

# Initial Environmental Examination

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**Project Number: 40031**  
**November 2010**

## India: Rajasthan Urban Sector Development Investment Program—Karauli Heritage Site

Prepared by Local Self Government Department

For the Government of Rajasthan  
Rajasthan Urban Infrastructure Development Project

The initial environmental examination is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

## ABBREVIATIONS

ADB	— Asian Development Bank
BOQ	— bill of quantity
CBO	— community-based organization
CGWB	— Central Ground Water Board
CLC	— City Level Committees
CLIP	— City Level Investment Plan
DSC	— Design and Supervision Consultants
EAC	— Expert Appraisal Committee
EARF	— Environmental Assessment Resettlement Framework
EIA	— Environmental Impact Assessment
EMP	— Environmental Management Plan
EMS	— Environmental Monitoring Specialist
EPA	— Environmental Protection Agency
GRC	— Grievance Redress Committee
H and S	— health and safety
IEE	— Initial Environmental Examination
IPIU	— Investment Program Implementation Unit
IPMC	— Investment Program Management Consultants
IPMU	— Investment Program Project Management Unit
JNNURM	— Jawaharlal Nehru National Urban Renewal Mission
LSGD	— Local Self Government Department
MFF	— multitranche financing facility
MLD	— million liters per day
MOEF	— National Ministry of Environment and Forests
NAAQS	— National Ambient Air Quality Standards
NGO	— nongovernmental organization
NRRP	— National Resettlement and Rehabilitation Policy
O and M	— operation and maintenance
OHSA	— Occupational Health and Safety Administration
OHSR	— overhead storage reservoirs
OMC	— Operations and Maintenance Contractors
PHED	— Public Health Engineering Department
PIU	— Project Implementation Unit
PMU	— Project Management Unit
ROW	— right of way
RPCB	— Rajasthan State Pollution Control Board
RUIDP	— Rajasthan Urban Infrastructure Development Project
RUSDIP	— Rajasthan Urban Sector Development Investment Programme
SEIAA	— State Environment Impact Assessment Authority
SPS	— Safeguard Policy Statement
STP	— sewage treatment plant
TDS	— total dissolved solids
TOR	— terms of reference
UIDSSMT	— Urban Infrastructure Development Scheme for Small and Medium Towns
ULB	— urban local body
USEPA	— United States Environmental Protection Agency
WTP	— water treatment plant

## WEIGHTS AND MEASURES

lakh	–	100 thousand = 100,000
crore	–	100 lakhs = 10,000,000
$\mu\text{g}/\text{m}^3$	–	micrograms per cubic meter
km	–	kilometer
lpd	–	liters per day
m	–	meter
mg/l	–	milligrams per liter
mm	–	millimeter
ppm	–	parts per million

### NOTE{S}

- (i) In this report, "\$" refers to US dollars.
- (ii) "INR" and "Rs" refer to Indian rupees

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## EXECUTIVE SUMMARY

1. Rajasthan Urban Sector Development Investment Program (RUSDIP) is intended to optimize social and economic development in 15 selected towns in the State, particularly district headquarters and towns with significant tourism potential. RUSDIP Phase II is being implemented over a seven year period beginning in 2008, and being funded by a Multitranche Financing Facility (MFF) loan from the Asian Development Bank (ADB). The Executing Agency is the Local Self-Government Department (LSGD) of the Government of Rajasthan; and the Implementing Agency is the Investment Program Management Unit (IPMU) of the Rajasthan Urban Infrastructure Development Project (RUIDP). ADB requires the consideration of environmental issues in all aspects of the Bank's operations, and the requirements for Environmental Assessment are described in ADB's SPS. This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, loans involving financial intermediaries, and private sector loans.

2. This Initial Environmental Examination (IEE) has been prepared for the Karauli Heritage Sites-Wall Gates Subproject as part of RUSDIP Phase II – Tranche 3. The main aspect for the scope of work at this site is area development and restoration of the heritage/historic Gates, which are not under Department of Archaeology & Museums or Archeological Survey of India (ASI).

3. The sub-project is in line with the Support Infrastructure Development Project<sup>1</sup> involving restoration of historic site in Karauli. The subproject sites are located at different locations inside the built-up portion of the town, namely (i) Nadi gate, (ii) Mela gate, (iii) Ganesh gate, (iv) Wazipur gate, (v) Hindon gate, (vi) Masalpur gate; and (vii) city walls. The subproject covers (i) dismantling of existing dilapidated structures (wall and gates); (ii) chemical (lime and *surkhi*) work; (iii) rubble masonry work; (iv) removal of the trees with its roots and applying and plinth-pouring; (v) lime plaster work (finishing coats); and (vi) shifting of utility cables.

4. The subproject is needed to (i) support infrastructure development to enhance the Historic/Heritage Wall Gates; (ii) provide modern facilities for increasing number of tourists visiting the Karauli; and (iii) preserve and maintain orderliness and cleanliness in the immediate vicinities of important structures in and around the site.

5. Detailed design began in the year 2010 and completed middle of 2010. Construction of all elements will begin in the end of year 2011, and work will be completed by 2012. LSGD, as part of the City Level Committee, has been actively participating in the design process. Final design will be approved by the local government prior to commencement of any physical work.

6. The subproject site is not located in areas prone to water-logging, salinisation, and flash flood. There are no protected areas, wetlands, mangroves, or estuarines in and around the structures. Trees, vegetation (mostly shrubs and grasses), and animals are those commonly found in urban areas.

7. Potential negative impacts were identified in relation to construction and operation of the improved infrastructure. No impacts were identified as being due to the subproject design or location. An Environmental Management Plan (EMP) is proposed as part of this IEE which includes (i) mitigation measures for significant environmental impacts during implementation, (ii) environmental monitoring program, and the responsible entities for mitigation, monitoring, and reporting; (iii) public consultation and information disclosure; and

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<sup>1</sup> Project supported by govt. of India for improvement of heritage site

grievance redress mechanism. Mitigation measures have been developed to reduce all negative impacts to acceptable levels. A number of impacts and their significance have already been reduced by amending the designs.

8. During the construction phase, impacts mainly arise from the need to excavate small areas which can result to disturbance to tourists, residents, businesses, traffic, and important buildings. These are common impacts of construction in built-up areas, and there are well developed methods for their mitigation.

9. One field in which impacts are much of interest in the subproject is archaeology, and series of specific measures have been developed to avoid damaging important remains during construction.

10. There were limited opportunities to provide environmental enhancements, but certain measures were included. For example it is proposed that the project will employ in the workforce people who live in the vicinity of construction sites to provide them with a short-term economic gain; and ensure that people employed in the longer term to maintain and operate the new facilities are residents of nearby communities.

11. Once the repair and restoration works are done, most facilities will operate with routine maintenance, which should not affect the environment. It will also be conducted in areas that have already been excavated, so there will be not much need to protect archaeological materials.

12. Mitigation will be assured by a program of environmental monitoring to be conducted during construction and operation stages. The environmental monitoring program will ensure that all measures are implemented, and will determine whether the environment is protected as intended. It will include observations on- and off-site, document checks, and interviews with workers and beneficiaries. The Investment Program Implementation Unit (IPIU) and Design and Supervision Consultants (DSC) will work closely in implementing the program. Any requirements for remedial action will be reported to the Investment Program Management Unit (IPMU).

13. The main impacts of the operating improved heritage sites facilities will be beneficial as visitors of Karauli will be provided with a glimpse of history, which will lead to economic gains to Karauli.

14. The stakeholders were involved in developing the IEE through face-to-face discussions on site and a large public meeting held in the town, after which views expressed were incorporated into the IEE and the planning and development of the project. The IEE will be made available at public locations in the town and will be disclosed to a wider audience via the ADB website. The consultation process will be continued and expanded during project implementation, when a nationally-recognized NGO will be appointed to handle this key element to ensure that stakeholders are fully engaged in the project and have the opportunity to participate in its development and implementation.

15. The subproject is unlikely to cause significant adverse impacts. The potential adverse impacts that are associated with design, construction, and operation can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures. Based on the findings of the IEE, the classification of the Project as Category "B" is confirmed, and no further special study or detailed EIA needs to be undertaken to comply with ADB SPS (2009) or GoI EIA Notification (2006).

## I. INTRODUCTION

### A. Purpose of the Report

1. Rajasthan Urban Sector Development Investment Program (RUSDIP) is intended to optimize social and economic development in fifteen selected towns in the State, particularly district headquarters and towns with significant tourism potential. This will be achieved through investments in urban infrastructure (water supply; sewerage and sanitation; solid waste management; urban drainage; urban transport and roads), urban community upgrading (community infrastructure; livelihood promotion) and civic infrastructure (art, culture, heritage and tourism; medical services and health; fire services; and other services). RUSDIP will also provide policy reforms to strengthen urban governance, management, and support for urban infrastructure and services. The assistance will be based on the State-level framework for urban reforms, and institutional and governance reforms recommended by the Government of India through the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) and Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT).

2. RUSDIP Phase II is being implemented over a seven year period beginning in 2008, and being funded by a loan via the Multitranche Financing Facility (MFF) of Asian Development Bank (ADB). The Executing Agency is the Local Self-Government Department (LSGD) of the Government of Rajasthan; and the Implementing Agency is the Project Management Unit (PMU) of the Rajasthan Urban Infrastructure Development Project (RUIDP).

3. This Initial Environmental Examination (IEE) has been prepared for the Karauli Heritage Wall Gates Site Subproject as part of RUSDIP Phase II Tranche 3. The subproject covers (i) dismantling of existing dilapidated structures (wall and gates); (ii) chemical (Llime and surkhi) work; (iii) rubble masonry work; (iv) removal of the trees with its roots and applying and plinth-pouring; (v) lime plaster work (finishing coats); and (vi) shifting of utility cables.

4. This IEE report covers the general environmental profile of Karauli and includes an overview of the potential environmental impacts and their magnitude on physical, ecological, economic, and social and cultural resources within the subproject's influence area during design, construction, and operation stages. An Environmental Management Plan (EMP) is also proposed as part of this report which includes mitigation measures for significant environmental impacts during implementation of the Project, environmental monitoring program, and the responsible entities for mitigation and monitoring.

### B. Extent of the IEE Study

5. This IEE report was prepared on the basis of detailed screening and analysis of all environmental parameters, field investigations and stakeholder consultations to meet the requirements for environmental assessment process and documentation as per ADB's Safeguard Policy Statement (SPS, 2009) and Government of India Environmental Impact Assessment (EIA) Notification of 2006.

#### 1. ADB Policy

6. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for Environmental Assessment are described in ADB SPS 2009. This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, loans involving financial intermediaries, and private sector loans.

7. **Screening and Categorization.** The nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impact are assigned to one of the following four categories:

- (i) **Category A.** Projects could have significant adverse environmental impacts. An EIA is required to address significant impacts.
- (ii) **Category B.** Projects could have some adverse environmental impacts, but of lesser degree or significance than those in category A. An IEE is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.
- (iii) **Category C.** Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.
- (iv) **Category FI.** Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all Projects will result in insignificant impacts.

8. **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.

9. **Public Disclosure.** ADB will post the following safeguard documents on its website so affected people, other stakeholders, and the general public can provide meaningful inputs into the project design and implementation:

- (i) For environmental category A projects, 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 Investment Program Implementation Unit (IPIU) during project implementation upon receipt.

## 2. National Law

10. 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 categorised as A or B depending on the scale of the project and the nature of its impacts.

11. Categories A projects require Environmental Clearance from the National Ministry of Environment and Forests (MOEF). The proponent is required to provide preliminary details of the project in the form of a Notification, after which an Expert Appraisal Committee (EAC) of the MOEF prepares comprehensive Terms of Reference (TOR) for the EIA study, which are finalized within 60 days. On completion of the study and review of the report by the EAC, MOEF considers the recommendation of the EAC and provides the Environmental Clearance if appropriate.

12. Category B projects require environmental clearance from the State Environment Impact Assessment Authority (SEIAA). The State level EAC categorises 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.

13. The only type of infrastructure provided by the RUSDIP that is specified in the EIA Notification is solid waste management thus EC is not required for this subproject.

### **3. Others**

14. The subproject sites are not included in the list of protected monuments/areas of the Archaeological Survey of India and Rajasthan Department of Archaeology and Museums. Hence "No Objection Certification" from the local government is required.

## **II. DESCRIPTION OF THE PROJECT**

### **A. Type, Category and Need**

15. **Type.** This is a simple repair and restoration works intended to improve the current situation of heritage gates and walls in Karauli. This is one of a series of subprojects designed by the RUSDIP that are intended to raise the standards of the municipal infrastructure and services of Karauli town and the other urban centres to those expected of modern Asian towns.

16. **Category.** Environmental examination indicates the proposed subproject falls within ADB's environmental Category B projects. The Project components will only have small-scale, localized impacts on the environment, and can be mitigated. Under ADB procedures such projects require an IEE to identify and mitigate the impacts, and to determine whether further study or a more detailed EIA may be required.

17. **Need.** The subproject is needed to (i) support infrastructure development to enhance the Historic/Heritage Wall Gates; (ii) provide modern facilities for increasing number of tourists visiting the Karauli; and (iii) preserve and maintain orderliness and cleanliness in the immediate vicinities of important structures in and around the site.

### **B. Location and Implementation Schedule**

18. The subproject sites, Wall Gates Nadi gate, Mela gate, Ganesh gate, Wazipur gate, Hindon gate, Masalpur gate are the historical gateways located in old Karauli city. Works under this subproject will (i) be limited on vacant lots and spaces allocated for general public; (ii) not directly on nor encroach any of the monuments/ structures in and around Historic site; and (iii) be closely supervised and monitored by LSGD.

19. Detailed design began in the year 2010 and completed in middle of 2010. Construction of all elements will begin in end of 2011, and work will be completed in 2012.

### **C. Description of the Subproject**

#### **1. Existing Condition**

20. Urban Local bodies have kept the wall gates in a presentable condition. The existing city wall has been in dilapidated state, the utility pipes and cables have deteriorated the beauty of the architectural heritage, Combination of red stone cladding and stone work has

been used for the whole city wall. The Ganesh Gate has been previously restored by Local Authority using ISMB and the wall using cement mortar which does not match the existing structure. Increase in number of domestic as well as foreign visitors are expected in the coming years to visit Karauli town. The current challenges are: (i) The City wall and Gates being of architectural heritage importance needs adequate safety & special care for protection from any kind of damages during restoration and development activity.(ii)Certain areas of city wall are difficult to approach for the reconstruction and restoration activity.(iii) The wooden door is in dilapidated condition, restoration will be tried with ivory inlay work by cleaning the art work with the help of suitable chemicals and filling the gaps and cracks in the wood and providing a preservative coating.(iv) Heavy traffic passing through the gate & posing risk for the gate structure also, alternative routing for heavy traffic does not seem to be feasible. (v) Due to the existence of the wall gates, the possibility of widening the road is almost nil. (vi) The gates being heritage structure need adequate safety & special protection from any kind of damage, some suitable arrangement is required.

## 2. Subproject Components

21. The subproject will involve restoration of the town's gates and walls:

- (iv) Removal of existing damaged plaster
- (v) Replastering with Lime Surkhi Plaster
- (vi) Reconstruction and restoration of existing city wall which is in dilapidated state.
- (vii) Wall filling with cement mortar and the cladding with matching red sand stone locally available easily or bricks as required in lime mortar.
- (viii) Restoration of Ganesh Gate by cleaning ISMB, treated with anti-corrosive chemical and concealed with Karauli stone slabs.
- (ix) Removal and reshifting of utility pipes and cables as they have deteriorated the beauty of the architectural heritage.
- (x) Restoration of the wooden work of the weathered Gates.
- (xi) Restoration of the timber with ivory inlay work by cleaning the art work with the help of suitable chemicals and filling the gaps and cracks in the wood and providing a preservative coating.
- (xii) The wall surface needs to be cleaned of algae and small plantations removed manually.
- (xiii) Consolidation & strengthening of the masonry wall
- (xiv) Repair of the Rubble Masonary.
- (xv) Repair of the damaged sections of the wall with masonry following the traditional material and technique.
- (xvi) Replastering Gates wall with traditional material & technique

22. **Table 1** summarizes the subproject components for each location covered by the subproject. The descriptions shown in the table are based on the present proposals, which are expected to be substantially correct, although certain details may change as development of the subproject progresses.

**Table 1: Present Condition of the Subproject and Proposed Components**

	Location	Description	Existing Condition	Proposed Improvement
1	City wall/Peripheral walls	- Situated at the entrance of the Karauli Fort Complex; and - Popular with tourists for its breathtaking view of Karauli town.	- maintained by ULB - open space near View Point being used as parking space - lacks good street furniture	(i) repairing of walls (ii) landscaping (iv) storm water disposal (v) strengthening of masonry wall (vi) Cleaning of
2	Wall gates	-The gates are called the	- Maintained by ULB	(i) Repairing of damaged

	Location	Description	Existing Condition	Proposed Improvement
		gateway of Karauli. - linking point between the old city and outskirts of Karauli. - Constructed around 15 <sup>th</sup> century. - Possess historical and archaeological value.	- damaged wall section - damaged kangaroo masonry - some shops are present near the entrance of the wall gate - the existing utility pipes and cables have deteriorated the wall gates.	wall (ii) Repair of damaged kangaroos and gates (iii) re-plastering (iv) shifting of utility cable and pipes.

### III. DESCRIPTION OF THE ENVIRONMENT

#### A. Physical Resources

##### 1. Administrative Boundaries

23. Karauli district is located in the southeast region of Rajasthan and lies at a distance of 182 kilometer (km) from Jaipur. Karauli town is surrounded by River in three sides. In the north-east side River Bhadrabati and In South-west side River Barkhera surrounded the town. The administrative headquarters is Karauli town.

##### 2. Topography, Drainage, and Natural Hazards

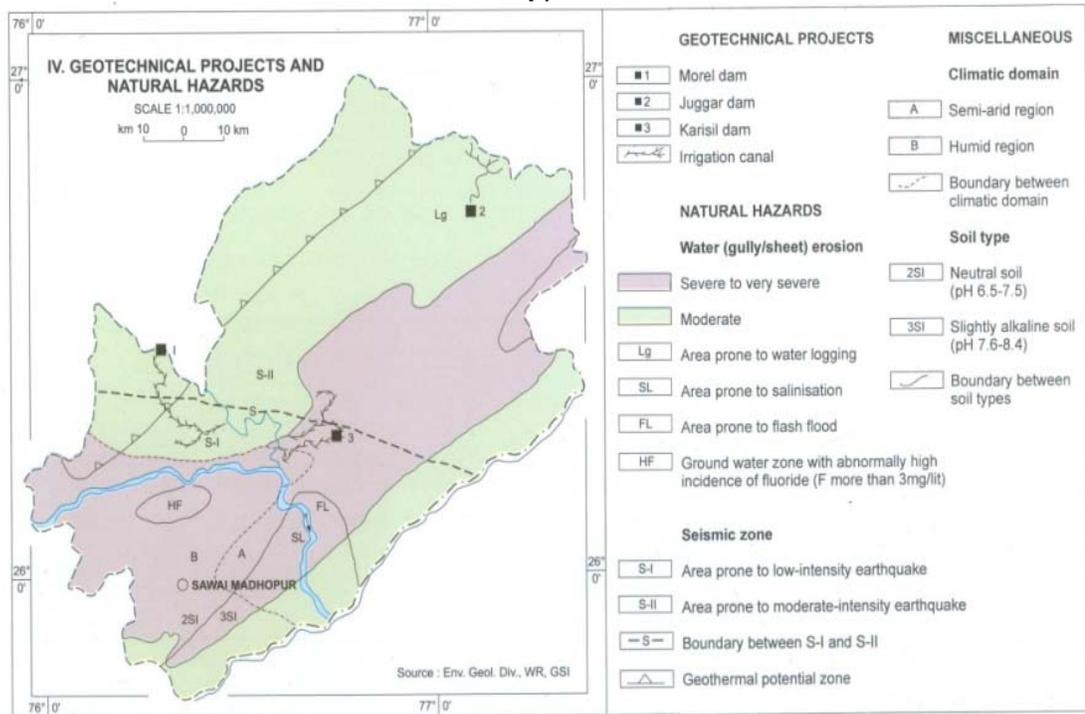
24. **Topography.** Karauli stands in the foothills of the Aravalli mountains therefore its topography ranges from flat to rugged terrains. The average elevation of the town is approximately of 275 m above the mean sea level. The 4.62-ha landfill site is a ravine area with natural depressions into it.

25. **Drainage.** Presently the roads in Karauli city are equipped with kachha open drains, but most of the drains are silted resulting in overflow and resulting flooding in monsoon. As reported by KMB, the total length of drains is approximately 150 Km. Out of which 125 km is kachha and 25 km of Pucca but open. An efficient network of storm water drains and outfall system is required to drain out storm water runoff.

26. Karauli town is surrounded by River in three sides. In the north-east side River Bhadrabati and In South-west side River Barkhera surrounded the town

27. **Natural Hazards.** Based on the evaluation of the Earthquake Zones of Rajasthan, Karauli lies in a low damage risk zone II and is less prone to earthquakes because it is located on relatively stable geological plains. The Natural Hazard Zone Map of Karauli district is shown in **Figure 1**. Evaluation of the map shows water (gully/sheet) erosion in the district ranges from low to very severe. Majority of the area is not prone flash-flood. The landfill site is located in an area with low damage risk zone, water (gully/sheet) erosion and not prone to flash floods.

**Figure 1: Natural Hazard Map of Karauli and Sawai Madhopur District (GSI Resource map)**



### 3. Geology, Geomorphology, and Soils

28. **Geology.** The various rocks type exposed in the area belong to Bhilwara and Deccan Traps Supergroups. Lead, copper and iron ore are the major minerals available there. Besides, the region also has ample reserves of spotted red sand stone and pink stone of Bhandar series.

29. **Geomorphology.** Karauli is essentially a hilly area surrounded on three sides on plans and one side by the Chambal River. The Mountain Aravali's eastern series consists of quartz, Mica, gneiss and Migmatites etc., whereas, the rock of Great Vindhyan series, mainly in Kaimul, Riwa and Bhandar, consists largely of sand stone, lime stone and slate

30. **Mineral Resources.** The district is well endowed with both metallic and non-metallic minerals. Lead, copper and iron ore are the major minerals available there. Besides, the region also has ample reserves of spotted red sand stone and pink stone of Bhandar series. The subproject site do not have mineral resources.

31. **Soils.** The nature of the soil is generally alluvial in nature which prone to water logging. Karauli soil is classified as saline and sodic. The nutrient status of the Karauli soil is graded as medium nitrogen, medium phosphorus, and high potassium levels.

32. **Climate.** The region has generally arid climate. Maximum temperature is 49 degrees Celsius. Minimum temperature is 2 degrees celsius. Normal annual rainfall in the district is 68.92 cm. The rainfall over Karauli is scanty and is concentrated over four month i.e. from June to September.

### 5. Air Quality

33. There are no data on ambient air quality of Karauli town, which is not subject to monitoring by the Rajasthan Pollution Control Board (RPCB) as there are no major industries. The nearest station is located at Alwar (154 km from Karauli). Traffic is the only significant pollutant in Karauli, so levels of oxides of sulphur and nitrogen are likely to be well within the National Ambient Air Quality Standards (NAAQS).

## 6. Surface Water

34. There is no secondary data of river water quality available. But it is expected that water quality is only deteriorate during monsoon due to TSS load. Due to high temperature at summer most of the surface water source becomes dried.

## 7. Groundwater

35. The Central Ground Water Board monitors several national hydrographic monitoring stations in and around Karauli. In most of the cases ground water table ranged between 10-20 meters below ground level

36. Records of groundwater quality monitoring from Public Health Engineering Department (PHED) show groundwater quality in Karauli town does not conform with the set norms of Government of Rajasthan. It has been noted that groundwater contains high level of total dissolved solids.

## B. Ecological Resources

37. Karauli town has been converted for agricultural use and there are no remaining natural habitats in the area. There are no protected areas nearby the subproject site.

38. **Flora.** Flora is limited to planted trees and shrubs like Dhok (*Anogeis pendula*) etc, and the fauna comprises domesticated animals (cows, goats, pigs and chickens), plus other species able to live close to man (urban birds, rodents and some insects). Vegetation in the landfill site is sparse.

39. **Fauna.** No classified, endangered or extinct species is found in Karauli town. However, Cheetal, chinkara etc are found in this area. Animals were not noted in the landfill site.

40. There is no forest area nearby the sub-project site. No endangered flora and fauna is reported from the site.

## C Economic Development

41. The participation ratio of workers is 23.38 % (2001 data). The most important sector of employment in Karauli is agriculture & other allied works and trade business and industry. Majority of the population is engaged in agriculture, industries and trading employing about 66.5 % of total workers.

### 1. Land use

42. Karauli town encompasses 58,808 acres in which only one third is urbanized and the rest consists of hills, water bodies and agricultural land. Even within the contiguous urbanized area, only 60% is developed, recreation land is 21.8 percent and the remaining comprises of water bodies agricultural lands, and pockets of vacant lands. The landfill site is classified "vacant land".

## 2. Commerce, Industry and Agriculture

43. **Commerce.** Art works occupies an important place in the city economy and basically the craft includes stone carving. The trade and commerce activities can be broadly classified into two categories namely the organized and unorganized markets. Other than the organized sector, there are a number of unorganized markets in the town. There has been a rapid growth in the commercial sector during the recent past. Hotel and transportation based units have shown appreciable growth. In addition, food & grocery items and clothes are the other organized commercial sectors showing an increase.

44. **Industries.** Industrial development in this particular area is not high. Only 2.25% of the total urban area is under industrial usage. Most of the area is still cultivated.

45. **Agriculture.** About 80% of lands used for agricultural purpose. Major crops include cereals, pulses, oilseeds, food grains and others.

## 3. Infrastructure

46. Water supply: Water supply to Karauli is from only groundwater sources<sup>2</sup> comprising 32 nos. of tube well. Groundwater is tapped through the tube wells. From tube well 5.2 MLD water is abstracted and supplied to the town. The present supply and distribution network comprising of transmission main of 9.4 km., trunk main of 4.7 km., feeder main of 11.80 km. and distribution mains of 19.0 km. including lateral with the diameter of pipelines ranging from 50 to 300 mm. There are 4 nos. of elevated reservoir of total capacity of 2.30 ML.

47. Sewerage System: There is no underground sewage system in Karauli town at present. Only few households are covered with individual septic tank. The disposal of waste and effluent of septic tank is through the open drains. Presently the open drains, which have been constructed by Municipal Board, convey the sewage which is leading to unhygienic and unsanitary conditions. As reported by the Karauli MB, there is 5,250 nos. individual Disposal system with septic tank covering 33015 population & 1,325 nos. of low cost sanitation covering 8,000 population. Besides individual disposal system, 25,200 populations directly dispose the sewage to the open drains.

48. Sanitation: Only 50% of the households reportedly have septic tanks and soak pits as the system of sewerage disposal. The remaining accounted for cases of open defecation which is an unacceptable and unhygienic practice. The raw settled sewage from septic tank is periodically flushed out by sanitary workers of the Municipal Board and discharge to open spaces, agricultural lands in an indiscriminate manner. Slum areas were also not equipped with requisite sanitation (LCS etc.) resulting in open defecation.

49. Drainage: Presently the roads in Karauli city are equipped with kachha open drains, but most of the drains are silted resulting in overflow and resulting flooding in monsoon. An efficient network of storm water drains and outfall system is required to drain out storm water runoff.

50. Industrial Effluents. Small cottage industries do exist within the town and small amount of effluent disposed is scattered in local *nallahs*.

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<sup>2</sup> Groundwater is tapped for both drinking water supply and irrigation purposes by means of dug wells, tube-wells and dug-cum-bore (DCB) wells. As extraction of groundwater is still unregulated in the State, there is no record of groundwater distribution for private drinking water supply and irrigation. The Central Ground Water Board (CGWB), Western Region, indicates that agricultural water use of ground water accounts for more than 80 percent of the total water use in Karauli.

51. Transportation. Karauli is well connected to all cities of Rajasthan.

#### **D. Social and Cultural Resources**

52. **Demography.** The town has a population of 66,239 (2001 census) with an annual growth rate of 3.51% and population density of 2007 persons per km<sup>2</sup>

53. **Health and educational facilities** Initially Karauli district was within the Sawai Madhopur district, but later on, Karauli was separated as a distinct district. Being a district headquarters, it is expected that the requisite number of educational and health facilities are available within the city area for the population as per norms.

54. There is one general hospital (200 beds capacity), one primary health centre and three private hospitals.

55. **History, culture and tourism.** Karuli, or Kerowlee, a native state of Rajputana agency, was founded in 1348. Almost the entire territory is composed of hills and broken ground, but there are no lofty peaks, the highest having an elevation of less than 1400 ft. above sea-level. The Chambal river flows along the south-east boundary of the state. Iron ore and building stone comprise the mineral resources.

56. Karauli is a small town, situated at a distance of 182 km from Jaipur. Karauli is well-known for its Madan Mohanji Temple. The temple is dedicated to Lord Krishna. Initially, the town was known as Kalyanpuri, which was named after the local deity Kalyanji. The fortified city of Karauli is surrounded by Red sandstone walls with bastions for security. In the present day, these fortifications are in wrecks, yet it boasts of the six gates and eleven posterns. The place is also famous for Kaila Devi temple which is visited by thousands of tourists every year.

57. Karauli also possesses a 600 years old Fort. This Fort makes the highlight of Karauli. Until 1950, this Fort was used as a residence by the Royal family. The Fort has been deserted by them since that time. The town also possess

58. Karauli is a popular destination for domestic as well as foreign tourist. Some famous temple like Madan Mahan Temple, Ma Sahib Temple, Sri Kaila Devi Temple, Kaila Devi Sanctuary and Sri Karanpur Mata Temple. Timagarh fort, Mandaroyal fort, Sahi Kund, Raj Palace, Sukh Vilas and Rangawa Talav are other points of attraction for tourist inflow. The nos. of tourist inflow increase geometrically during festival like Amawasya, Janmastmi, Holi and Diwali. However numbers of tourist inflow is still to be counted.

#### **IV. ANTICIPATED IMPACTS AND MITIGATION MEASURES**

59. This section of the IEE reviews possible subproject-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 subproject's area of influence. As defined previously, the primary impact areas are (i) the construction sites; (ii) adjacent monuments, temples, and buildings; (iii) main routes/intersections which will be traversed by construction vehicles; and (iv) quarries and borrow pits as sources of construction materials. The secondary impact areas are: (i) entire Karauli area outside of the delineated primary impact area; and (ii) entire Karauli district in terms of over-all environmental and socio-economic improvement.

60. The ADB Rapid Environmental Assessment Checklist for Urban Development in [http://www.adb.org/documents/guidelines/environmental\\_assessment/eaguidelines002.asp](http://www.adb.org/documents/guidelines/environmental_assessment/eaguidelines002.asp)

was used to screen the subproject for environmental impacts and to determine the scope of the IEE investigation. The completed Checklist is found in **Appendix 1**. All the proposed subproject components will interact physically with the environment.

61. In the case of this subproject (i) most of the individual elements are relatively small and involve straightforward 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 the part of old Karauli, will not cause direct impact on biodiversity values. The subproject will be in properties held by the local government and access to the subproject area is thru public rights-of-way and existing roads hence, land acquisition and encroachment on private property will not occur.

#### **A. Pre-construction – Location and Design**

62. **Design of the proposed components.** The design of the subproject components will be presented to LSGD for review and approval as both the structures and their premises do not come under ASI or Department of Archaeology & Museums.

63. **Environmentally-sensitive Areas.** Location impacts are not significant as there are no environmentally sensitive areas within the subproject area. No cutting of trees will be there due to the nature of the project.

64. **Utilities.** Telephone lines, electric poles and wires near the gates will be shifted. To mitigate the adverse impacts due to relocation of the utilities, DSC will (i) identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction phase; and (ii) require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.

65. **Asbestos Cement (AC) Pipes.** An additional, particularly acute health risk presented by this subproject derives from the fact that, the existing water supply system comprises mainly AC pipes, so there is a risk of contact with carcinogenic material if these pipes are uncovered in the course of the work. However unlikely, the design consultant will develop a protocol to be applied in any instance that AC pipes are found, to ensure that appropriate action is taken. This will be based on the approach recommended by the United States Environmental Protection Agency (USEPA),<sup>3</sup> and amongst other things, will involve:

- (i) Develop reporting procedures to inform management immediately if AC pipes are encountered; and
- (ii) Require construction consultants to develop and apply an AC Management Plan, as part of the over-all health and safety (H and S) plan, to protect both workers and citizens in case accidental uncovering of AC pipes. This AC Management Plan should also contain national and international standards for safe removal and long-term disposal of all asbestos-containing material encountered.

66. **Social and Cultural Resources.** Rajasthan is an area of rich and varied cultural heritage which includes many forts and palaces from the Rajput and Mughal periods, and large numbers of temples and other religious sites, so there is a risk that any work involving ground disturbance can uncover and damage archaeological and historical remains. For this

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<sup>3</sup> In the USA, standards and approaches for handling asbestos are prescribed by the Occupational Health and Safety Administration (OHSA) and the Environmental Protection Agency (EPA) and can be found at <http://www.osha.gov/SLTC/asbestos>

subproject, excavation will occur near archaeological monuments, so it could be that there is a very risk of such impacts. IPIU/DSC will:

- (i) Consult ASI to obtain an expert assessment of the archaeological potential of the site;
- (ii) Consider alternatives if the site is found to be of medium or high risk;
- (iii) Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available; and
- (iv) Develop a protocol for use by the construction contractors in conducting any excavation work, to ensure that any chance finds are recognised and measures are taken to ensure they are protected and conserved.

67. **Site selection of construction work camps, stockpile areas, storage areas, and disposal areas.** Priority is to locate these in the existing dumpsite area. However, if it is deemed necessary to locate elsewhere, sites to be considered will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems. Residential areas will not be considered 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 the monuments, buildings, or in areas which will inconvenience the community and visitors. All locations would be included in the design specifications and on plan drawings.

68. **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 included in the design specifications and on plan drawings. Priority would be sites already permitted by Mining Department. If other sites are necessary, these would to be located away from population centres, drinking water intakes and streams, cultivable lands, and natural drainage systems; and in structurally stable areas even if some distance from construction activities. It will be the construction contractor's responsibility to verify the suitability of all material sources and to obtain the approval of Karauli Municipal Council (KMC). 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 KMC.

## **B. Construction**

### **1. Screening of No Significant Impacts**

69. The construction work is expected not to cause major negative impacts, mainly because:

- (i) Most of the activities will be on the built-up areas of the Heritage/Historic Site of Karauli thus could be constructed without causing impacts to biodiversity;
- (ii) The site is located on an government-owned land which is not occupied or used for any other purpose;
- (iii) Overall construction program will be relatively short and is expected to be completed in 12 months with activities to conducted by small teams working on short lengths at a time so most impacts will be localized and short in duration; and
- (iv) Most of the predicted impacts associated with the construction process are produced because the process is invasive. However the routine nature of the

impacts means that most can be easily mitigated and the impacts are clearly a result of the construction process rather than the design or location, as impacts will not occur if excavation or other ground disturbance is not involved.

70. As a result, there are several aspects of the environment which are not expected to be affected by the construction process and these can be screened out of the assessment at this stage as required by ADB procedure. These are shown in **Table 2**. These environmental factors are screened out presently but will be assessed again before starting of the construction activities.

**Table 2: Fields in which construction is not expected to have significant impacts**

<b>Field</b>	<b>Rationale</b>
Topography, Drainage, and Natural Hazards	Activities are not large enough to affect these features.
Geology, Geomorphology, Mineral Resources, and Soils	Activities are not large enough to affect these features. No mineral resources in the subproject sites.
Climate	Activities are not large enough to affect this feature.
Air Quality	Short-term production of dust is the only effect on atmosphere
Geohydrology and Groundwater	Activities will not be large enough to affect these features
Protected Areas	No protected area is there in the near vicinity of the proposed sites.
Flora and Fauna	No rare or endangered species.
Land Use	No change in land use.
Socio-economic	Subproject site is located entirely on government-owned land so there is no need to acquire land from private owners.
Commerce, Industry, and Agriculture	Activities are not large enough to affect these features
Population	Activities are not large enough to affect this feature.

## **2. Construction method**

71. Works will involve (i) common civil works like restoration and construction of Gates(Nadi gate, Mela gate, Ganesh gate, Wazipur gate, Hindon gate, Masalpur gate), and utility shifting (cables shifting)

## **3. Anticipated Impacts and Mitigation Measures**

72. Although construction of the subproject components involves quite simple techniques, the invasive nature of excavation, and in this case the relatively proximity to historically- and archaeologically-sensitive areas means that there will be quite a lot of disturbance where there are a variety of human activities.

73. Physical impacts will be reduced by the method of working, whereby the works will be (i) conducted by small teams working at specified location.

74. **Sources of Materials.** Approximately 90 m<sup>3</sup> of materials (sand, soil, and gravel) is required for this subproject. The construction contractor will be required to:

- (i) Use quarry sites and sources permitted by government;
- (ii) Verify suitability of all material sources and obtain approval of IPIU;
- (iii) If additional quarries will be required after construction has started, obtain written approval from IPMU; and
- (iv) Submit to DSC on a monthly basis documentation of sources of materials.

75. **Air Quality.** Emissions from construction vehicles, equipment, and machinery used for 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, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons) but temporary and during construction activities only. To mitigate the impacts, construction contractors will be required to:

- (i) Consult with IPIU/DSC on the designated areas for stockpiling of clay, soils, gravel, and other construction materials;
- (ii) Damp down exposed soil and any stockpiled on site by spraying with water when necessary during dry weather;  
Use tarpaulins to cover sand and other loose material when transported by trucks; and
- (iii) Fit all heavy equipment and machinery with air pollution control devices which are operating correctly.

76. **Surface Water Quality.** Construction activities will be conducted on flat areas flowing to water channel which are dry during the summer period. Run-off from stockpiled materials and chemical contamination from fuels and lubricants, chemicals used for washing during construction works can contaminate downstream surface water quality. These potential impacts are temporary and short-term duration only and to ensure these are mitigated, construction contractor will be required to:

- (i) Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;
- (ii) Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with IPIU/DSC on designated disposal areas;
- (iii) Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies;
- (iv) Place storage areas for fuels and lubricants away from any drainage leading to water bodies;
- (v) Dispose any wastes generated by construction activities in designated sites;
- (vi) Do not dispose spent or left chemical after chemical washing in any water body or drain, dispose according to Material Safety Data Sheet (MSDS) of the chemical and
- (vii) Conduct surface water quality inspection according to the Environmental Management Plan (EMP).

77. **Noise Levels.** Construction works will be on busy areas in the Karauli Town. The sensitive receptors are the general population and visitors in these areas. Increase in noise level may be caused by earth-moving and equipment, and the transportation of equipment, materials, and people. Impact is negative, short-term, and reversible by mitigation measures. The construction contractor will be required to:

- (i) Plan activities in consultation with IPIU/DSC so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance;
- (ii) Require horns not be used unless it is necessary to warn other road users or animals of the vehicle's approach;
- (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.

78. **Existing Infrastructure and Facilities.** Any excavation works can damage existing infrastructure located near project location. It is therefore important that construction contractors will be required to:

- (i) Obtain from IPIU and/or DSC the list of affected utilities and operators;
- (ii) Prepare a contingency plan to include actions to be done in case of unintentional interruption of services. and
- (iii) Develop and implement an AC Pipes Management Plan

79. **Landscape and Aesthetics.** The construction works will produce about 20 m<sup>3</sup> of excess excavated soils, excess construction materials, and solid waste such as removed concrete, wood, trees and plants, packaging materials, empty containers, spoils, oils, lubricants, and other similar items. These impacts are negative but short-term and reversible by mitigation measures. The construction contractor will be required to:

- (i) Prepare and implement Waste Management Plan;
- (ii) Avoid stockpiling of wastes;
- (iii) Coordinate with KMC for beneficial uses of excess excavated soils/waste 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 (such as buildings, shelters, and latrines) which are no longer required; and
- (vii) Request IPIU/DSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.

80. **Accessibility.** Hauling of construction materials and operation of equipment on-site can cause traffic problems and conflicts in ROW. Potential impact is negative but short term and reversible by mitigation measures. The construction contractor will be required to:

- (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;
- (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 Karauli Municipal Traffic Office for temporary road diversions and with for provision of traffic aids if transportation activities cannot be avoided during peak hours; and
- (vii) Notify affected sensitive receptors by providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.

81. **Socio-Economic – Income.** The subproject components will be located on government lands, so there will be no need to acquire land, and thus there will be no impacts on the asset or landowners or tenants. However construction works will impede the access of tourists to the heritage gates and nearby shops. The potential impacts are negative and moderate but short-term and temporary. The construction contractor will be required to:

- (i) Leave spaces for access between mounds of soil/ construction materials;
- (ii) Provide walkways and metal sheets where required to maintain access across working location for people and vehicles;

- (iii) Increase workforce in front of critical areas such as institutions, 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.

82. **Socio-Economic – Employment.** Manpower will be required during the 12-month construction stage. This can result to generation of contractual employment and increase in local revenue. Thus potential impact is positive and long-term. The construction contractor will be required to:

- (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; and
- (ii) Secure construction materials from local market.

83. **Occupational Health and Safety.** Workers need to be mindful of the occupational hazards which can arise from working in construction. Potential impacts are negative and long-term but reversible by mitigation measures. The construction contractor will be required to:

- (i) Develop and implement site-specific Health and Safety (H and 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) H and S Training<sup>4</sup> 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) Provide supplies of potable drinking water;
- (vi) Provide clean eating areas where workers are not exposed to hazardous or noxious substances;
- (vii) Provide H and S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, use personal protective equipments, 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;
- (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

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<sup>4</sup> 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.

international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate;

- (xii) Use chemical during chemical wash as directed by the manufacturer in Material Safety Data Sheet (MSDS), use appropriate personal protective equipments such as suitable hand gloves, safety goggles, apron etc,
- (xiii) Only trained and experienced worker should be deployed for chemical washing
- (xiv) Use proper stairs, staging, platforms, barricades and Personal Protective Equipments (PPEs) such as safety belt, while working at height more that 1.5 meters.
- (xv) 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.

84. **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:

- (i) Plan routes to avoid times of peak-pedestrian activities.
- (ii) Liaise with IPIU/DSC in identifying high-risk areas on route cards/maps.
- (iii) Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure.
- (iv) Provide road signs and flag persons to warn of dangerous conditions.

85. **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:

- (i) Consult with IPIU/DSC before locating project offices, sheds, and construction plants;
- (ii) Minimize removal of vegetation and disallow cutting of trees;
- (iii) Provide water and sanitation facilities for employees;
- (iv) Prohibit employees from poaching wildlife and cutting of trees for firewood;
- (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 following preference hierarchy: reuse, recycling and disposal to designated areas;
- (viii) Remove all wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and
- (ix) Request IPIU/DSC to report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.

86. **Social and Cultural Resources.** For this subproject, any excavation will occur near important historical and archaeological sites so that there is a risk of chance finds during excavation work. The construction contractor will be required to:

- (i) Strictly follow the protocol for chance finds in any excavation work;
- (ii) Request IPIU/DSC or any authorized person with archaeological field training to observe excavation;
- (iii) Stop work immediately to allow further investigation if any finds are suspected; and

- (iv) Inform IPIU/DSC if a find is suspected, and take any action they require ensuring its removal or protection in situ.

### C. Operation and Maintenance

#### 1. Screening out areas of no significant impact

87. Infrastructure will be used with minor repair and routine maintenance; there are several environmental sectors which should be unaffected once the new system becomes operational. These are identified in **Table 3** below, with an explanation of the reasoning in each case. These factors are thus screened out of the impact assessment and will not be mentioned further.

**Table 3: Fields in which Operation and Maintenance of the Completed Infrastructures are expected Not to have Significant Impacts**

Field	Rationale
Atmosphere	Activities are not large enough to affect these features.
Wildlife, forests, rare species, protected areas	There is no wildlife or rare or endangered species nearby the subproject components.
Coastal resources	Karauli is not located in a coastal area

#### 2. Operation and Maintenance of the historic site

88. O and M of the infrastructures will be the responsibility of O and M contractor for 3 yrs and later by LSGD.

89. The infrastructures are designed such that they shall not require major repairs or refurbishments and should operate with little maintenance beyond routine actions required to keep the toilets, water stations, lampposts, and other minor components in working order. These 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 servicing.

#### 3. Anticipated Environmental Impacts and Mitigation Measures

90. **Physical Resources.** Physical impacts will be negligible and rather positive. Repair works will not be conducted during monsoon period so there will be no effect on drainage or other surface water body. Generated dust will be suppressed by water sprinkling.

91. **Ecological Resources.** There are no significant ecological resources in or around the town, so any repairs or maintenance work can be conducted without ecological impacts.

92. **Economic Development.** The provision of improved infrastructure in the Fort will definitely encourage tourism which will result in overall improved economic condition of the Karauli town.

93. **Social and Cultural Resources.** There is a low risk of chance finds during O and M since all work will be conducted in areas that have already been disturbed when the infrastructure was installed. However, repair works could cause some temporary disruption of activities so the same precautions as employed during the construction period should be adopted. O and M contractor will need to:

- (i) Complete work in these areas quickly;

- (ii) Provide access for pedestrians and metal sheets for vehicles where required; and; and
- (iii) Consult municipal authorities, 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.

## **V. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE**

### **A. Project Stakeholders**

94. The primary stakeholders are:

- (i) Residents, shopkeepers and businesspeople who live and work alongside the project sites in which improvements will be provided and near sites where facilities will be built;
- (ii) Custodians and users of socially and culturally important buildings in affected areas;
- (iii) State and local authorities responsible for the protection and conservation of archaeological relics, historical sites and artefacts; and
- (iv) State and local tourism authorities.

95. The secondary stakeholders are:

- (i) LSGD as the Executing Agency;
- (ii) Other government institutions whose remit includes areas or issues affected by the subproject (state and local planning authorities such as Public Health Engineering Department, Local Government Department, Ministry of Environment and Forests, Roads and Highways Division);
- (iii) Non-government organizations (NGOs) and community-based organizations (CBOs) working in the affected communities;
- (iv) Other community representatives (prominent citizens, religious leaders, elders, women's groups);
- (v) The beneficiary community in general; and
- (vi) ADB, Gol, and Ministry of Finance.

### **B. Consultations and Disclosures Conducted**

96. Some informal discussion was held with the local people during site visit. Issues discussed are:

- (i) Awareness and extent of the project and development components;
- (ii) Benefits of Project for the economic and social upliftment of community;
- (iii) Labour availability in the Project area or requirement of outside labour involvement;
- (iv) Local disturbances due to Project Construction Work;
- (v) Necessity of tree felling etc. at project sites;
- (vi) Water logging and drainage problem if any;
- (vii) Drinking water problem;
- (viii) Forest and sensitive area nearby the project site; and
- (ix) Movement of wild animals nearby the project site.

97. Public consultations and group discussion meetings were conducted by CAPP/DSC and IPIU. The objectives were to appraise the stakeholders about the program's environmental and social impacts and present safeguards to mitigate any potential

significant impacts. Records of public consultations are attached as **Appendix 2**. The major issues raised are related to traffic interferences and possible dust and noise problems during construction phase. Other comments include construction vehicles creating some disturbances to the local people daily activities, necessity of proper safety arrangements. The issues and comments have been considered and incorporated in the design of the subproject and mitigation measures for the potential environmental impacts raised during the public consultations.

98. Informal discussions were held with the local people during site visits for the preparation of this IEE. Issues discussed were:

- (i) The people were in favour of restoration of historical monuments especially the wall gates.
- (ii) They raised the issues of solid waste dumps near the wall gates that produce odour and are a source of diseases as well.
- (iii) The local people also complained about the water supply related problems they are facing.
- (iv) Local people should be employed by the contractor during construction work;
- (v) Adequate safety measures should be taken during construction work;
- (vi) Mobile kiosks/vendors/hawkers have shown willingness to shift in nearby places without taking any compensation and assistance from the Executing Agency; and

99. Hindi versions of the Environmental Framework were provided during workshops to ensure stakeholders understood the objectives, policy, principles, and procedures. Likewise, English and Hindi versions of the Environmental Framework have been placed in Urban Local Body (ULB) offices, Investment Program Project Management Unit (IPMU) and IPIU offices, and the town library.

### **C. Future Consultation and Disclosure**

100. LSGD extended and expanded the consultation and disclosure process significantly during implementation of RUSDIP. They have appointed an experienced NGO to handle this key aspect of the programme. The NGO (Community Awareness Participation Program, [CAPP]) continuously (i) conducts a wide range of activities in relation to all subprojects in each town; and (ii) ensures the needs and concerns of stakeholders are registered and are addressed in subproject design.

101. For this subproject, CAPP will develop, in close coordination with IPIU and DSC, a public consultation and disclosure program which is likely to include the following:

- (i) Consultation during detailed design:
  - (a) Focus-group discussions with affected persons and other stakeholders (including women's groups, NGOs and CBOs) to hear their views and concerns, so that these can be addressed in subproject design where necessary; and
  - (b) Structured consultation meetings with the institutional stakeholders (government bodies and NGOs) to discuss and approve key aspects of the project.
- (ii) Consultation during construction:
  - (a) Public meetings with affected communities to discuss and plan work programmes and allow issues to be raised and addressed once construction has started; and
  - (b) Smaller-scale meetings to discuss and plan construction work with individual communities to reduce disturbance and other impacts, and

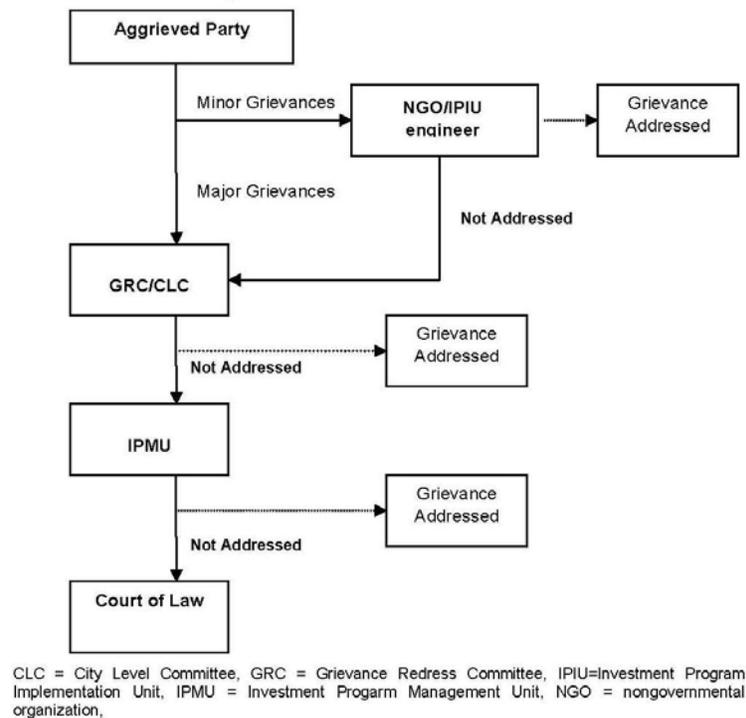
- provide a mechanism through which stakeholders can participate in subproject monitoring and evaluation;
- (ii) Project disclosure:
- (a) Public information campaigns (via newspaper, TV and radio) to explain the project to the wider town population and prepare them for disruption they may experience once the construction programme is underway;
  - (b) Public disclosure meetings at key project stages to inform the public of progress and future plans, and to provide copies of summary documents in Hindi; and
  - (c) Formal disclosure of completed project reports by making copies available at convenient locations in the study towns, informing the public of their availability, and providing a mechanism through which comments can be made.

102. Based on ADB requirements, the following will be posted on ADB website: (i) this IEE, upon receipt; (ii) a new or updated IEE, if prepared, reflecting significant changes in the Project during design or implementation; (iii) corrective action plan prepared during Project implementation to address unanticipated environmental impacts and to rectify non-compliance to EMP provisions; and (iv) environmental monitoring reports, upon receipt.

## **VI. GRIEVANCE REDRESS MECHANISM**

103. Grievances of affected persons will first be brought to the attention of the implementing NGO or IPIU engineer. Grievances not redressed by the NGO or IPIU will be brought to the City Level Committees (CLC) set up to monitor project implementation in each town. The CLC, acting as a grievance redress committee (GRC) is chaired by the District Collector with representatives from the ULB, state government agencies, IPIU, community-based organizations (CBOs) and NGOs. As GRC, the CLC will meet every month. The GRC will determine the merit of each grievance, and resolve grievances within a month of receiving the complaint, failing which the grievance will be addressed by the inter-ministerial Empowered Committee. The Committee will be chaired by the Minister of Urban Development and Local Self Government Department (LSGD), and members will include Ministers, Directors and/or representatives of other relevant Government Ministries and Departments. Grievance not redressed by the GRC will be referred to the IPMU for action failing which grievances will be referred by DPs/APs to the appropriate courts of law. The IPIU will keep records of all grievances received including: contact details of complainant, date that the complaint was received, nature of grievance, agreed corrective actions and the date these were effected, and final outcome. The grievance redress process is shown in **Figure 2**.

104. All costs involved in resolving the complaints will be borne by the IPMU. The GRCs will continue to function throughout the project duration.

**Figure 2: Grievance Redress Mechanism**

## VII. ENVIRONMENTAL MANAGEMENT PLAN

### A. Institutional Arrangements

105. The main agencies involved in managing and implementing the subproject are:
- (i) LSGD is responsible for management, coordination, and execution of all activities funded under the loan;
  - (ii) IPMU is responsible for coordinating construction of subprojects across all towns, and for ensuring consistency of approach and performance;
  - (iii) IPMC assists IPMU in managing the program and assures technical quality of design and construction;
  - (iv) DSCs design the infrastructure, manage tendering of Contractors and supervise the construction process;
  - (v) IPIUs appoint and manage Construction Contractors to build elements of the infrastructure in a particular town.
  - (vi) An inter-ministerial Empowered Committee<sup>5</sup> (EC) assists LSGD in providing policy guidance and coordination across all towns and subprojects.; and
  - (vii) City Level Committees<sup>6</sup> (CLCs) have also been established in each town to monitor project implementation in the town and provide recommendations to the IPIU where necessary.

106. **Figure 3** shows institutional responsibility for implementation of environmental safeguard at different level.

<sup>5</sup> The EC is chaired by the Minister of Urban Development and LSG, and members include Ministers, Directors and/or representatives of other relevant Government Ministries and Departments.

<sup>6</sup> CLCs are chaired by District Collector<sub>s</sub>, with members including officials of the ULB, local representatives of state government agencies, the IPIU, and local NGOs and CBOs.

**1. Responsible for carrying out mitigation measures**

107. During construction stage, implementation of mitigation measures is the construction contractor’s responsibility while during operation stage, O and M contractor and LSGD will be responsible for the conduct of maintenance or repair works.

108. To ensure implementation of mitigation measures during the construction period, contract clauses (**Appendix 3**) for environmental provisions will be part of the civil works contracts. Contractors’ conformity with contract procedures and specifications during construction will be carefully monitored by IPIU.

**2. Responsible for carrying out monitoring measures**

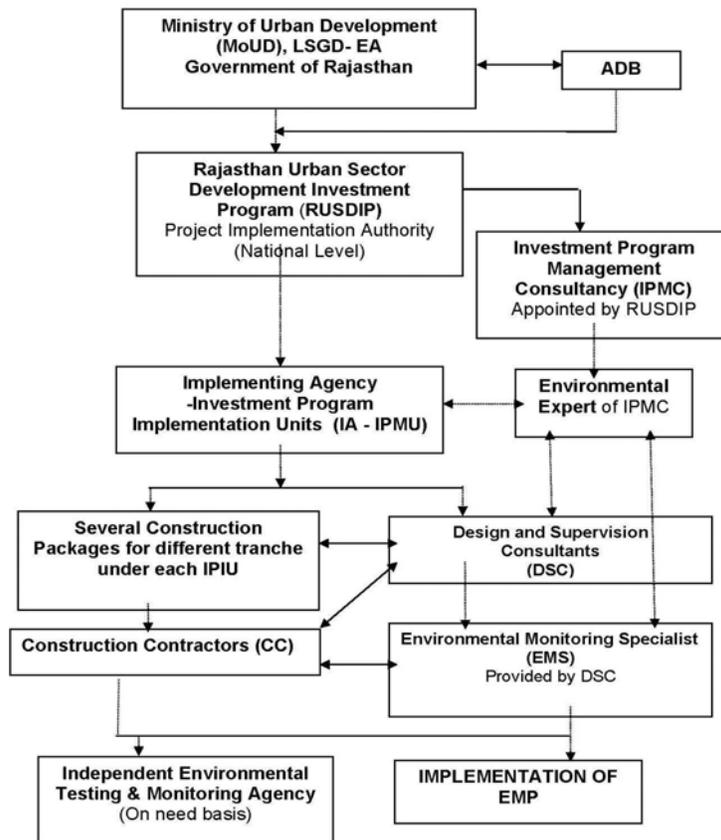
109. During construction, DSC’s Environment Safeguards Officer and the designated representative of IPIU will monitor the construction contractor’s environmental performance.

110. During the operation stage, monitoring will be the responsibility of KMC.

**3. Responsible for reporting**

111. LSGD will submit to ADB quarterly reports on implementation of the EMP and will permit ADB to field annual environmental review missions which will review in detail the environmental aspects of the Project. Any major accidents having serious environmental consequences will be reported immediately.

**Figure 3: Institutional Arrangement**



**B. Environmental Mitigation Plan**

112. **Tables 4 to 6** show the potential adverse environmental impacts, proposed mitigation measures, responsible parties, and estimated cost of implementation. This EMP will be included in the bid documents and will be further reviewed and updated during implementation.

**C. Environmental Monitoring Program**

113. **Tables 7 to 9** show the proposed environmental monitoring program for this subproject. It includes all relevant environmental parameters, description of sampling stations, frequency of monitoring, applicable standards, responsible parties, and estimated cost. Monitoring activities during the detailed engineering design stage will form part of the baseline conditions of the subproject sites and will be used as the reference for acceptance of restoration works by the construction contractors.

**Table 4: Anticipated Impacts and Mitigation Measures – Pre-construction Environmental Mitigation Plan**

<b>Field</b>	<b>Anticipated Impact</b>	<b>Mitigation Measures</b>	<b>Responsible for Mitigation</b>	<b>Monitoring of Mitigation</b>
Design Consideration	Unacceptable design for the existing heritage sites	Obtained “No Objection Certification” from the local government	IPIU and DSC	“No Objection Certificate” from the local government
Utilities	Telephone lines, electric cables, poles and wires, water and sewer lines within the project areas	(i) Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction phase; and (ii) Require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.	DSC	(i) list of affected utilities and operators; (ii) bid document to include requirement for a contingency plan for service interruptions
Asbestos Cement Pipes	Risk of contact with carcinogenic materials	(i) Require DSC to develop AC Protocol; (ii) Develop reporting procedures to inform management immediately if AC pipes are encountered; and (ii) Require construction consultants to develop and apply an AC Management Plan, as part of the over-all health and safety (H and S) plan, to protect both workers and citizens in case accidental uncovering of AC pipes. This AC Management Plan should also contain national and international standards for safe removal and long-term disposal of all asbestos-containing material encountered.	IPIU and DSC	(i) Asbestos Cement Protocol; (ii) requirement for AC Management included in bid documents
Social and Cultural Resources	Ground disturbance can uncover and damage archaeological and historical	(i) Consult ULB to obtain an expert assessment of the archaeological potential of the	IPIU and DSC	Chance Finds Protocol

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
	remains	site; (ii) Consider alternatives if the site is found to be of medium or high risk; (iii) Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available; and (iv) Develop a protocol for use by the construction contractors in conducting any excavation work, to ensure that any chance finds are recognised and measures are taken to ensure they are protected and conserved.		
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 subproject sites; (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; (iii) Do not consider residential areas; (iv) Take extreme care in selecting sites to avoid direct disposal to water body or in areas which will inconvenience the community.	IPIU and DSC to determine locations prior to award of construction contracts.	List of selected sites for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas.
Sources of Materials	Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion,	(i) Prioritize sites already permitted by the Mining Department; (ii) If other sites are	IPIU and DSC to prepare list of approved quarry sites and sources of materials	(i) list of approved quarry sites and sources of materials; (ii) bid document to include requirement for verification of

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
	disturbance in natural drainage patterns, ponding and water logging, and water pollution.	necessary, inform construction contractor that it is their responsibility to verify the suitability of all material sources and to obtain the approval of IPIU; and (iii) If additional quarries will be required after construction is started, inform construction contractor to obtain a written approval from PMU.		suitability of sources and permit for additional quarry sites if necessary.

**Table 5: Anticipated Impacts and Mitigation Measures – Construction Environmental Mitigation Plan**

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
Sources of Materials	Extraction of rocks and material may cause ground instability	(i) Use quarry sites and sources permitted by government; (ii) Verify suitability of all material sources and obtain approval of Investment Program Implementation Unit (IPIU); (iii) If additional quarries will be required after construction has started, obtain written approval from IPMU; and; (iv) Submit to DSC on a monthly basis documentation of sources of materials.	Construction Contractor	Construction Contractor documentation
Air Quality	Emissions from construction vehicles, equipment, and machinery used for excavation and construction resulting to dusts and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and	(i) Consult with IPIU/DSC on the designated areas for stockpiling of clay, soils, gravel, and other construction materials; (ii) Excavate the bridge foundations at the same time as the access roads are built so that dug material is used immediately, avoiding the	Construction Contractor	(i) Location of stockpiles; (ii) complaints from sensitive receptors; (iii) heavy equipment and machinery with air pollution control devices (iii) ambient air for respirable particulate matter (RPM) and suspended particulate matter (SPM); (iv) vehicular emissions such as

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
	hydrocarbons)	<p>need to stockpile on site;</p> <p>(iii) Damp down exposed soil and any stockpiled on site by spraying with water when necessary during dry weather;</p> <p>(iv) Use tarpaulins to cover sand and other loose material when transported by trucks; and</p> <p>(v) Fit all heavy equipment and machinery with air pollution control devices which are operating correctly.</p>		sulphur dioxide (SO <sub>2</sub> ), nitrous oxides (NO <sub>x</sub> ), carbon monoxide (CO), and hydrocarbons
Surface water quality	Run-off from stockpiled materials, and chemical contamination from fuels and lubricants during construction works can contaminate downstream surface water quality.	<p>(i) Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;</p> <p>(ii) Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with IPIU/DSC on designated disposal areas;</p> <p>(iii) Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies;</p> <p>(iv) Place storage areas for fuels and lubricants away from any drainage leading to water bodies;</p> <p>(v) Dispose any wastes generated by construction activities in designated sites;</p> <p>(vi) Do not dispose spent of left chemical after chemical washing in any water body or drain, dispose according to Material Safety Data Sheet (MSDS) of the chemical and</p> <p>(vii) Conduct surface quality</p>	Construction Contractor	<p>(i) Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) number of silt traps installed along drainages leading to water bodies; (iii) records of surface water quality inspection; (iv) effectiveness of water management measures; (v) for inland water: suspended solids, oil and grease, biological oxygen demand (BOD), and coliforms.(vi) Physical inspection for use and disposal of chemical used</p>

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		inspection according to the Environmental Management Plan (EMP).		
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 IPIU/DSC so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance; (ii) Require horns not be used unless it is necessary to warn other road users or animals of the vehicle's approach; (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.	Construction Contractor	(i) Complaints from sensitive receptors; (ii) use of silencers in noise-producing equipment and sound barriers; (iii) Equivalent day and night time noise levels
Existing Infrastructure and Facilities	Disruption of service and damage to existing infrastructure located at project area	(i) Obtain from IPIU and/or DSC the list of affected utilities and operators; (ii) Prepare a contingency plan to include actions to be done in case of unintentional interruption of services; and (iii) Develop and implement an AC Pipes Management Plan	Construction Contractor	(i) Existing Utilities Contingency Plan; (ii) Asbestos Cement Pipes Management Plan
Landscape and Aesthetics	solid wastes, removed silts as well as excess construction materials	(i) Prepare and implement Waste Management Plan; (ii) Avoid stockpiling of excess excavated soils; (ii) Coordinate with JMB for beneficial uses of excess	Construction Contractor	(i) Waste Management Plan; (ii) complaints from sensitive receptors; (iii) IPIU/DSC to report in writing that the necessary environmental restoration work has been

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		<p>excavated soils or immediately dispose to designated areas;</p> <p>(iv) Recover used oil and lubricants and reuse or remove from the sites;</p> <p>(v) Manage solid waste, rubbish from the gates according to the following preference hierarchy: reuse, recycling and disposal to designated areas;</p> <p>(vi) Remove all wreckage, rubbish, weeds on the gates, or temporary structures (such as buildings, shelters) which are no longer required; and</p> <p>(vii) Request IPIU/DSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.</p>		adequately performed before acceptance of work.
Accessibility	traffic problems and conflicts in right-of-way (ROW)	<p>(i) Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites;</p> <p>(ii) Schedule transport and hauling activities during non-peak hours;</p> <p>(iii) Locate entry and exit points in areas where there is low potential for traffic congestion;</p> <p>(iv) Keep the site free from all unnecessary obstructions;</p> <p>(v) Drive vehicles in a considerate manner;</p> <p>(vi) Coordinate with Karauli Municipal Traffic Office for temporary road diversions and with for provision of traffic aids if transportation activities</p>	Construction Contractor	(i) Traffic Management Plan; (ii) complaints from sensitive receptors; (iii) number of signages placed at subproject sites.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		cannot be avoided during peak hours; and (vii) Notify affected sensitive receptors by providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.		
Socio-Economic – Income.	impede the access of tourists to nearby shops	(i) Leave spaces for access between mounds of soil; (ii) Provide walkways and metal sheets where required to maintain access across trenches for people and vehicles; (iii) Increase workforce in front of critical areas such as institutions, 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.	Construction Contractor	(i) complaints from sensitive receptors; (ii) number of walkways, signages, and metal sheets placed at subproject sites.
Socio-Economic Employment	- generation of contractual 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; and (ii) Secure construction materials from local market.	Construction Contractor	(i) employment records; (ii) records of sources of materials
Occupational Health and Safety	occupational hazards which can arise from working in infrastructures like roads and bridges	(i) Develop and implement site-specific Health and Safety (H and S) Plan which will include measures such as: (a) excluding public from the site; (b) ensuring all	Construction Contractor	(i) site-specific Health and Safety (H and S) Plan; (ii) Equipped first-aid stations; (iii) Medical insurance coverage for workers; (iv) Number of accidents;

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		<p>workers are provided with and use Personal Protective Equipment; (c) H and S Training for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents;</p> <p>(ii) Ensure that qualified first-aid can be provided at all times. Equipped first-aid stations shall be easily accessible throughout the site;</p> <p>(iii) Provide medical insurance coverage for workers;</p> <p>(iv) Secure all installations from unauthorized intrusion and accident risks;</p> <p>(v) Provide supplies of potable drinking water;</p> <p>(vi) Provide clean eating areas where workers are not exposed to hazardous or noxious substances;</p> <p>(vii) Provide H and S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, handling of hazardous chemicals, personal protective protection, and preventing injuring to fellow workers;</p> <p>(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</p>		<p>(v) Supplies of potable drinking water;</p> <p>(vi) Clean eating areas where workers are not exposed to hazardous or noxious substances;</p> <p>(vii) record of H and S orientation trainings</p> <p>(viii) personal protective equipments;</p> <p>(ix) % of moving equipment outfitted with audible back-up alarms;</p> <p>(x) Site inspection for the use and disposal of chemicals</p> <p>(xi) sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal.</p> <p>(xii) Storage of hazardous acids, paints required during construction work</p>

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		<p>unescorted;</p> <p>(ix) Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;</p> <p>(x) Ensure moving equipment is outfitted with audible back-up alarms;</p> <p>(xi) Use chemical during chemical wash as directed by the manufacturer in Material Safety Data Sheet (MSDS), use appropriate personal protective equipments such as suitable hand gloves, safety goggles, apron etc,</p> <p>(xii) Only trained and experienced worker should be deployed for chemical washing</p> <p>(xiii) 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</p> <p>(xiv) 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</p>		

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
Asbestos Cement Pipes	health risk	actively. (i) Train all personnel (including manual labourers) to enable them to understand the dangers of AC pipes and to be able to recognise them in situ; (ii) Report to management immediately if AC pipes are encountered; (iii) Develop and apply AC Management Plan.	Construction Contractor	(i) records of trainings; (ii) AC Management Plan approved by PIU/DSC
Community Health and Safety.	traffic accidents and vehicle collision with pedestrians	(i) Plan routes to avoid times of peak-pedestrian activities. (ii) Liaise with IPIU/DSC in identifying high-risk areas on route cards/maps. (iii) Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. (iv) Provide road signs and flag persons to warn of dangerous conditions.	Construction Contractor	(i) Traffic Management Plan; (ii) complaints from sensitive receptors
Work Camps	temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants	(i) Consult with IPIU/DSC before locating project offices, sheds, and construction plants; (ii) Minimize removal of vegetation and disallow cutting of trees; (iii) Provide water and sanitation facilities for employees; (iv) Prohibit employees from poaching wildlife and cutting of trees for firewood; (v) Train employees in the storage and handling of materials which can	Construction Contractor	(i) complaints from sensitive receptors; (ii) water and sanitation facilities for employees; and (iii) IPIU/DSC report in writing that the camp has been vacated and restored to pre-project conditions

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		<p>potentially cause soil contamination;</p> <p>(vi) Recover used oil and lubricants and reuse or remove from the site;</p> <p>(vii) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;</p> <p>(viii) Remove all wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and</p> <p>(ix) Request IPIU/DSC to report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.</p>		
Social and Cultural Resources	risk of archaeological chance finds	<p>(i) Strictly follow the protocol for chance finds in any excavation work;</p> <p>(ii) Request IPIU/DSC or any authorized person with archaeological field training to observe excavation;</p> <p>(iii) Stop work immediately to allow further investigation if any finds are suspected; and</p> <p>(iv) Inform IPIU/DSC if a find is suspected, and take any action they require ensuring its removal or protection in situ.</p> <p>(v) Work closely with ULB to ensure monitoring of all works and compliance with all ULB rules</p>	Construction Contractor/ASI field staff	(i) records of chance finds

**Table 6: Anticipated Impacts and Mitigation Measures – Operation and Maintenance Environmental Mitigation Plan**

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
Economic Development and Social and Cultural Resources	temporary disruption of activities	(i) Complete work in these areas quickly; and (ii) Provide wooden bridges for pedestrians and metal sheets for vehicles to allow access across open trenches where required; and (iv) Consult municipal authorities, 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.	KMC and O and M Contractors	complaints from sensitive receptors
Solid wastes	If not removed frequently – garbage dumping near gates, resulting nuisance and unhygienic condition	Regular removal of waste	KMC and O and M Contractors	(i) frequency of collection; (ii) complaints from sensitive receptors

**Table 7: Pre-construction Environmental Monitoring Program**

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
Design Consideration	not applicable	IPIU and DSC	“No Objection Certificate” from the local government	checking of records	NOC issued prior to commencement of civil works	Once prior to start of construction	IPMU
Baseline Environmental Condition – Ambient Air Quality	Subproject sites	DSC	Establish baseline values of respirable particulate matter (RPM) and (ii) suspended particulate matter (SPM)	Air sample collection and analyses by in-house laboratory or accredited 3rd party laboratory	GOI Ambient Air Quality Standards	Once prior to start of construction	IPMU
Baseline Environmental Condition - Water Quality	Subproject sites	DSC	Establish baseline values of suspended solids (TSS), (iii) pH	Air sample collection and analyses by in-house laboratory or accredited 3rd	GOI Water Quality Standards	Once prior to start of construction	IPMU

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
			(iv) biological oxygen demand (BOD), (v) fecal coliform	party laboratory			
Sources of Materials	not applicable	DSC	(i) list of affected utilities and operators; (ii) bid document to include requirement for a contingency plan for service interruptions	checking of records	(i) list of affected utilities and operators prepared; (ii) requirement for a contingency plan for service interruptions included in bid documents	once	IPMU
Asbestos Cement Pipes	not applicable	IPIU and DSC	(i) Asbestos Cement Protocol; (ii) requirement for AC Management included in bid documents	checking of records	(i) AC Protocol prepared; (ii) bid documents include requirements for AC Management Plan	once	IPMU
Social and Cultural Resources	not applicable	IPIU and DSC	Chance Finds Protocol	checking of records	Chance Finds Protocol provided to construction contractors prior to commencement of activities	once	IPMU
Construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas.	not applicable	IPIU and DSC to determine locations prior to award of construction contracts.	List of selected sites for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas.	checking of records	List of selected sites for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas provided to construction contractors prior to commencement of works.	once	IPMU

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
Sources of Materials	not applicable	IPIU and DSC to prepare list of approved quarry sites and sources of materials	(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.	checking of records	(i) list of approved quarry sites and sources of materials provided to construction contractors (ii) bid document included requirement for verification of suitability of sources and permit for additional quarry sites if necessary.	once	IPMU

**Table 8: Construction Environmental Monitoring Program**

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
Sources of Materials	quarries and sources of materials	Construction Contractor	Construction Contractor documentation	(i) checking of records; (ii) visual inspection of sites	(i) sites are permitted; (ii) report submitted by construction contractor monthly (until such time there is excavation work)	monthly submission for construction contractor as needed for DSC	DSC
Air Quality	construction sites and areas designated for stockpiling of materials	Construction Contractor	(i) Location of stockpiles; (ii) complaints from sensitive receptors; (iii) heavy equipment and machinery with air pollution control devices	(i) checking of records; (ii) visual inspection of sites	(i) stockpiles on designated areas only; (ii) complaints from sensitive receptors satisfactorily addressed; (iii) air pollution	monthly for checking records	DSC in coordination with LSGD

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
			(iii) ambient air for respirable particulate matter (RPM) and suspended particulate matter (SPM); (iv) vehicular emissions such as sulphur dioxide (SO <sub>2</sub> ), nitrous oxides (NO <sub>x</sub> ), carbon monoxide (CO), and hydrocarbons (HC)		control devices working properly; (iv) GOI Ambient Quality Standards for ambient air quality; (iv) GOI Vehicular Emission Standards for SO <sub>2</sub> , NO <sub>x</sub> , CO and HC.		
Surface Water Quality	(i) construction sites; (ii) areas for stockpiles, storage of fuels and lubricants and waste materials;	Construction Contractor	(i) Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) number of silt traps installed along drainages leading to water bodies; (iii) records of surface water quality inspection; (iv) effectiveness of water management measures; (v) for inland water: suspended solids, oil and grease, biological oxygen demand (BOD), and coliforms. (vi) use of	visual inspection; Sample collection and laboratory analyses	(i) designated areas only; (ii) silt traps installed and functioning; (iii) no noticeable increase in suspended solids and silt from construction activities (iv) GOI Standards for Water Discharges to Inland Waters and Land for Irrigation (v) Material Safety Data Sheet (MSDS) of the chemical used	Monthly	DSC in coordination with LSGD

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
			chemical for chemical wash				
Noise Levels	(i) construction sites; (ii) areas for stockpiles, storage of fuels and lubricants and waste materials; (iii) work camps	Construction Contractor	(i) Complaints from sensitive receptors; (ii) use of silencers in noise-producing equipment and sound barriers; (iii) Equivalent day and night time noise levels	(i) checking of records; (ii) visual inspection	(i) complaints from sensitive receptors satisfactorily addressed; and (ii) silencers in noise-producing equipment functioning as design; and (iii) sound barriers installed where necessary	Monthly	DSC in coordination with LSGD
Existing Utilities and Infrastructure	(i) construction sites; (ii) alignment of affected utilities	Construction Contractor	(i) Existing Utilities Contingency Plan; (ii) Asbestos Cement Pipes Management Plan	(i) checking of records; (ii) visual inspection	implementation according to Utilities Contingency Plan and Asbestos Cement Plan	as needed	DSC
Landscape and Aesthetics	(i) construction sites; (ii) areas for stockpiles, storage of fuels and lubricants and waste materials; (iii) work camps	Construction Contractor	(i) Waste Management Plan; (ii) complaints from sensitive receptors; (iii) IPIU/DSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.	(i) checking of records; (ii) visual inspection	(i) no accumulation of solid wastes on-site; (ii) implementation of Waste Management Plan; (iii) complaints from sensitive receptors satisfactorily addressed.	monthly	DSC in coordination with LSGD
Accessibility	(i) construction sites;	Construction Contractor	(i) Traffic Management	visual inspection	(i) implementation of Traffic	Monthly	DSC in coordination with

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
	(ii) traffic routes		Plan; (ii) complaints from sensitive receptors; (iii) number of signages placed at subproject sites.		Management Plan; (ii) complaints from sensitive receptors satisfactorily addressed; (iii) signages visible and located in designated areas		LSGD
Socio-Economic - Income	construction sites	Construction Contractor	(i) complaints from sensitive receptors; (ii) number of walkways, signages, and metal sheets placed at subproject sites.	visual inspection	(i) complaints from sensitive receptors satisfactorily addressed; (ii) walkways, ramps, and metal sheets provided (iii) signages visible and located in designated areas	Quarterly	DSC
Asbestos Cement Pipes	construction sites	Construction Contractors	(i) records of trainings; (ii) AC Management Plan approved by IPIU/DSC	checking of records	no exposure to AC pipes	as needed	IPIU and DSC
Socio-Economic - Income	construction sites	Construction Contractor	(i) employment records; (ii) records of sources of materials	checking of records	number of employees from Karauli equal or greater than 50% of total workforce	quarterly	DSC
Occupational Health and Safety	construction sites	Construction Contractor	(i) site-specific Health and Safety (H and S) Plan; (ii) Equipped first-aid stations; (iii) Medical insurance coverage for workers;	(i) checking of records; (ii) visual inspection	(i) implementation of H and S plan; (ii) number of work-related accidents; (iii) % usage of personal protective equipment;	quarterly	DSC

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
			(iv) Number of accidents; (v) Supplies of potable drinking water; (vi) Clean eating areas where workers are not exposed to hazardous or noxious substances; (vii) record of H and S orientation trainings (viii) personal protective equipments; (ix) % of moving equipment outfitted with audible back-up alarms; (xi) sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal.		(iv) number of first-aid stations, frequency of potable water delivery, provision of clean eating area, and number of sign boards are according to approved plan; (v) % of moving equipment outfitted with audible back-up alarms		
Community Health and Safety	construction sites	Construction Contractor	(i) Traffic Management Plan; (ii) complaints from sensitive receptors	visual inspection	(i) implementation of Traffic Management Plan; (ii) complaints from sensitive receptors satisfactorily	quarterly	DSC in coordination with LSGD

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
Work Camps	work camps	Construction Contractor	(i) complaints from sensitive receptors; (ii) water and sanitation facilities for employees; and (iii) IPIU/DSC report in writing that the camp has been vacated and restored to pre-project conditions	visual inspection	addressed (i) designated areas only; (ii) complaints from sensitive receptors satisfactorily addressed	quarterly	DSC in coordination with LSGD
Chance Finds	construction sites	Construction Contractor	records of chance finds	checking of records	Implementation of Chance Finds Protocol	as needed	DSC in coordination with LSGD
Disposal and use of Chemical/ acids	Construction sites	Construction Contractor	(i) Disposal of used chemical/ acids (ii) personal protective equipments;	(i) checking of records; (ii) visual inspection	Records of proper disposal	As needed	DSC in coordination with Municipality
Storage of chemical and acids	Storage site	Construction Contractor	(i) record of H and S orientation trainings (ii) personal protective equipments; (iii) sign boards for hazardous substances and areas for storage and disposal.	(i) checking of records; (ii) visual inspection	Records of proper storage	As needed	IPIU and DSC

**Table 9: Operation and Maintenance Environmental Monitoring Program**

<b>Field</b>	<b>Location</b>	<b>Responsible for Mitigation</b>	<b>Monitoring of Mitigation</b>	<b>Method of Monitoring</b>	<b>Indicators/ Standards</b>	<b>Frequency</b>	<b>Responsible for Monitoring</b>
Economic Development and Social and Cultural Resources	subproject sites	KMC and O and M Contractors	complaints from sensitive receptors	checking of records	complaints from sensitive receptors satisfactorily addressed	as needed	IPMU
On-site Solid Waste Management	subproject sites	KMC and O and M Contractors	complaints from sensitive receptors	checking of records	complaints from sensitive receptors satisfactorily addressed	as needed	IPMU

#### D. Environmental Management Plan Costs

114. Most of the mitigation measures require the Construction Contractors to adopt good site practice, which should be part of their normal procedures already, so there are unlikely to be major costs associated with compliance. Regardless of this, any costs of mitigation by the construction contractors or DSC are included in the budgets for the civil works and do not need to be estimated separately here. Mitigation that is the responsibility of LSGD will be provided as part of their management of the project, so this also does not need to be duplicated here.

115. The remaining actions in the EMP are the various environmental monitoring activities to be conducted by the Environmental Monitoring Specialist (EMS) in the DSC. These have been budgeted elsewhere but budget is listed below in the event additional person months are required and found necessary by DSC, and their costs are shown in **Table 10**. The figures show that the total cost of environmental management and monitoring for the subproject is INR 300,000.

**Table 10: Environmental Management and Monitoring Costs (INR)**

Item			Quantity	Unit Cost	Total Cost	Source of Funds
<b>1. Implementation of EMP</b>						
Domestic Specialist	Environmental Monitoring		1 x 2 month	150,000 <sup>7</sup>	300,000	DSC
<b>TOTAL</b>					<b>300,000</b>	

EMP = Environmental Management Plan.

### VIII. FINDINGS AND RECOMMENDATIONS

116. The process described in this document has assessed the environmental impacts of all elements of the infrastructure proposed under the Karauli Heritage Site Subproject. Potential negative impacts were identified in relation to construction and operation of the improved infrastructure. No impacts were identified as being due to either project design or location. These were discussed with LSGD and specialists responsible for the subproject engineering aspects, and as a result mitigation measures have been developed to reduce all negative impacts to acceptable levels. Some measures have already been included in the designs submitted for approval by LSGD.

117. During the construction phase, impacts mainly arise from the need to excavate and dispose of waste soils/ rubbish and from the disturbance of residents, businesses, traffic and important buildings by the construction works. These are common impacts of construction in built-up areas, and there are well developed methods for their mitigation.

118. It is proposed that the project will employ in the workforce people who live in the vicinity of construction sites to provide them with a short-term economic gain; and ensure that people employed in the longer term to maintain and operate the new facilities are residents of nearby communities.

119. Once the construction is completed, most facilities will operate with routine maintenance, which should not affect the environment. The infrastructure will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the

<sup>7</sup> Unit costs of domestic consultants include fee, travel, accommodation and subsistence

work will be infrequent, affecting small areas only. It will also be conducted in areas that have already been excavated.

120. Mitigation will be assured by a program of environmental monitoring to be conducted during construction and operation stages, with assistance from LSGD. The environmental monitoring program will ensure that all measures are implemented, and will determine whether the environment is protected as intended. It will include observations on- and off-site, document checks, and interviews with workers and beneficiaries. The Investment Project Implementation Unit (IPIU) and Design and Supervision Consultants (DSC) will work closely with ASI in implementing the program. Any requirements for remedial action will be reported to the IPMU.

121. The main impacts of the subproject will be beneficial to the citizens of Karauli as improved infrastructure of Historic importance area will lead to socio-economic gains for the town.

122. The stakeholders were involved in developing the IEE through face-to-face discussions on site and a large public meeting held in the town, after which views expressed were incorporated into the IEE and the planning and development of the project. The IEE will be made available at public locations in the town and will be disclosed to a wider audience via the ADB website. The consultation process will be continued and expanded during project implementation, when a nationally-recognised NGO will be appointed to handle this key element to ensure that stakeholders are fully engaged in the project and have the opportunity to participate in its development and implementation

## **IX. CONCLUSIONS**

123. The subproject is not anticipated to cause significant adverse impacts. The potential adverse impacts that are associated with design, construction, and operation can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures.

124. Based on the findings of the IEE, the classification of the Project as Category “B” is confirmed, and no further special study or detailed EIA needs to be undertaken to comply with ADB SPS (2009) or Gol EIA Notification (2006).

**Appendix 1 – Rapid Environmental Assessment (REA) Check List  
(Restoration of Wall Gates, Karauli)**

SCREENING QUESTIONS	Yes	No	REMARKS
<b>A. Project Siting</b> Is the project area...			
▪ Densely populated?	√		The district is surrounded by the districts of Dholpur, Bharatpur, Dausa and Karauli. The Chambal River flows through the district. The rugged landscape of Karauli makes it an ideal place for travelling. As of 2001 India census, Karauli had a population of 66,179. City wall gates are located in the main city.
▪ Heavy with development activities?		√	Karauli is one of the least developed areas of Rajasthan, hence it is not loaded with developmental activities. It is infact an effort to develop the cultural and heritage sites of the area.
Adjacent to or within any environmentally sensitive areas?			
<ul style="list-style-type: none"> <li>• Cultural heritage site</li> </ul>	√		<p>Karauli was officially founded in 1348 AD by the Yaduvanshi Rajput, Raja Arjun Pal. This holy city was originally known as Kalyanpuri, after the local deity Kalyanji. Legend has it that the princely state of karauli (17 Gun salutes) was established by Raja Bijal pal Jadon, The 88th descendent of lord Krishna, as far back as 995 AD.</p> <p>The 600 year Karauli old city palace was built probably in the 14th century by the royal family and a magnificent city palace in 1635 AD. The fort and the city palace remains the official residence of the royal family of Karauli till 1938 AD. At that time a much more modern Bhanwar Vilas palace was built by Maharaja Ganesh pal Deo Bhadur. The Temple of Kaila Devi holds an important place among the religious places of Rajasthan.</p> <p>Being a popular tourist destination, there are a number of tourist attractions in Karauli district. The region is known for its scenic beauty and idyllic charm. The rich heritage is also an added advantage. Some popular places worth a visit in the district are: Mandrayal Fort, Chambal River, Madan mohanji , Kailadevi etc.</p>

SCREENING QUESTIONS	Yes	No	REMARKS
<ul style="list-style-type: none"> <li>Protected Area</li> </ul>	√		<p>Kaila Devi national park is located at a distance of about 20 kms from the project site. Kaila Devi national park is named after the locally famous kaila Devi temple at its entrance. Another typical feature of the sanctuary is the numerous khos or deep gorges breaking the ground. These several hundred feet deep khos initially fall steeply, forming irregular, lofty walls of rocks, which further down, slope gently into narrow valleys. The rich and dense forest in the khos virtually make them impenetrable and inaccessible - ideal place for animals to take shelter and rest. Some interesting khos in the sanctuary are Chirmul, Ghanteshwar, Khadi ( Keri Umar), Kudka and Nibhera.</p> <p>There is no protected area nearby the project locations</p>
<ul style="list-style-type: none"> <li>Wetland</li> </ul>		√	There is no wetlands area present near to the project area.
<ul style="list-style-type: none"> <li>Mangrove</li> </ul>		√	There is no mangrove area present near to the project area.
<ul style="list-style-type: none"> <li>Estuarine</li> </ul>		√	There is no estuarine area present near to the project area.
<ul style="list-style-type: none"> <li>Buffer zone of protected area</li> </ul>		√	Site is not within buffer zone of the protected area of Kaila Devi National Park but close to it (with in 20 Km)
<ul style="list-style-type: none"> <li>Special area for protecting biodiversity</li> </ul>		√	Kaila devi national park is a home to various animals and birds. Among mammals Chinkara, wild bore, jackal can be seen very commonly in morning and late afternoon. Leopard, Sloth bear, Hyena, wolf and sambhar sightings can be seen and of course tiger continues its secretive existence.
<ul style="list-style-type: none"> <li>Bay</li> </ul>		√	Not Applicable
<p><b>B. Potential Environmental Impacts</b></p> <p>Will the Project cause...</p>		√	
<ul style="list-style-type: none"> <li>impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.</li> </ul>		√	No such impact will be there due to the proposed project as the nature of the project does not call for such impacts.
<p>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?</p>		√	No surrounding environmental conditions will be deteriorated due to this project.

SCREENING QUESTIONS	Yes	No	REMARKS
▪ degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		√	No, there will be no degradation of land and ecosystems
▪ dislocation or involuntary resettlement of people		√	No dislocation and involuntary resettlement will be there as the work involves only the removal of damaged stone. The work also includes dismantling of Rubble Masonry wall in damaged area.
▪ degradation of cultural property, and loss of cultural heritage and tourism revenues?		√	This project will upgrade the quality of cultural property.
▪ 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 pollutive industries?		√	No such impact will be there due to the proposed project as the nature of the project does not call for such impacts.
▪ 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 problems will be observed due to this restoration project.
▪ air pollution due to urban emissions?		√	No such impact will be there due to the proposed project as the nature of the project does not call for such impacts.
▪ social conflicts between construction workers from other areas and local workers?		√	Preference will be given to the local workers in order to prevent any social conflicts between workers from other areas and local workers.
▪ road blocking and temporary flooding due to land excavation during rainy season?		√	No such kind of problems will be there.
▪ noise and dust from construction activities?	√		There may be a moderate generation of noise and dust from construction activities, which will be mitigated by providing adequate measures during the constructional phase.
▪ traffic disturbances due to construction material transport and wastes?	√		Slight disturbances may be there as all the wall gates are located in the city area there by all type of traffic passes through these city wall gates
▪ temporary silt runoff due to construction?		√	There is no considerable runoff could be caused during the constructional activities.
▪ hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?		√	No such hazards to public health will be there.
▪ water depletion and/or degradation?		√	Ground water requirement is very less for restoration work , so there is no need to exploit the ground water

SCREENING QUESTIONS	Yes	No	REMARKS
<ul style="list-style-type: none"> <li>▪ overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?</li> </ul>	√	<input type="checkbox"/>	No such problems are expected.
<ul style="list-style-type: none"> <li>▪ contamination of surface and ground waters due to improper waste disposal?</li> </ul>	<input type="checkbox"/>	√	Proper waste handling facilities will be utilized as per MSW rules-2000 in order to prevent any contamination.
<ul style="list-style-type: none"> <li>▪ pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?</li> </ul>	<input type="checkbox"/>	√	Not applicable

## Appendix 2 Public Consultation- Environment

### Sub Project:- Heritage Sites (Karauli)

#### Issues discussed

- General Observations
- Awareness and extent of the project and development components
- Benefits of the Project for the economic and Socio-cultural development
- Labour availability in the Project area or requirement of outside labour involvement
- Local disturbances due to Project Construction Work
- Local disturbances during project operation work.
- Necessity of tree felling etc. at project site
- Water logging and drainage problem if any
- Major environmental problems expected,
- Forest and sensitive area nearby the project site
- Other problems, encountered, if any

**1. Date & time of Consultation:- 21.10.10 at 10.00 AM , Location :- Near Ganesh Gate**

**2. Date & time of Consultation:- 21.10.10 at 11.00 AM, Location :- Near Nadi Gate**

**3. Date & time of Consultation:- 21.10.10 at 12.00 PM, Location :- Near Wazipur Gate**

**4. Date & time of Consultation:- 21.10.10 at 01.00 PM, Location :- Near Mela Gate**

**5. Date & time of Consultation:- 21.10.10 at 04.00 PM, Location :- Near Hindaun Gate**

**6. Date & time of Consultation:- 21.10.10 at 05.00 PM, Location :- Near Masalpur Gate**

**Table: Issues of the Public Consultation- Design phase**

Sr. No.	Key Issues/Demands	Perception of community	Action to be Taken
1	Awareness of project – including coverage area	The people of the town are aware of the proposed project of restoration of Wall Gates. As per the local people, the DSC consultants and IPIU have informed them regarding the proposed projects and its benefits. People were in favour of the project and demanded good quality work for restoration of gates so that the historic view can be saved.	The nearby residents should be associated at the most by proper discussions with them.
2	In what way they may associate with the project	<ul style="list-style-type: none"> <li>• The local people are of the view that local people should be hired depending upon their efficiency and expertise.</li> <li>• The local people wanted that they should be involved from the initial decision making phase onwards so that they can participate at every stage.</li> </ul> The local people said that they should be well informed on time regarding the areas where the work will initiate so that they can accustom themselves.	Preference will be given to the local labour during the implementation of the project as per the requirement. People will be informed well before time before the execution starts.
3	Presence of any forest, wild life or any sensitive / unique	Kaila Devi National Park is situated at a distance of around 22 Km, so no chances of any problem to the protected forest because of the project work.	Scientific application of mitigation measures will be provided to avoid any impact on the forest area.

Sr. No.	Key Issues/Demands	Perception of community	Action to be Taken
	environmental components nearby the project area		
4	Presence of historical/cultural/religious sites nearby	The project location is at historical sites	Preventive measures will be taken in order to avoid any negative impacts on the historical site
5	Unfavorable climatic condition	As per the local people's view, the summer season is not appropriate to commence the work as the temperature reaches about 47°C. During the heavy rains, there might arise some problems in the execution of the project as the drainage facilities in the area are extremely poor due to which overflowing of drains is a common problem encountered by the people.	Suitable climatic conditions will be considered during the planning and execution stage. The points raised by the local people should be taken into consideration.
6	Occurrence of flood	Not applicable as per the nature of work.	Proper actions should be taken during the execution of the project in order to prevent flood situation.
7	Drainage and sewerage problem facing	Drainage system is not proper, people suffer from water stagnancy in their areas either at the time of rainy season or when some pipeline breaks away. Sewerage lines are not available in the project area. Some of them also said that they have to face severe odour related problems during the summer season. Problems due to open drains are there which are not cleaned periodically due to which they get choked easily. They complained about the improper waste management system, the solid waste finds its way in the drains and on the roads.	The work on the improvement of drainage system will be initiated soon, which will certainly improve the problem related to stagnancy of water. Proper sewerage system should be installed to improve the sewerage conditions.
8	Present drinking water problem – quantity and quality	Some of the areas are supplied water by PHED. A large number of houses have their own tube-wells and hand-pumps.	Construction of CWRs and OHSRs should be made in order to reduce the drinking water problem. Proper treatment of water should take place and the supply of water should be through PHED so that indiscriminate use of water can stop.
9	Present solid waste	The Municipal Board takes care of the solid waste management of Karauli	Proper solid waste management system should be implemented.

Sr. No.	Key Issues/Demands	Perception of community	Action to be Taken
	collection and disposal problem	town. Sweeping and waste collection facilities are irregular and inappropriate. Infact it can be said that there is no waste collection facility in the whole town.	
10	Availability of labour during construction time	Sufficient labour is available in this area.	Availability of labour is not a problem here, if required labour from nearby areas will be hired.
11	Access road to project site	The sites are accessible via road. The roads are only 4 m wide at present. Also the conditions of the roads are not good, it paves a way for the numerous road accidents that take place in this area.	The upcoming project will certainly reduce the problems of the local people.
12	Perception of villagers on tree felling and afforestation	The local people were of the view that trees should not be cut; if urgent it should be minimum in number and number of trees cut should be replaced by planting trees in the nearby areas. Since the nature of the project does not call for tree felling, so the general people had no obstructions with this point.	It has been explained that during the construction phase, no tree is going to be affected.
13	Dust and noise Pollution and disturbances during construction work	People are aware of the fact that during construction work some amount of dust and noise will arise. But they wanted that It should be minimized as much as possible. It has been explained that as per Safeguard policy of the project for abatement of pollution, control system will be considered Vehicles movement will be controlled & appropriate measure will be taken to combat the same.	PUC certified vehicles should be used during material handling and transportation activities. Sprinkling of water should be done in order to minimize the fugitive dust emissions.
14	Setting up worker camp site within the village/ project locality	As per the people, local laborers should be hired which will minimize the requirement of setting of a temporary work shelter.	Preference will be given to the local labour during the implementation of the project as per the requirement.
15	Safety of residents During construction phase and plying of vehicle for construction activities	People were of the view that safety measures like cautionary boards, signals, barricades should be used at the project site in order to minimize any mishap.	Safeguard policy should be Implemented in order to minimize the accidents.
16	Requirement of enhancement of	The people were of the thought that this town should be raised to the levels that	Actions should be taken in order to improve the standard of living.

Sr. No.	Key Issues/Demands	Perception of community	Action to be Taken
	other facilities	of other developed cities like better road connectivity, proper solid waste management, rainwater harvesting etc should be implemented in order to raise the standard of living.	

**NAME AND POSITION OF PERSONS CONSULTED:**

Ashok Dharendra: Karauli  
 Arvind Agarwal: Karauli  
 Kishore Kumar Sharma: Karauli  
 Bhushan Srivastav: Karauli  
 Deepak Jain: Karauli.  
 Parmeshwar Jat: Karauli  
 Abhay Kumar: Karauli  
 Amit Soni :Local Resident, Karauli  
 Lalit Janjani: Karauli  
 Jasir Khan: Karauli  
 Nidhi Khandelwal: Karauli  
 Deepak Tanwar: Karauli  
 S.K.Singh: Karauli  
 Ashok Gupta: Karauli  
 Indra Kumar : Karauli  
 Narayan Kumar: Karauli

### **Appendix 3 Recommended Contract Clauses**

- A. Sources of Materials
- (i) Use quarry sites and sources permitted by government;
  - (ii) Verify suitability of all material sources and obtain approval of IPIU;
  - (iii) If additional quarries will be required after construction has started, obtain written approval from IPMU; and;
  - (iv) Submit to DSC on a monthly basis documentation of sources of materials.
- B. Air Quality
- (i) Consult with IPIU/DSC on the designated areas for stockpiling of clay, soils, gravel, and other construction materials;
  - (ii) Excavate the bridge foundations at the same time as the access roads are built so that dug material is used immediately, avoiding the need to stockpile on site;
  - (iii) Damp down exposed soil and any stockpiled on site by spraying with water when necessary during dry weather;
  - (iv) Measurement of air quality at heritage site as per EMP
  - (v) Use tarpaulins to cover sand and other loose material when transported by trucks; and
  - (vi) Fit all heavy equipment and machinery with air pollution control devices which are operating correctly.
- C. Surface Water Quality
- (i) Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;
  - (ii) Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with IPIU/DSC on designated disposal areas;
  - (iii) Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies;
  - (iv) Place storage areas for fuels and lubricants away from any drainage leading to water bodies;
  - (v) Dispose any wastes generated by construction activities in designated sites
  - (vi) Do not dispose spent or left chemical after chemical washing in any water body or drain, dispose according to Material Safety Data Sheet (MSDS) of the chemical and
  - (vi) Conduct surface quality inspection according to the Environmental Management Plan (EMP).
- D. Noise Levels
- (i) Plan activities in consultation with IPIU/DSC so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance;
  - (ii) Require horns not be used unless it is necessary to warn other road users or animals of the vehicle's approach;
  - (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) Measurement of noise level at sub-project locations as per EMP
- E. Existing Infrastructure and Facilities
- (i) Obtain from IPIU and/or DSC the list of affected utilities and operators;
  - (ii) Prepare a contingency plan to include actions to be done in case of unintentional interruption of services; and
  - (iii) Develop and implement an Asbestos Cement Pipes Management Plan
- F. Accessibility
- (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;
  - (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 Karauli Traffic Office for temporary road diversions and with for provision of traffic aids if transportation activities cannot be avoided during peak hours; and
  - (vii) Notify affected sensitive receptors by providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.
- G. Landscape and Aesthetics
- (i) Prepare and implement Waste Management Plan;
  - (ii) Recover used oil and lubricants and reuse or remove from the sites; (iii) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;
  - (iv) Remove all wreckage, garbage from lake, silt, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and
  - (v) Request IPIU/DSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.
- H. Socio-Economic – Income
- (i) Leave spaces for access between mounds of soil;
  - (ii) Provide walkways and metal sheets where required to maintain access across trenches for people and vehicles;
  - (iii) Increase workforce in front of critical areas such as institutions, 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.
- I. Socio-Economic – Employment
- (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; and
  - (ii) Secure construction materials from local market.
- J. Occupational Health and Safety
- (i) Develop and implement site-specific Health and Safety (H and 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) H and 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) Provide supplies of potable drinking water;
  - (vi) Provide clean eating areas where workers are not exposed to hazardous or noxious substances;
  - (vii) Provide H and 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;

- (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) Use chemical during chemical wash as directed by the manufacturer in Material Safety Data Sheet (MSDS), use appropriate personal protective equipments such as suitable hand gloves, safety goggles, apron etc,
  - (xiii) Only trained and experienced worker should be deployed for chemical washing
  - (xiv) 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.
  - (xv) Use proper stairs, staging, platforms, barricades and Personal Protective Equipments (PPEs) such as safety belt, while working at height more that 1.5 meters.
- K. Asbestos Cement Pipes
- (i) Train all personnel (including manual labourers) to enable them to understand the dangers of AC pipes and to be able to recognise them in situ;
  - (ii) Report to management immediately if AC pipes are encountered;
  - (iii) Develop and apply AC Management Plan.
- L. Community Health and Safety.
- (i) Plan routes to avoid times of peak-pedestrian activities.
  - (ii) Liaise with IPIU/DSC in identifying high-risk areas on route cards/maps.
  - (iii) Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure.
  - (iv) Provide road signs and flag persons to warn of dangerous conditions.
- M. Work Camps
- (i) Consult with IPIU/DSC before locating project offices, sheds, and construction plants;
  - (ii) Minimize removal of vegetation and disallow cutting of trees;
  - (iii) Provide water and sanitation facilities for employees;
  - (iv) Prohibit employees from poaching wildlife and cutting of trees for firewood;
  - (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 following preference hierarchy: reuse, recycling and disposal to designated areas;
  - (viii) Remove all wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and
  - (ix) Request IPIU/DSC to report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.
- N. Social and Cultural Resources
- (i) Strictly follow the protocol for chance finds in any excavation work;
  - (ii) Request IPIU/DSC or any authorized person with archaeological field training to observe excavation;
  - (iii) Stop work immediately to allow further investigation if any finds are suspected; and
  - (iv) Inform IPIU/DSC if a find is suspected, and take any action they require ensuring its removal or protection in situ.