting from Gurudwara to Nanak Tiraha 500 m away

Starting from Gurudwara to Nanak Tiraha 600 m away

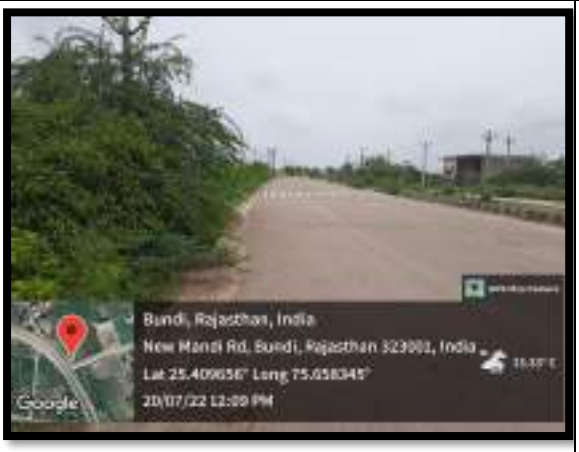
Starting from Gurudwara to Nanak Tiraha 800 m away

Starting from Gurudwara to Nanak Tiraha 900 m away

Starting from Gurudwara to Nanak Tiraha 1100 m away

		
Starting from Gurudwara to Nanak Tiraha 1300 m away		Starting from Gurudwara to Nanak Tiraha 1500 m away (Brick drain finished)
		
Starting from Gurudwara to Nanak Tiraha 1700 m away		Starting from Gurudwara to Nanak Tiraha 1800 m away
		
Starting from Gurudwara to Nanak Tiraha 1900 m away		End point from Gurudwara to Nanak Tiraha 2000 m away @ Nanak Tiraha

Starting from Nanak Tiraha to Nanakpura village - 1.5 Km. Extended

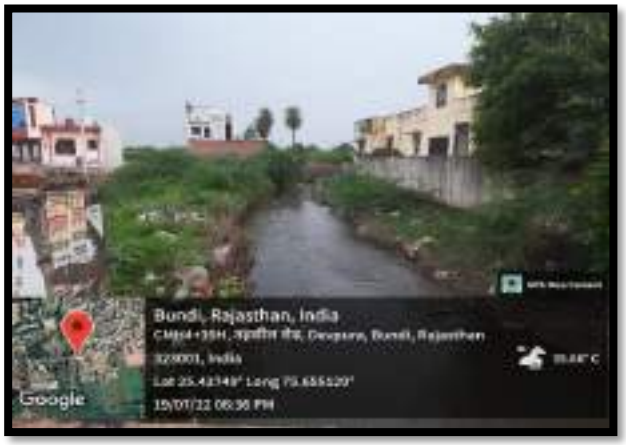
			
Starting from Nanak Tiraha 000 m out of 1.5 Km. Extended part ending at Nanakpura village			Starting from Nanak Tiraha 100 m away out of 1.5 Km. Extended part ending at Nanakpura village
			
Starting from Nanak Tiraha 300 m away out of 1.5 Km. Extended part ending at Nanakpura village-			Starting from Nanak Tiraha 300 m away out of 1.5 Km. Extended part ending at Nanakpura village
			
Starting from Nanak Tiraha 500 m away out of 1.5 Km. Extended part ending at Nanakpura village			Starting from Nanak Tiraha 700 m away out of 1.5 Km. Extended part ending at Nanakpura village

			
Starting from Nanak Tiraha 950 m away out of 1.5 Km. Extended part ending at Nanakpura village			Starting from Nanak Tiraha 1300 m away out of 1.5 Km. Extended part ending at Nanakpura village
			
End point @ Nanakpura village from Nanak Tiraha 1500 m out of 1.5 Km. Extended part ending at Nanakpura village			Public Consultation at Devpura for drains/ road.
			
Public Consultation at Devpura for drains/ road.			Public Consultation at Devpura for drains/ road.

			
Public Consultation at Devpura for drains/ road.			Public Consultation at Nanakpura for drains/ road.

3. Jait Sagar Nallah (Jait Sagar to Devpura Drain)

Existing Length - 3.5 Km.
Extension Proposed - 2.4 Km.
Total Length - 5.9 Km.

		
Jait Sagar to Devpura Drain Ending at Devpura		Extended drain from Devpura to Nanakpura village 2.5 Km

Extended drain from Devpura to Nankpura village about 2.5 km. Ending point at Nanakpura village

Jait Sagar Drain _ Coming from Jait Sagar Talab

Jait Sagar Drain _ going towards Devpura to Nanakpulia @ Mahaveer Colony

4. Bundi Bypass to FCI Godam along with Rani Ji Ki Bawadi (Total Length- 2.69 Km)

Ice Factory to Khoja Gate, Rani Ji Ki Bawdi, Bundi- Starting point

Ice Factory to Khoja Gate, Rani Ji Ki Bawdi, Bundi -@ 100 m

Ice Factory to Khoja Gate, Rani Ji Ki Bawdi, Bundi-@200m

Ice Factory to Khoja Gate, Rani Ji Ki Bawdi, Bundi-@300m

Ice Factory to Khoja Gate, Rani Ji Ki Bawdi, Bundi- @ UIDSMT End Point

5. Khoja Gate Ganesh Ji to Ice Factory (Total Length- 0.40 Km)

Ice Factory to Khoja Gate, Rani Ji Ki Bawdi, Bundi- Starting Point

Ice Factory to Khoja Gate, Rani Ji Ki Bawdi, Bundi- @ 100 m

 Ice Factory to Khoja Gate, Rani Ji Ki Bawdi, Bundi- @ 200 m	 Ice Factory to Khoja Gate, Rani Ji Ki Bawdi, Bundi- @ UIDSMT End Point

Appendix 6: Environmental Monitoring Plan - Ambient Air, Noise, Water and Soil

1. Under RSTDSP works Environmental Monitoring will done for ambient air, noise, and Ground water quality with following parameters-

A. **Ambient Air Quality-** Particulate Matters PM_{10}, Particulate Matter $PM_{2.5}$, SO_x, NO_x, Carbon Monoxide (CO) as per methods and norms approved by CPCB
B. **Ambient Noise Quality-** L_{day} and L_{night} (in Leq dBA) 24 hrs basis as per methods and norms approved by CPCB

2. During pre-construction stage monitoring is required to establish baseline at following sites-

Environmental Monitoring Locations and required samples

S.N.	Type of monitoring	Location of monitoring and no. of samples	Total No. of samples
1	Ambient Air Monitoring	Bundi Bypass Nala, Jait Sagar nala	20
2.	Ambient Noise monitoring	Bundi Bypass, Jait Sagar nala	20
3	Ground Water Monitoring	Bundi Bypass, Jait Sagar nala	20

Note -

i. All the tests should be done by labs approved by CPCB and/or RSPCB and should be accredited by NABL
ii. All the tests should be done as per the norms and methods approved by CPCB/RSPCB
iii. All the meteorological data like weather, wind, location, nearby features etc. should be recorded during sampling and indicated in the report for ambient air quality
iv. For air quality monitoring, if any two sites are within the distance of 2 km from each other, only one sampling can be done at any site

* Sensitive receptors are hospitals, schools, any major religious place etc

Appendix 7: Integrated Biodiversity Assessment Report (IBAT analysis) for Bundi

IBAT

Integrated Biodiversity Assessment Tool

PROXIMITY REPORT
CWR (1200 KL) AT NAINWA ROAD

Country: India

Location: [25.4, 75.7]

Date of analysis: 04 May 2022 (GMT)

Buffers applied: 1 km | 10 km | 50 km

IUCN Red List Biomes: Freshwater, Terrestrial

Generated by: Noëme Walican

Organisation: ADB

Overlaps with:

Protected Areas	0
Key Biodiversity Areas	3
IUCN Red List	37

Displaying project location and buffers: 1 km, 10 km, 50 km

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About this report

This report presents the results of [6274-30211] proximity analysis to identify the biodiversity features and species which are located within the following buffers: 1 km, 10 km, 50 km.

This report is one part of a package generated by IBAT on 04 May 2022 (GMT) that includes full list of all species, protected areas, Key Biodiversity Areas in CSV format, maps showing the area of interest in relation to these features, and a 'How to read IBAT reports' document.

WARNING: IBAT aims to provide the most up-to-date and accurate information available at the time of analysis. There is however a possibility of incomplete, incorrect or out-of-date information. All findings in this report must be supported by further desktop review, consultation with experts and/or on-the-ground field assessment. Please consult IBAT for any additional disclaimers or recommendations applicable to the information used to generate this report.

Please note, sensitive species data are currently not included in IBAT reports in line with the Sensitive Data Access Restrictions Policy for the IUCN Red List. This relates to sensitive Threatened species and KBAs triggered by sensitive species.

Data used to generate this report

- UNEP-WCMC and IUCN, 2022. Protected Planet: The World Database on Protected Areas (WDPA)[On-line]. Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net - May 2022.
- BirdLife International (on behalf of the KBA Partnership), 2022. Key Biodiversity Areas - April 2022.
- IUCN, 2021. IUCN Red List of Threatened Species - December 2021.
- IUCN. The IUCN Red List of Threatened Species. Version 2019-3. (2019). https://www.iucnredlist.org
- IUCN. Threats Classification Scheme (Version 3.2). (2019)
- Strassburg, B.B.N., Iribarrem, A., Beyer, H.L. et al. Global priority areas for ecosystem restoration. Nature 586, 724–729 (2020). https://doi.org/10.1038/s41586-020-2784-9

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Protected Areas

The following protected areas are found within 1 km, 10 km, 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

No protected areas within buffer distance

Key Biodiversity Areas

The following key biodiversity areas are found within 1 km, 10 km, 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Distance
Bardha Dam	50 km
Jawahar Sagar Sanctuary	50 km
Ramsagar Lake	50 km

IUCN Red List of Threatened Species

The following threatened species are potentially found within 50km of the area of interest.

For the full IUCN Red List please refer to the associated csv in the report folder.

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Ardeotis nigriceps	Great Indian Bustard	AVES	CR	Decreasing	Terrestrial
Sypheotides indicus	Lesser Florican	AVES	CR	Decreasing	Terrestrial
Vanellus gregarius	Sociable Lapwing	AVES	CR	Decreasing	Terrestrial
Gyps bengalensis	White-rumped Vulture	AVES	CR	Decreasing	Terrestrial

IBAT

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Sarcogyps calvus	Red-headed Vulture	AVES	CR	Decreasing	Terrestrial
Gyps indicus	Indian Vulture	AVES	CR	Decreasing	Terrestrial
Nilssonia gangetica	Indian Softshell Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Platanista gangetica	South Asian River Dolphin	MAMMALIA	EN	Unknown	Freshwater
Rynchops albicollis	Indian Skimmer	AVES	EN	Decreasing	Terrestrial, Freshwater
Sterna acuticauda	Black-bellied Tern	AVES	EN	Decreasing	Terrestrial, Freshwater
Haliaeetus leucoryphus	Pallas's Fish-eagle	AVES	EN	Decreasing	Terrestrial, Freshwater
Neophron percnopterus	Egyptian Vulture	AVES	EN	Decreasing	Terrestrial, Freshwater
Falco cherrug	Saker Falcon	AVES	EN	Decreasing	Terrestrial, Marine, Freshwater
Leptoptilos dubius	Greater Adjutant	AVES	EN	Decreasing	Terrestrial, Freshwater
Manis crassicaudata	Indian Pangolin	MAMMALIA	EN	Decreasing	Terrestrial
Varanus flavescens	Yellow Monitor	REPTILIA	EN	Decreasing	Terrestrial
Aquila nipalensis	Steppe Eagle	AVES	EN	Decreasing	Terrestrial

IBAT

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Crocodylus palustris	Mugger	REPTILIA	VU	Stable	Terrestrial, Freshwater
Lutrogale perspicillata	Smooth-coated Otter	MAMMALIA	VU	Decreasing	Terrestrial, Marine, Freshwater
Wallago attu		ACTINOPTERYGII	VU	Decreasing	Freshwater
Bagarius yarrelli		ACTINOPTERYGII	VU	Decreasing	Freshwater
Aythya ferina	Common Pochard	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater
Columba eversmanni	Yellow-eyed Pigeon	AVES	VU	Decreasing	Terrestrial, Freshwater
Grus antigone	Sarus Crane	AVES	VU	Decreasing	Terrestrial, Freshwater
Sterna aurantia	River Tern	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater
Clanga clanga	Greater Spotted Eagle	AVES	VU	Decreasing	Terrestrial, Freshwater
Aquila rapax	Tawny Eagle	AVES	VU	Decreasing	Terrestrial, Freshwater
Lissemys punctata	Indian Flapshell Turtle	REPTILIA	VU	Decreasing	Terrestrial, Freshwater
Xenochrophis cerasogaster	Painted Keelback	REPTILIA	VU	Decreasing	Freshwater
Melursus ursinus	Sloth Bear	MAMMALIA	VU	Decreasing	Terrestrial

IBAT

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Panthera pardus	Leopard	MAMMALIA	VU	Decreasing	Terrestrial
Tetracerus quadricornis	Four-horned Antelope	MAMMALIA	VU	Decreasing	Terrestrial
Geochelone elegans	Indian Star Tortoise	REPTILIA	VU	Decreasing	Terrestrial
Rusa unicolor	Sambar	MAMMALIA	VU	Decreasing	Terrestrial
Saara hardwickii	Indian Spiny-tailed Lizard	REPTILIA	VU	Decreasing	Terrestrial
Saxicola macrorhynchus	White-browed Bushchat	AVES	VU	Decreasing	Terrestrial
Oryza malampuzhaensis		LILIOPSIDA	VU	Decreasing	Terrestrial

IBAT

Recommended citation

IBAT Proximity Report. Generated under licence 6274-30211 from the Integrated Biodiversity Assessment Tool on 04 May 2022 (GMT). www.ibat-alliance.org

How to use this report

This report provides an indication of the potential biodiversity-related features - protected areas, key biodiversity areas and species - close to the specified location. It provides an early indication of potential biodiversity concerns, and can provide valuable guidance in making decisions. For example, this information can be helpful when assessing the potential environmental risk and impact of a site, categorising investments/projects, preparing the terms of reference for an impact assessment, focusing attention on key species of conservation concern and sites of known conservation value, and reviewing the results of an impact assessment.

The report does not provide details of potential indirect, downstream or cumulative impacts. Furthermore, the report should be regarded as a "first-step", providing a set of conservation values sourced from global data sets, and is not a substitute for further investigation and due diligence, especially concerning national and/or local conservation priorities.

IBAT

Integrated Biodiversity Assessment Tool

World Bank Group Biodiversity Risk Screen

CWR (1200 KL) AT NAINWA ROAD

- **Country:** India
- **Location:** [25.4, 75.7]
- **IUCN Red List Biomes:** Freshwater, Terrestrial
- **Created by:** Noime Walican

Overlaps with:

Protected Areas	1 km: 0	10 km: 0	50 km: 0	0
World Heritage (WH)	1 km: 0	10 km: 0	50 km: 0	0
Key Biodiversity Areas	1 km: 0	10 km: 0	50 km: 3	3
Alliance for Zero Extinction (AZE)	1 km: 0	10 km: 0	50 km: 0	0
IUCN Red List				17
Critical Habitat				Likely

Displaying project location and buffers: 1 km, 10 km, 50 km

WORLD BANK GROUP

This report is based on IFC Performance Standard 6 (PS6) but applies to World Bank Environmental and Social Standard 6 (ESS6)

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About this report

The recommendations stated alongside any Protected Areas and Key Biodiversity Areas identified in this report are determined by the following:

Protected Areas:

- 'Highest risk. Seek expert help' is stated if the report identifies a designation that includes either 'natural' or 'mixed world heritage site'.
- 'Assess for Critical Habitat' is stated if the report identifies a Strict Nature Reserve, Wilderness Area or National Park as coded by IUCN protected area categories Ia, Ib and II.
- 'Assess for biodiversity risk' is stated if the report identifies any other type of protected area.

Key Biodiversity Areas:

- 'Highest risk. Seek expert help' is stated if the report identifies an Alliance for Zero Extinction site.
- 'Assess for Critical Habitat' is stated if the report identifies Critically Endangered or Endangered species OR species with restricted ranges OR congregatory species as coded in the IUCN Red List of Threatened Species.
- 'Assess for biodiversity risk' is stated if the report identifies any other type of Key Biodiversity Area.

IBAT provides initial screening for Critical Habitat values. Performance Standard 6 (PS6) defines these values for Critical Habitat (PS6: para. 16) and legally protected and internationally recognized areas (PS6: para. 20). PS6 will be triggered when IFC client activities are located in modified habitats containing 'significant biodiversity value," natural habitats, Critical Habitats, legally protected areas, or areas that are internationally recognized for biodiversity. References to PS6 and Guidance Note 6 (GN6) are provided to guide further assessment and detailed definitions where necessary. Please see https://www.ifc.org/ps6 for full details on PS6 and GN6.

The report screens for known risks within a standard 50km buffer of the coordinates used for analysis. This buffer is not intended to indicate the area of impact. The report can be used to:

- Scope risks to include within an assessment of risks and impacts
- Identify gaps within an existing assessment of risks and impacts
- Prioritize between sites in a portfolio for further assessment of risks and impacts
- Inform a preliminary determination of Critical Habitat
- Assess the need for engaging a biodiversity specialist
- Identify additional conservation experts or organizations to inform further assessment or planning

WARNING: IBAT aims to provide the most up-to-date and accurate information available at the time of analysis. There is however a possibility of incomplete, incorrect or out-of-date information. All findings in this report must be supported by further desktop review, consultation with experts and/or on-the-ground field assessment as described in PS6 and GN6. Please consult IBAT for any additional disclaimers or recommendations applicable to the information used to generate this report.

Please note, sensitive species data are currently not included in IBAT reports in line with the Sensitive Data Access Restrictions Policy for the IUCN Red List. This relates to sensitive Threatened species and KBAs triggered by sensitive species.

IBAT

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Priority Species

Habitat of significant importance to priority species will trigger Critical Habitat status (See PS6: para 16). IBAT provides a preliminary list of priority species that could occur within the 50km buffer. This list is drawn from the IUCN Red List of Threatened Species (IUCN RL). This list should be used to guide any further assessment, with the aim of confirming knownor likely occurrence of these species within the project area. It is also possible that further assessment may confirm occurrence of additional priority species not listed here. It is strongly encouraged that any new species information collected by the project be shared with species experts and/or IUCN wherever possible in order to improve IUCN datasets.

IUCN Red List of Threatened Species - CR & EN

The following species are potentially found within 50km of the area of interest.
For the full IUCN Red List please refer to the associated csv in the report folder

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Nilssonia gangetica	Indian Softshell Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Platanista gangetica	South Asian River Dolphin	MAMMALIA	EN	Unknown	Freshwater
Rynchops albicollis	Indian Skimmer	AVES	EN	Decreasing	Terrestrial, Freshwater
Sterna acuticauda	Black-bellied Tern	AVES	EN	Decreasing	Terrestrial, Freshwater
Haliaeetus leucoryphus	Pallas's Fish-eagle	AVES	EN	Decreasing	Terrestrial, Freshwater
Neophron percnopterus	Egyptian Vulture	AVES	EN	Decreasing	Terrestrial, Freshwater
Falco cherrug	Saker Falcon	AVES	EN	Decreasing	Terrestrial, Marine, Freshwater
Leptoptilos dubius	Greater Adjutant	AVES	EN	Decreasing	Terrestrial, Freshwater

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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Ardeotis nigriceps	Great Indian Bustard	AVES	CR	Decreasing	Terrestrial
Sypheotides indicus	Lesser Florican	AVES	CR	Decreasing	Terrestrial
Vanellus gregarius	Sociable Lapwing	AVES	CR	Decreasing	Terrestrial
Gyps bengalensis	White-rumped Vulture	AVES	CR	Decreasing	Terrestrial
Sarcogyps calvus	Red-headed Vulture	AVES	CR	Decreasing	Terrestrial
Gyps indicus	Indian Vulture	AVES	CR	Decreasing	Terrestrial
Manis crassicaudata	Indian Pangolin	MAMMALIA	EN	Decreasing	Terrestrial
Varanus flavescens	Yellow Monitor	REPTILIA	EN	Decreasing	Terrestrial
Aquila nipalensis	Steppe Eagle	AVES	EN	Decreasing	Terrestrial

Restricted Range Species

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Macrobrachium rosenbergii	Giant River Prawn	MALACOSTRACA	LC DR LR/LC	Unknown	Freshwater

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Biodiversity features which are likely to trigger Critical Habitat

Protected Areas

There are no protected areas to show for this report.

Key Biodiversity Areas

The following key biodiversity areas are found within 1 km and 10 km and 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Distance	IBA	AZE	Recommendation
Bardha Dam	50 km	Yes	No	Assess for critical habitat
Jawahar Sagar Sanctuary	50 km	Yes	No	Assess for critical habitat
Ramsagar Lake	50 km	Yes	No	Assess for critical habitat

Species with potential to occur

Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	CR	EN	VU	NT	LC	DD
REPTILIA	52	7	0	2	5	3	41	1
MAMMALIA	62	7	0	2	5	4	51	0
AVES	308	20	6	7	7	14	274	0
ACTINOPTERYGII	34	2	0	0	2	2	29	1
AMPHIBIA	9	0	0	0	0	0	9	0
INSECTA	50	0	0	0	0	0	48	2

Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	CR	EN	VU	NT	LC	DD
GASTROPODA	23	0	0	0	0	0	22	1
POLYPODIOPSIDA	2	0	0	0	0	0	2	0
MAGNOLIOPSIDA	38	0	0	0	0	0	37	1
LILIOPSIDA	48	1	0	0	1	0	45	2
BIVALVIA	10	0	0	0	0	0	10	0
MALACOSTRACA	5	0	0	0	0	0	5	0
ARACHNIDA	1	0	0	0	0	0	1	0

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Recommended citation

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Recommended Experts and Organizations

For projects located in Critical Habitat, clients must ensure that external experts with regional expertise are involved in further assessment (GN6: GN22). Clients are encouraged to develop partnerships with recognized and credible conservation organizations and/or academic institutes, especially with respect to potential developments in natural or Critical Habitat (GN6: GN23). Where Critical Habitats are triggered by priority species, species specialists must be involved. IBAT provides data originally collected by a large network of national partners, while species information is sourced via the IUCN Red List and affiliated Species Specialist Groups. These experts and organizations are listed below. **Please note that this is not intended as a comprehensive list of organizations and experts. These organizations and experts are under no obligation to support any further assessment and do so entirely at their discretion and under their terms. Any views expressed or recommendations made by these stakeholders should not be attributed to the IFC or IBAT for IFC partners.**

Birdlife Partners

URL: https://www.birdlife.org/worldwide/partnership/birdlife-partners

Directory for Species Survival Commission (SSC) Specialist Groups and Red List Authorities

URL: https://www.iucn.org/commissions/ssc-groups