Environmental Assessment Document

Initial Environmental Examination: Baran Urban transport and Roads Subproject
Project Number: 40031
September 2008

India: Rajasthan Urban Sector Development Investment Program

Prepared by Local Self Government Department

For the Government of Rajasthan
Rajasthan Urban Infrastructure Development Project

ABBREVIATION

ADB	Asian Development Bank
CWR	Clear Water Reservoir
DSC	Design and Supervision Consultancy
EA	Executing Agency
EAC	Expert Appraisal Committee
FI	Financial Intermediary
GLSR	Ground Level Service Reservoir
GoI	Government of India
GoR	Government of Rajasthan
GSI	Geological Survey of India
IA	Implementing Agency
IEE	Initial Environmental Examination
IPMC	Investment Programme Management Consultancy
IPMU	Investment Programme Management Unit
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
LPCD	Litre Per Capita per Day
LPS	Litre Per Second
LSGD	Local Self-Government Department
MFF	Multitranche Financing Facility
MLD	Million litre Per day
MoEF	Ministry of Environment and Forests
NAAQS	National Ambient Air Quality Standards
OM	Operations Manual
PHED	Public Health Engineering Department
PMU	Project Management Unit
RCC	Reinforced Cement Concrete
ROW	Right of Way
RPCB	Rajasthan State Pollution Control Board
RSPM	Respirable Suspended Particulate Matter
RUIDP	Rajasthan Urban Infrastructure Development Project
RUSDIP	Rajasthan Urban Sector Development Investment Program
SPM	Suspended Particulate Matter
ToR	Terms of Reference
UA	Urban Agglomeration
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns
uPVC	Unplasitized Poly Venyl Chloride
USEPA	United States Environmental Protection Agency

WEIGHTS AND MEASURES

lakh	–	100 thousand = 100,000
crore	–	100 lakhs = 10,000,000
$\mu g/m^3$	–	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

Table of Contents

I. INTRODUCTION

A. Purpose of the report

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. 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 (GoI) through the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) and Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT).

2. RUSDIP Phase II to be implemented over a seven year period beginning in 2008, and will be funded by a loan via the Multitranche Financing Facility (MFF) of the ADB. The Executing Agency (EA) is the Local Self-Government Department (LSGD) of the Government of Rajasthan (GoR); and the Implementing Agency (IA) is the Project Management Unit (PMU) of the Rajasthan Urban Infrastructure Development Project (RUIDP), which is currently in the construction stage.

3. RUSDIP will improve infrastructure through the design and implementation of a series of subprojects, each providing improvements in a particular sector (water supply, sewerage, solid waste etc) in one town. RUSDIP has been classified by ADB as environmental assessment category B (having some negative impacts but less significant than category A). The impacts of subprojects prepared according to ADB Environment Policy (2002) and Environmental Assessment Guidelines (2003).

B. Extent of the IEE study

4. Indian law and ADB policy require that the environmental impacts of development projects are identified and assessed as part of the planning and design process, and that action is taken to reduce those impacts to acceptable levels. This is done through the environmental assessment process, which has become an integral part of lending operations and project development and implementation worldwide.

ADB Policy

5. ADB's Environment Policy requires the consideration of environmental issues in all aspects of the Bank's operations, and the requirements for Environmental Assessment are described in Operations Manual (OM) 20: Environmental Considerations in ADB Operations. This states that ADB requires environmental assessment of all project loans, programme loans, sector loans, sector development programme loans, financial intermediation loans and private sector investment operations.

6. The nature of the 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 impacts and are assigned to one of the following categories:

Category A: Projects that could have significant environmental impacts. An Environmental Impact Assessment (EIA) is required.

Category B: Projects that could have some adverse environmental impacts, but of less significance than those for category A. An Initial Environmental Examination (IEE) is required to determine whether significant impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.

Category C: Projects those are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.

Category FI: Projects that involve a credit line through a financial intermediary (FI) or an equity investment in a FI. The FI must apply an environmental management system, unless all subprojects will result in insignificant impacts.

7. The Bank has categorised this program as Category B and following normal procedure for MFF loans has determined that one Environmental Examination will be conducted for each subproject, with a subproject being the infrastructure improvements in a particular sector (water supply, sewerage, etc) in one town.

National Law

8. The GoI EIA Notification of 2006 (replacing the EIA Notification of 1994), sets out the requirement for Environmental Assessment in India. This states that Environmental Clearance (EC) 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.

9. 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 EC if appropriate.

10. 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 EC 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.

11. The only type of infrastructure provided by the RUSDIP that is specified in the EIA Notification is solid waste management, where EC is required for all Common Municipal Solid Waste Management Facilities (facilities that are shared by more than one town)[1]. EC

[1] According to the Rajasthan State Pollution Control Board, the MoEF intends to issue a clarification to the EIA Notification in due course, which will add all landfill facilities and Sewage Treatment Plants to the list of projects specified as requiring EC under the Notification. This has not yet been issued, so the text above indicates the correct legal position at the time of writing

is thus not required for road sector sub-project that is the subject of this Environmental Examination.

Review and Approval Procedure

12. For Category B projects the Draft Environmental Status report and its summary (SIEE) are reviewed by ADB's Regional Department sector division and Environment and Social Safeguards Division, and by the Executing Agency, and additional comments may be sought from project affected people and other stakeholders. All comments are incorporated in preparing the final documents, which are reviewed by the Executing Agency and the national environmental protection agency (MoEF in this case). The EA then officially submits the IEE and SIEE reports to ADB for consideration by the Board of Directors. Completed reports are made available worldwide by ADB, via the depository library system and the ADB website.

Scope of Study

13. This is the report for the Baran road urban transport sector. It discusses the generic environmental impacts and mitigation measures relating to the location, design, construction and operation of physical works proposed road over bridge (flyover) under this subproject.

II. DESCRIPTION OF THE PROJECT

A. Type, Category and Need

14. This is a transportation sub-project, and as explained earlier, it has been classified by ADB as Category B, because it is not expected to have major negative environmental impact on the surroundings. 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. The sub-project is needed to help alleviate road congestion in the town, where the capacity of the network has not expanded to cope with increased traffic demand. It will provide a Road Over Bridge (ROB) (flyover) on Level Crossing No. 37 KHA at Kota-Baran- Shivpuri Road (NH 76) km 468 passing through the centre of the town, which currently has to be closed for substantial time in a day to allow the passage of trains. 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 Baran and the other urban centres to those expected of modern Asian towns.

B. Location, Size and Implementation Schedule

15. The sub-project is located in Baran, the headquarters town of Baran district, in the south eastern part of Rajasthan **(Figure 2.1).** The infrastructure will consist of ROB over railway crossing no. 37 KHA **(Figure 2.2).**

16. Detailed design will begin in the middle of 2008 and work should be completed by the end of the 2009.

C. Existing situation

17. Baran and Chabbra comprises a road network of 125.6 km, consisting of 57.6 km bituminous roads, 33.0 km earthen road and 35 km cement concrete roads. Only 32.6 km road network is maintained by PWD, which is 26 percent of road length. All remaining roads are maintained by the municipal boards. In the recent past, both municipal boards have invested substantially in upgrading roads to cement concrete.

18. The Kota Baran-Shivpuri road (part of NH-76, Km 468) is the main entrance to Baran town. Due to the heavy vehicular traffic and frequent movement of railway traffic thereby causing interruption to road users for long time for Baran town. The district Administration and Police Line area lays one side of the Railway line and most of the town part lies in the other side of the railway crossing.

19. At present average 30 Trains are passing through the line and average 5041 fast moving vehicle & average 676 slow moving vehicles are passing through the above road. In peak hours, the traffic congestion at level crossing creates chaotic situation due to closer of gates for passing the trains. Besides the above, congestion at above level crossing location are becoming worse day by day due to enormous growth of 2-wheelers and car/jeep/taxi. The subproject, when implemented, will benefit the population of town as well as through traffic of NH-76 with safe travel time & fuel consumption. The following will be the key outcomes from the Subproject:

a. Predominant traffic will be served

b. Avoid any accident

c. Saving of time

d. Fuel saving

e. Traffic congestion will be eased

f. Social & Environmental hazards to be reduced

g. No psychological barrier

D. Description of the Sub-project including detail scope of works

20. **Table 2.1** shows the nature of the subproject. There are main elements: construction of the ROB above the railway crossing, and improvements to the existing roads. The descriptions shown in **Table 2.1** 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 2.1: Improvements in transportation infrastructure proposed in Baran

Infrastructure	Function	Description	Location
Roads and Bridge in Baran	Reduction of traffic congestion above the present road	Construction of new ROB	Level Crossing No. 37 KHA at Kota-Baran-Shivpuri Road (NH 76) Km. 468

21. MC and PWD are responsible for planning, construction and maintenance of the city's transport network and the traffic police is responsible for traffic control and daily traffic management issues. After preliminary study, and subsequent discussion with MC & PWD, 2-lane ROB including both end approaches/service roads at level crossing location are identified to implement in phase –II of RUSDIP. Other issues shall be taken care of MC and PWD as per their jurisdictions. From traffic/safety/environmental point of view, the construction of ROB is most important for Baran Town.

22. As per IRC 62:1976, if the product of ADT (fast moving vehicles only) and nos. of trains per day i.e. Average Train Vehicle Unit (ATVU) exceeds 50,000 for last 5 years, the construction of ROB is necessary.

Average Daily Traffic (fast moving vehicles only)	=	5041 nos.
Number of Trains passing per day	=	30 nos.
Average Train Vehicle Unit (ATVU)	=	151220 units > 50000

23. Hence ROB is absolutely necessary as per calculated Average Train Vehicle Unit (ATVU) which exceeds the value as mentioned in IRC 62:1976.

24. **Sub project description:** Scope and components of the works consist of construction of ROB span, both side via-duct spans, embankment with RE (Reinforced Earth) wall, service road, footpath, provision of drain & utility space etc. Details of major works are as under;

i) The total ROB length including ROB spans, viaduct spans & approach embankment is approximately 850 m.

ii) Construction of 1 x 36.502 + 2x16.349 ROB span.

iii) Construction of 7 x 18m + 1x 16.90 m viaduct spans at Kota end, 10 x 18m + 1 x 16.90 m viaduct spans at Baran end

iv) Construction of approach embankment with RE (Reinforced Earth) wall at both sides Construction of Service road at both sides of ROB approaches.

v) Provision of footpath, provision of drain, utility space, crash barrier, Road appurtenances

25. **Salient Details of ROB & Viaduct:** At present the existing broad gauge railway track is single line having ROW 34.5m. Considering future expansion of two tracks both sides of the existing one as per Railway norms, single span is proposed at a skew angle of 59 degree for ROB. Besides the ROB span, a few viaduct spans (7 x 18m + 1x 16.90 m at Kota end and 10 x 18m + 1 x 16.90 m at Baran end) at both end of ROB are proposed to minimize the acquisition. Ground level service road at both ends shall be provided for proper circulation of traffic/pedestrian near Level crossing and to minimize the environmental hazards. Embankment with RE walls both sides are proposed at both ends after the viaduct spans. The salient details of ROB, viaducts, embankment with RE walls, service roads etc. are presented in **Table 2.2** below.

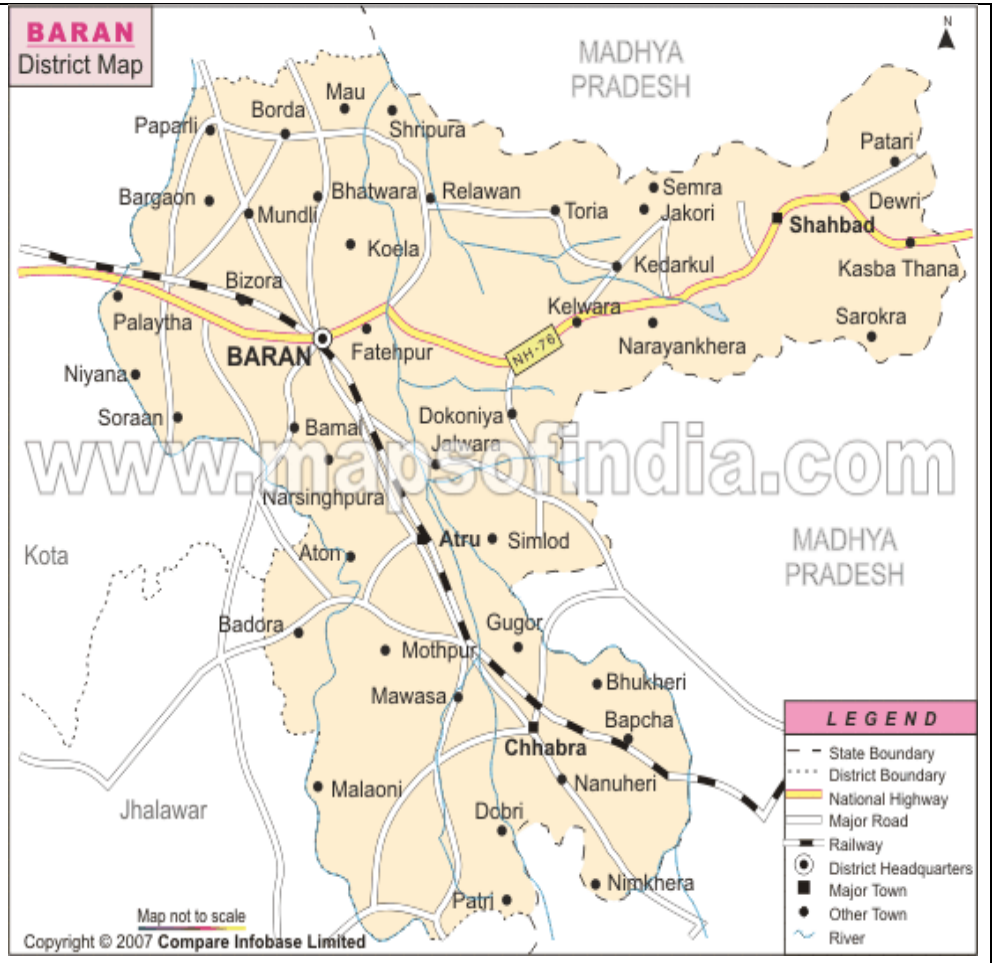
Table 2.2: Salient Details of ROB & Viaduct

Sl. No.	Items	Details
1	ROB portion	1 x 36.502 + 2x16.349
2	Viaducts spans on Baran end	10 x 18m + 1 x 16.90 m
3	Viaducts spans on Kota end	7 x 18m + 1x 16.90 m
4	Approach embankment with reinforced earth retaining walls along Kota end	175 m
5	Approach embankment with reinforced earth retaining walls along Baran end	200 m
6	Total length of ROB including Railway portion, viaducts span and Approach embankment etc	850 m
7	Vertical clearance over the railway tracks	7.3 m

Sl. No.	Items	Details
8	Gradient	3.333%
9	Width of Carriageway / Total width of ROB, viaducts and Approach embankment	7.5m/12.0m for main spans incl. ROB 7.5m/8.5m for viaducts & Approach embankment with RE walls
10	Footpath	1.5 m on either side for main span
11	Crash Barriers & Railing	Standard Railing as per MORTH Drawings.
12	Approaches	Approach embankment beyond viaduct spans with reinforced Earth retaining walls
13	Specification for Embankment a) Earth fill b) Sub-grade 500 mm c) G.S.B. d) WMM e) DBM f) BC	 Soil shall have fines of 75 micron not exceeding 10%. Sub- grade fill shall have CBR of 8% 250mm 280mm 115mm(65+50) 40mm
14	Wearing coat over concrete decking	40 mm B.C + 25 mm mastic asphalt.
15	Structural details of Railway portion & viaduct spans. (i) Railway Portion (Super-structure) PSC Pre-cast T- Beam and RCC cast in-situ Deck slab (ii) Via duct spans (Super-structure) PSC Pre-cast T- Beam and RCC cast in-situ Deck slab (iii) Sub-structure for Railway Portion and viaduct spans (iv) Foundations (v) Reference IRC Codes (vi) Seismic Zone (vii) Bearings (viii) Expansion joints	 1x36.502 + 2x16.349 10 x 18m + 1 x 16.90 m 7 x 18m + 1 x 16.90 m Solid rectangular with semicircular end Type Piers and rectangular pier cap 1000mm, dia piles of 15m depth with 1500mm thick pile cap. a) IRC – 5 – 1998 b) IRC – 6 – 2000 c) IRC – 18 – 2000 d) IRC – 21 – 2000 e) IRC – 37 - 2001 f) IRC – 78 – 2000 ZONE - II Elastomeric Bearings. Strip seal expansion joints
16	Service Roads	5.5 m wide service roads along with 1.5m footpath are proposed on all along the length of ROBs on either side except

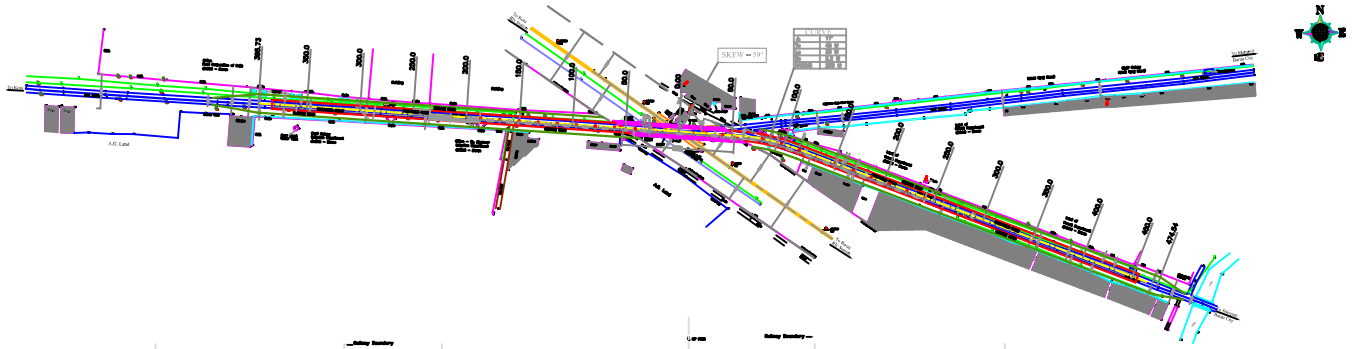
Sl. No.	Items	Details
		railway track portion.
17	Electrification	Provision has been made electrification of during night time to facilitate proper movement of traffic.
18	Shifting of utilities	Electric Post and Telephone Post have to be shifted to suitable location.
19	Diversion road	4.90 km diversion road
20	Drainage	Drainage spouts, drain pipes to be provided in ROB, viaduct & RE wall portion and box/pipe drains to be provided below footpath

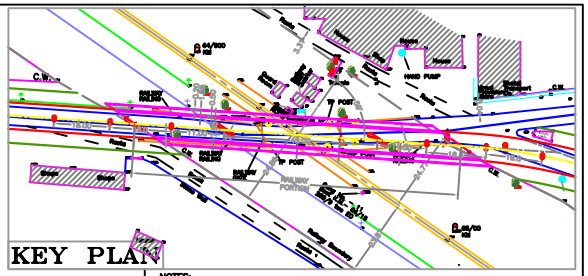
Fig 2.1: Location of the project area



Rajasthan Urban Sector Development Investment Program **ADB TA 4814-IND**	**Govt of Rajasthan** **Asian Development Bank**
Baran Regional Map	

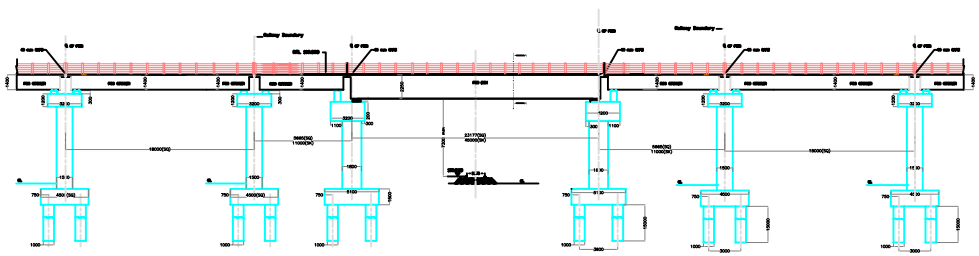
Fig 2.2: Proposed ROB at Baran



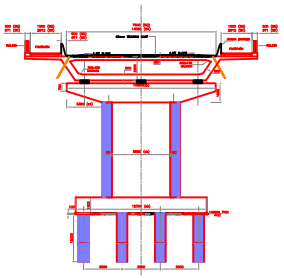


NOTES:

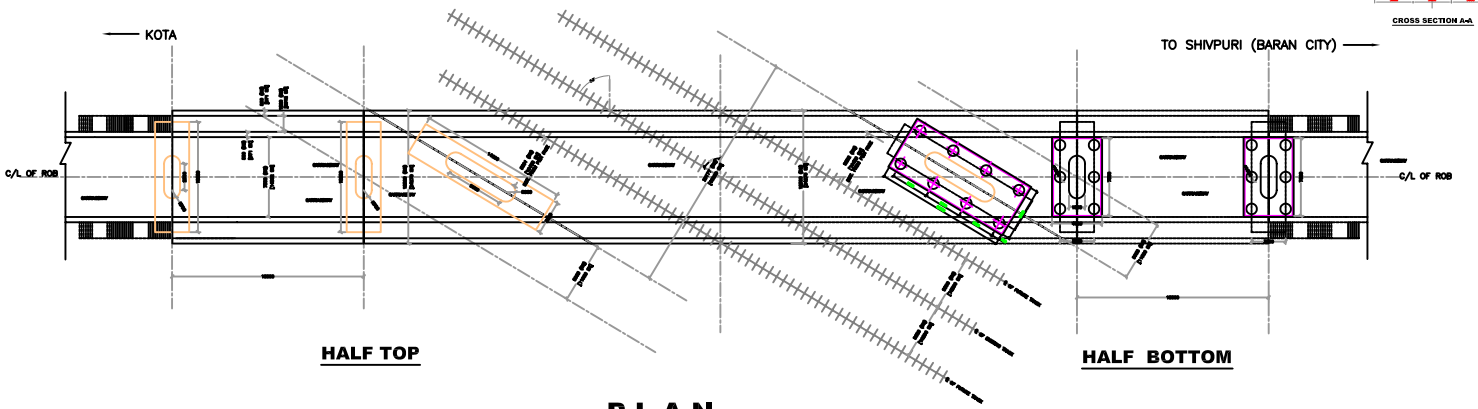
1. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS WHICH ARE IN METERS.NO DIMENSION SHALL BE SCALED FROM THE DRG. ONLY WRITTEN DIMENSION TO BE FOLLOWED.
2. DEPTH OF FOUNDATION SHOWN IN THE DRAWING IS TENTATIVE AND SHALL BE DECIDED ACCORDING TO THE NATURE OF SOIL MET WITH AT THE SITE.
3. DURING THE CONSTRUCTION EXISTING WORK SHOULD BE PROTECTED WITH APPROPRIATE PHASE WORK IF NECESSARY.
4. ALL RCC WORK SHALL CONFORM TO I.R.C 21_2000 SECTION III CODE OF PRACTICE FOR REINFORCED CEMENT CONCRETE ROAD BRIDGES.
5. ROAD LEVEL IS FIXED & CLEARANCE FROM RAIL LEVEL TO SOFFIT OF GIRDER IS ALSO FIXED AS PER EXISTING NORMS OF SCHEDULE OF DIMENSIONS.
6. CLEARANCE OF 7300 MM IS KEPT AS PER RAILWAY BOARD LETTER NO. ..... DT. .....
7. DIMENSIONS OF ALL THE ELEMENTS OF THE BRIDGE SHOWN IN THE DRAWING ARE PURELY TENTATIVE & WILL DEPEND UPON THE ACTUAL DESIGN& DRAWING OF R.O.B. SUBMITTED BY TENDERER &APPROVED BY RLYS.
8. STANDARD OF LOADING ONE LANES OF CLASS 70 R TRACKED LOADING OR WHEELED LOADING OR TWO LANE OF CLASS 'A' LOADING WHICHEVER IS SEVERE.
9. FOR THE DESIGN OF ELEMENTS OF R.O.B RELEVANT I.R.C CODES SHALL BE STRICTLY FOLLOWED.
10. ELASTOMERIC BEARING SHALL BE PROVIDED UNDER EACH RIB AS PER THE STIPULATIONS MADE IN I.R.C 83 (PART–II) 1987.
11. TEMPORARY ENGINEERING INDICATORS SHALL BE PROVIDED DURING THE EXECUTION OF WORK AS PER G.R.15.09(I)d &SR 15.09(2) .
12. DESIGN OF SUPER STRUCTURE i.e. VOIDED SLAB SHALL BE AS PER THE MORT &H SPECIFICATIONS.
13. CARRIAGEWAY WIDTH AND TOTAL WIDTH OF DECK AS SHOWN IN PLAN IS AS PER IRC CODE/ MORTH SPECIFICATION.
14. RAILWAY LAND BOUNDARY & PROPOSED DIVERSION ARE SHOWN IN DWG.
15. ALL PROTECTION WORK FOR THE SAFETY OF RUNNING TRACK IN CONNECTION WITH EXCAVATION OF FOUNDATION SHALL BE PROVIDED BY THE CONTRACTOR DURING EXCAVATION.
16. CRASH BARRIERS WILL BE PROVIDED AS PER DRG NO.CE(W)12250/2–D(1). OR AS PER MORT &H STANDARD DRAWING.
17. SINCE THE R.O.B IS CONSTRUCTED IN LIEU OF L.C. NO. 37 AT NH–76 HENCE AFTER OPENING OF R.O.B THIS L.C. SHALL BE CLOSED.
18. PRESTRESSING STEEL SHALL BE H.T.S. STRANDS CLASS 2 CONFORMING TO IS:14268–1995.
19. SANCTION OF C.R.S, MUMBAI SHALL BE OBTAINED FOR PROPOSED WORK.
20. PROVISION OF CLAMPS IN SUPER STRUCTURE FOR SUPPORTING THE AC TRACTION WIRE SHALL BE MADE IN CONSULTATION WITH CONCERNED DEPT.
21. SUITABLE UTILITY DUCTS SHALL BE PROVIDED BELOW THE EITHER SIDE OF FOOTPATH.
22. FOR DETAILS OF DRAINAGE SPOUT WEARING COURSE & EXPANSION JOINTS. REFER MOST'S STD DRAWING NO. SD/303.
23. TENTATIVELY CONTROLLED CONC. MIX. FOR PROPOSED WORK ARE AS UNDER:
    (1) PILE, PILE CAP, PIER,PIER CAP = M:35
    (2) VOIDED SLAB = M:40
24. IT SHALL BE ENSURED THAT REPRESENTATION FOR SIGNAL & TELECOM DEPT. ARE MADE AVAILABLE BEFORE THE WORK IS COMMENCED IN THE VICINITY OF SIGNALLING & FOR TELECOM CABLE.
25. APPROACH GRADIENT SHOWN IN THIS DRAWING ARE TENTATIVE AND WILL BE AS PER SITE CONDITION.
26. CRS. OF PILES SHOWN IN THIS DRAWING ARE TENTATIVE SHALL BE AS PER FINAL DESIGN &DWG HOWEVER IT SHALL NOT BE LESS THAN THE SPACING STIPULATED IN CLAUSE 5.6 OF I.S.2911,PART I SEC 2:1979
27. NO PLASTERING CEMENT WASH PROTECTIVE COATING OVER THE CONCRETE IS PERMITTED ANY BAD WORK WILL QUALITY SUMMARY REJECTION OF MEMBER/ELEMENT.



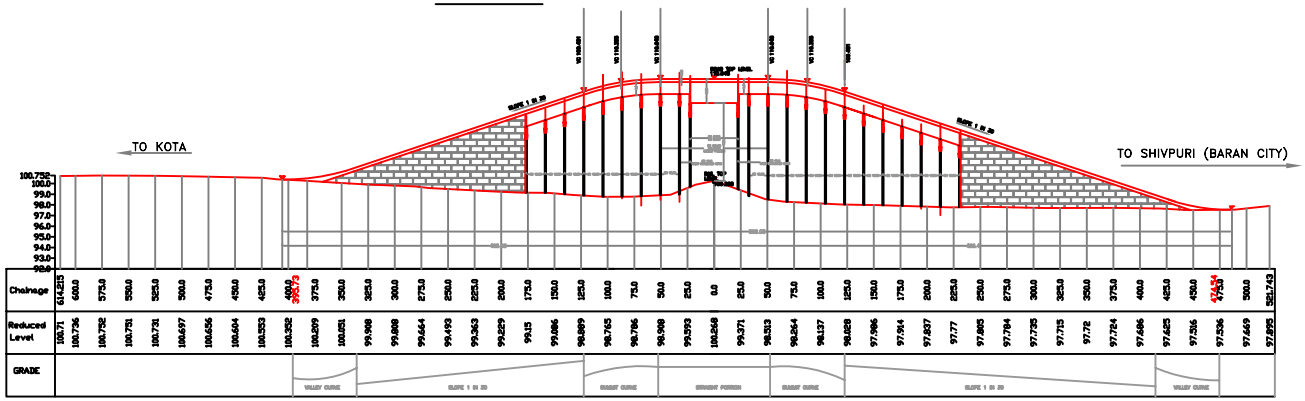
LONGITUDINAL SECTION ALONG CARRIAGEWAY



CROSS SECTION A-A



PLAN



Vertical Alignment

L–SECTION ALONG CENTRE LINE OF CARRIAGEWAY

PLAN SHOWING THE PROPOSED 3x18.03m(SK 59.00°) ROAD OVER BRIDGE IN LIEU OF L. C. NO.37 AT NH 76 ON KOTA-BARAN-SHIVPURI ROAD

III. DESCRIPTION OF THE ENVIRONMENT

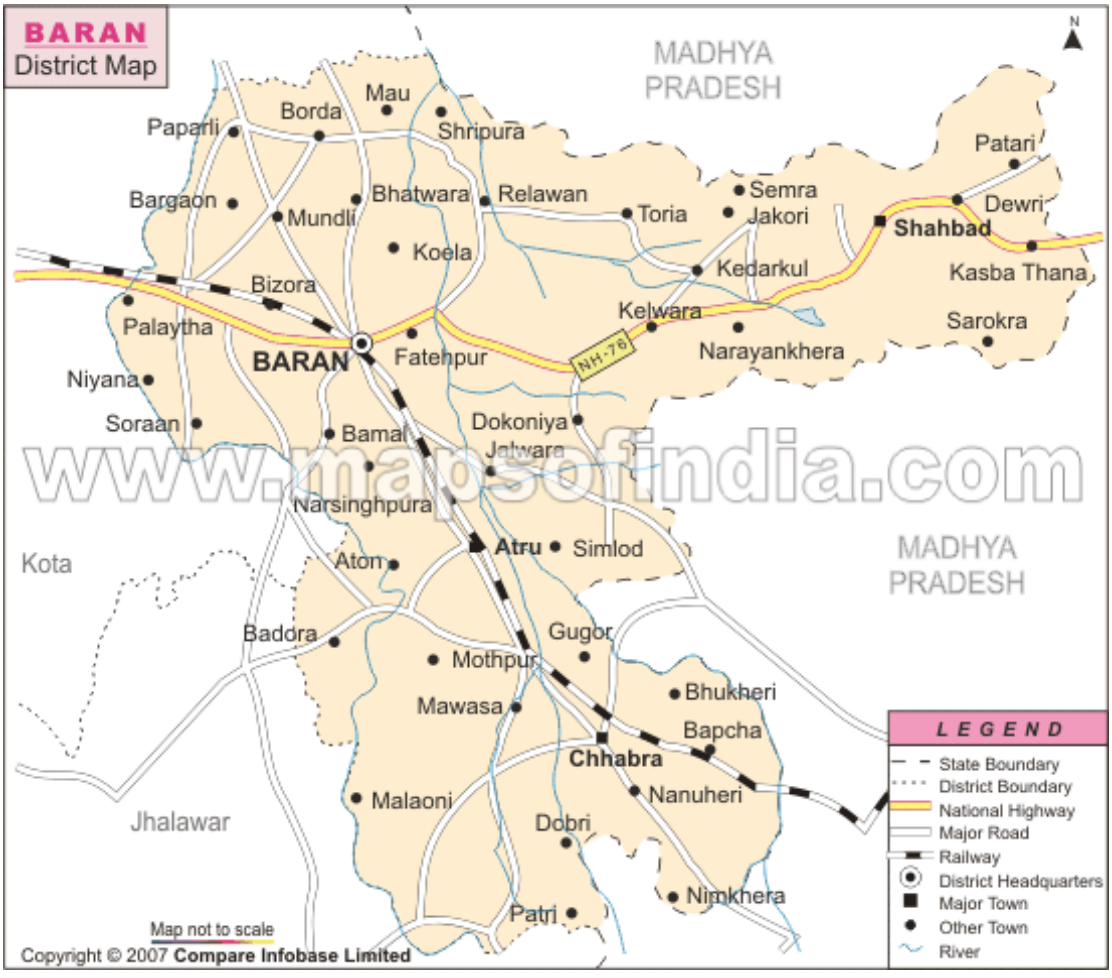
A. Physical Resources

1. Location

26. Baran-Chabbra Local Planning Area (LPA) located in Baran District (in the southeast part of Rajasthan) comprises the two Municipal Boards of Baran and Chabbra situated approximately 59 km apart with their municipal boundaries meeting at one point. Viewed as one LPA, Baran -Chabbra is located approximately 126 km from Divisional Headquarter Kota. The two municipalities are well connected by Kota-Bina Railway line which was established on 1906. The town is well connected by road and railway and linked with other city by the NH-76 (Pindwara-Kota-Baran-Shivapuri) and SH-19 (Indergarh-Mangrol-Jhalawar-Dag Agra). Banganga River flows to the north of the Baran town and joins the river Parvan, a tributary of the River Chambal and Chabbra is situated in the bank of Renuka River.

27. The town has been growing as the commercial centre in the region. A Gas Thermal Power Plant is situated at Anta, 22 km west of Baran town. **Figure 3.1** shows the regional setting of the Baran-Chabbra LPA. Baran -Chabbra are part of the Hadoti region, a famous heritage tourism destination comprising of Gugor Fort which is believed as 800 years old, Kula Devi Mataji and Nageswar Shiv Mandir.

Figure 3.1: District map of Baran



28. The general statistic of the Baran District is tabulated in the **Table 3.1**

Table 3.1: Some important features of district Baran

Parameters / Particulars	
Sub division	Baran, Chabbra, Shahabad, Kishangang, Atru, Mangrol
Tehsils	Baran, Anta, Chhipabarod Chabbra, Shahabad, Kishangang, Atru, Mangrol
Sub Tehsils	Kelwara
Panchayat Samities	Baran, Anta, Chhipabarod Chabbra, Shahabad, Kishangang, Atrul
Municipalities	Baran, Chabbra, Anta, Mangrol
Gram Panchayats	215 nos.
Villages having water supply	1069 nos.
Major source of water supply	Dams at Hikar, tubewell, Handpumps
Parliamentary Constitution	Kota- Baran AssemblyKota Jhalawar- Chabbra, Kishangang, Atru,
Assembly Constitution	Baran, Chabbra, Kishangang, Atru

2. Topography, Drainage, Natural hazard and Drought

29. ***Topography:*** Baran lies between the East longitude 76^{o} 31' E and North latitude 25^{o} 60' N and also known as 'Annapurna Nagri'. It is situated at the north-West of Baran District at 260 meters above MSL. Baran Municipal Council is situated nearer to SH-19 and NH-76. A Broad gauge line from Kota to Guna is also connecting the town to various major towns of Rajasthan. Town is situated at a distance of 67 Km. from Kota by Rail nearest Air port is at Kota where commercial craft is not available. Banganga River flows to the north of the town and joins the river Parvan, a tributary of river Chambal. Chabbra is located between the East longitude 77^{o} 02' E and North latitude 24^{o} 39' N. It is situated at the South-east portion of Baran District at 260 meters above MSL

30. ***Drainage:*** The land slopes gently northward from the high table land of Malwa in MP. It is well watered, drained by rivers flowing in North and North-Eastern directions. There are hills in the south, north and eastern portion of the district and it is gently fertile. There are hills in the east Shahabad Tehsil, having the highest point, named as Mamooni, which is 546 m above mean sea level. These hills are the part of Aravali Ranges.

31. ***Natural Hazards***- Earthquake**:** Baran - Chabbra town lies in low damage risk zone II. The area is less prone to earthquakes as it is located on comparatively stable geological plains based on evaluation of the available earthquake zone information. **Figure 3.2** depicts the earthquake zones of Rajasthan. **Figure 3.3** shows natural hazard zones of the Baran district.

32. ***Drought:*** Low rainfall coupled with erratic behavior of the monsoon in the State makes Rajasthan the most vulnerable to drought. Based upon the discussion with PHED officials the water table in the City continuously decreases by 1-2 meter on an annual basis combined with significant drawdown conditions.

Figure 3.2: Earthquake zones of Rajasthan

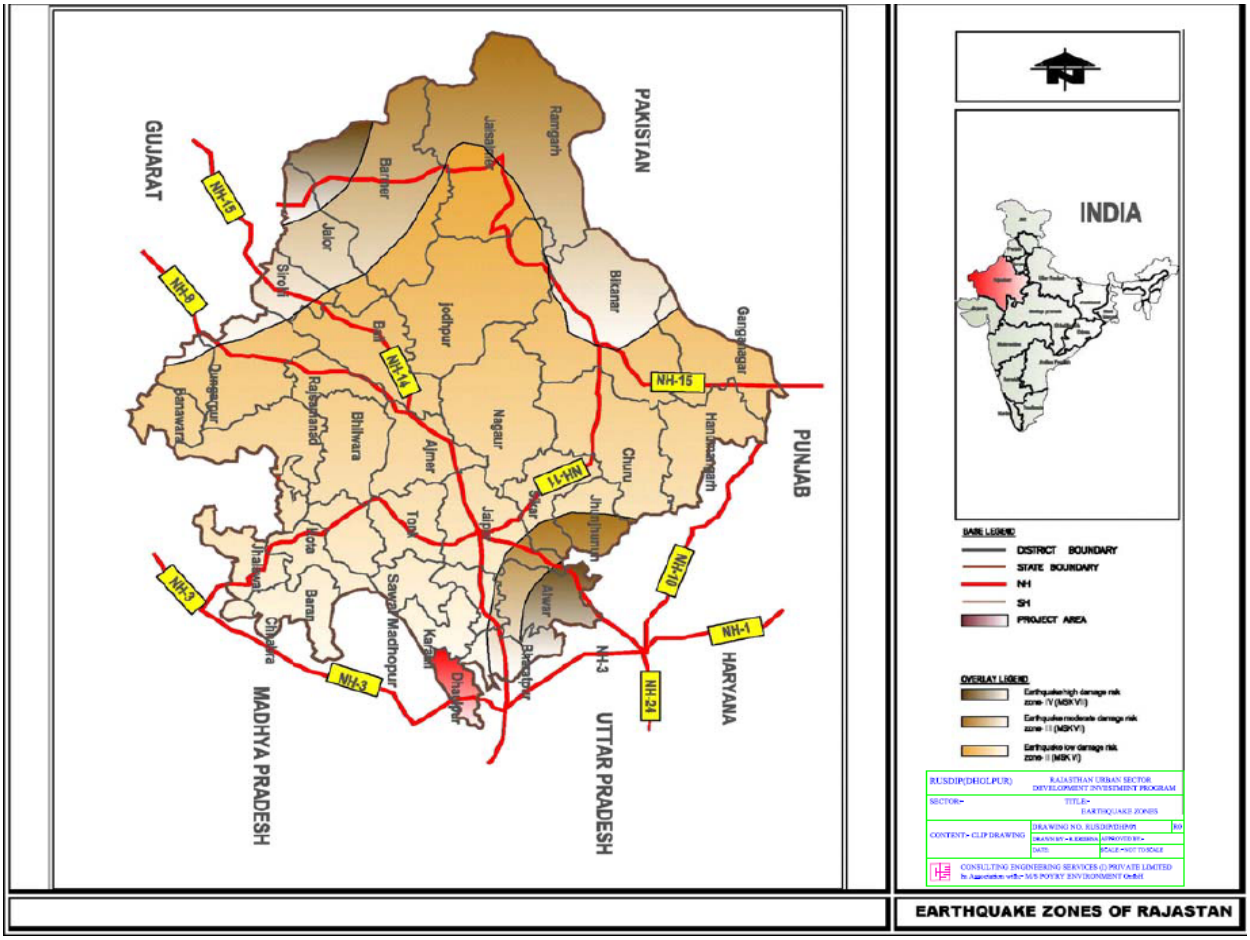
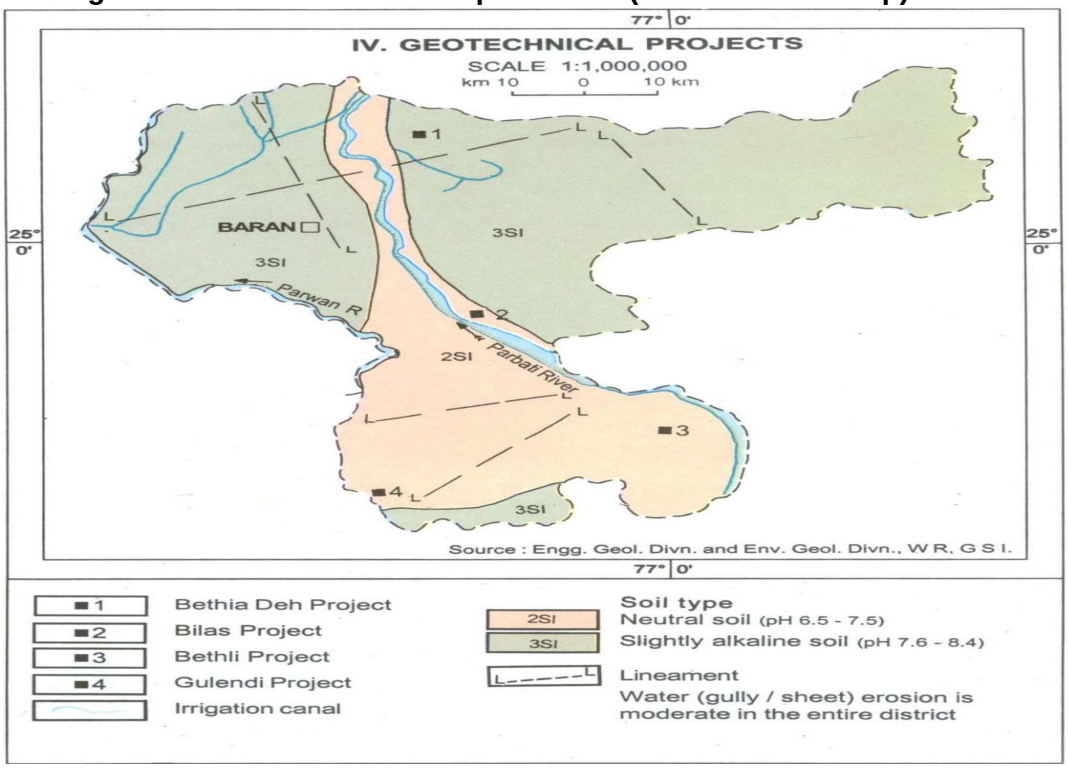


Figure 3.3: Natural Hazard map of Baran (GSI Resource map)



3. Geology, geomorphology, mineral resources and soil

33. Major part of Baran district is occupied by Shale-Sandstone –limestone sequences belonging to the Vidhyan SuperGroup and the Deccan. The oldest rock type belonging to the Vindhyan Super Group .These are Classified in to the Rewa and Bhander Groups. This is conformably overlain by the Bhander Group comprising Ganurgarh Shale Bundi Hill. Of these the Bundi Hill Sandstone and the Sirbu Shale Formations in ascending order of succession. Younger alluvium is found along the present day flood plains of the rivers, supports extensive cultivation.

34. *Mineral Resources:* Baran district is endowed with bauxite, clay and building stone. Bauxite occurs near Majola. In Mamoni area reserves of 0.5 millions tonnes of bauxite averaging 49.54 % AO, 5 % SiO, 31.1 % FeO and 6.99 % TiO are found. The length and width of deposit are 1400 m and 450 m, respectively .The thickness varies from 3 to 15 m. The Vindhyan sandstones form good building stone which are sold under the trade name “Kota stone”

35. Geology and mineral map of the district is shown in **Figure 3,4** and geomorphologic map of the district is depicted in **Figure 3.5.**

Figure 3.4: Geology and Mineral map of Baran district (Source: GSI Resource map)

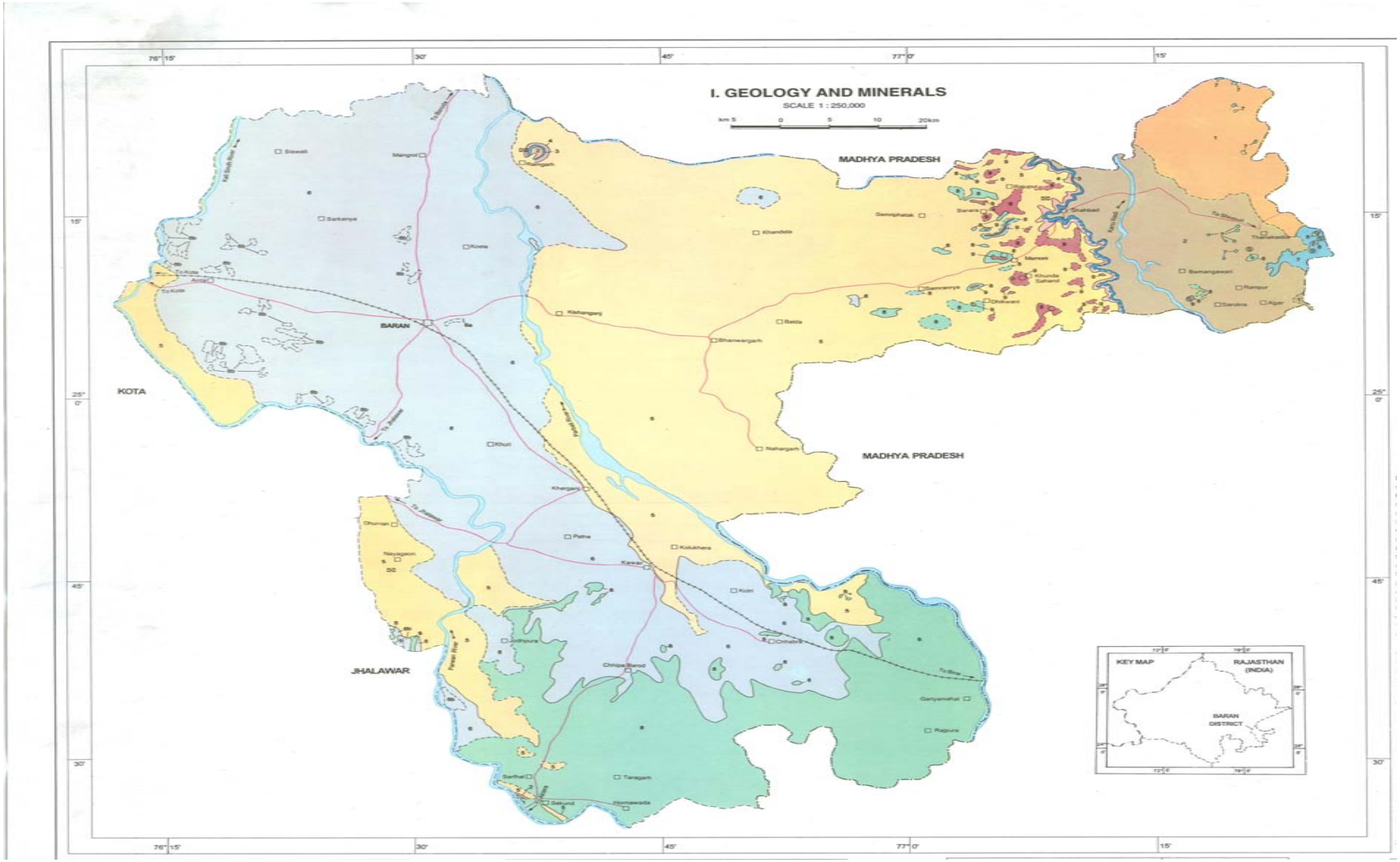
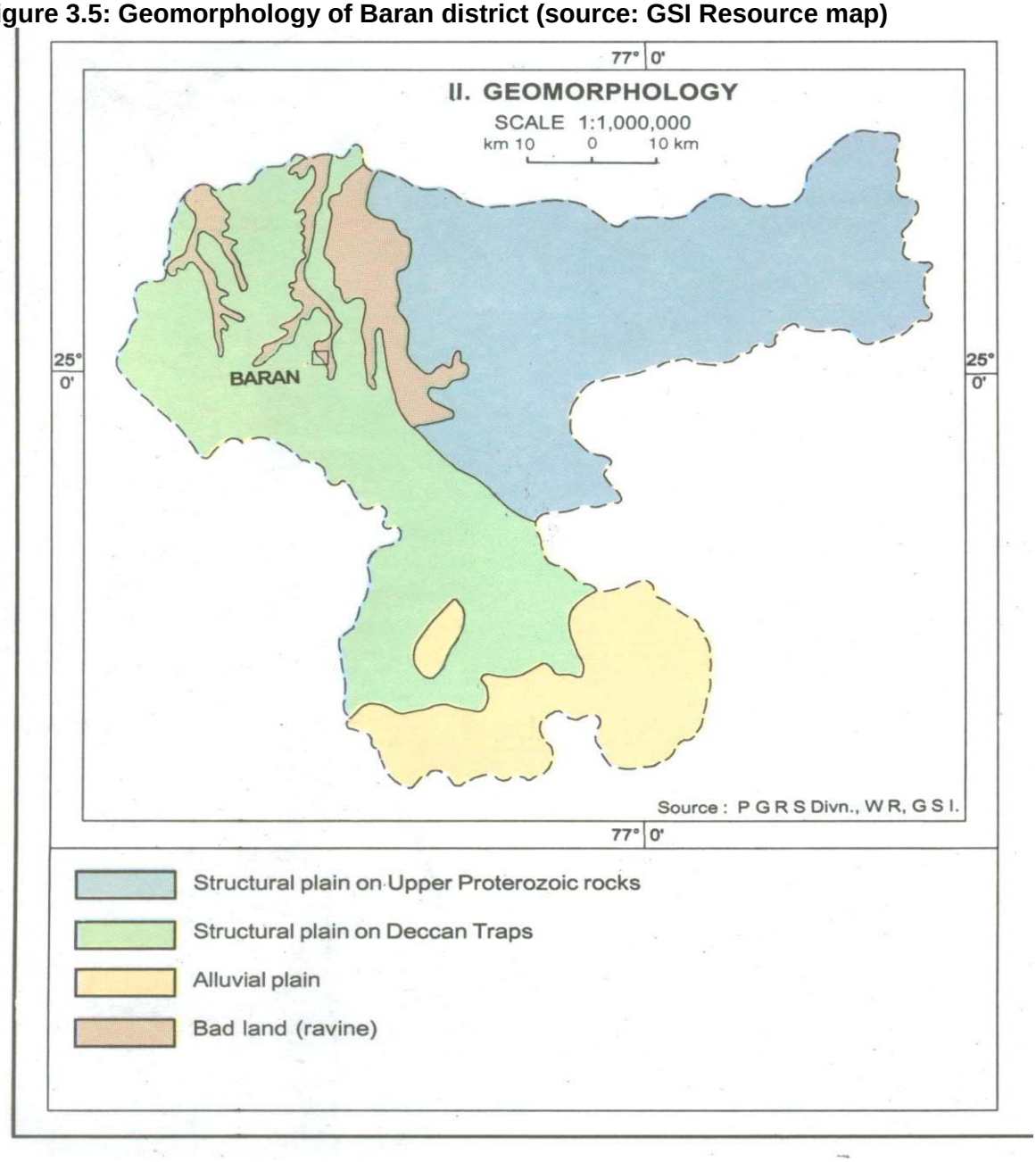


Figure 3.5: Geomorphology of Baran district (source: GSI Resource map)



36. *Soil characteristics:* Soil of the region falls within low rainfall zone of 650- 1000 mm. The soils are black of alluvial origin, clay loam and groundwater salinity is reported. **Table 3.2** shows nutrient level in the Baran soil including area coverage of saline and sodic soil. The nutrient status of the Baran soil is graded as medium to high level.

Table 3.2: Fertility status – major nutrients and problematic soils of Baran district

	Nutrient status			Saline Soil(Ha)	Sodic or Alkali(Ha)
	N	P	K		
Status	Medium	Medium	High	1008	1584

(Source: Vital Agricultural Statistics 2004-05, Directorate of Agriculture, Rajasthan)

4. Climate

37. The mean daily maximum temperature of Baran is 42.6 degrees Celsius. The mean daily minimum temperature is 29.7 degrees celsius. The area experiences a humid climate and the annual rain fall is 882 mm.

38. The rainfall over Baran-Chabbra is moderate and is concentrated over four month i.e. from June to September. The rains are erratic and so is the distribution of the rainfall. However agriculture and the animal wealth are dependent on rains to large extent. The Average rain falls for both the towns of last 18 years are as tabulated in the **Table 3.3.**

39. Seasonal Rainfall data for the recent year (2005-2006) is shown in **Table 3.4. Figure 3.6** shows yearly variation (1997-2007) of rainfall at Baran and Chabbra.

Table 3.3: 18 years Rainfall data for both the town

Year	Av. Rainfall in mm for Baran	Av. Rainfall in mm for Chabbra
1990	777.0	1203.0
1991	1046.8	943.6
1992	605.4	720.0
1993	631.0	1216.0
1994	989.6	1125.0
1995	723.0	1135.0
1996	797.0	1277.0
1997	691.0	1116.0
1998	645.0	956.8
1999	782.0	869.0
2000	860.0	928.0
2001	868.0	751.0
2002	254.0	440.5
2003	571.0	994.0
2004	768.0	994.0
2005	923.5	864.0
2006	925.4	887.0
2007	613.0	749.0

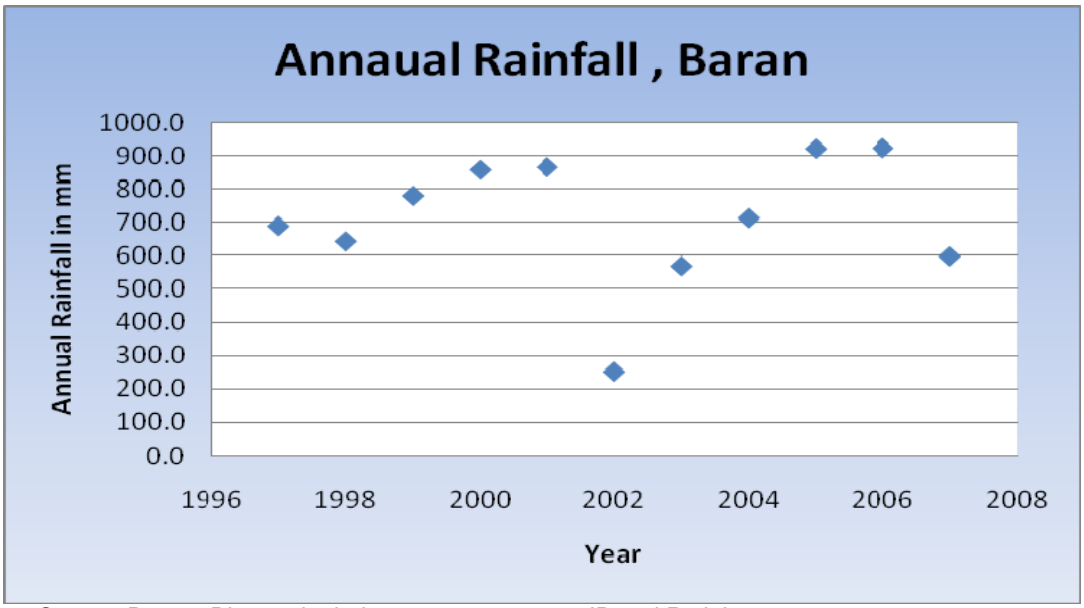
Source: Collectorate Land Record Section

Table 3.4: Rainfall at Baran in recent years (2005-06)

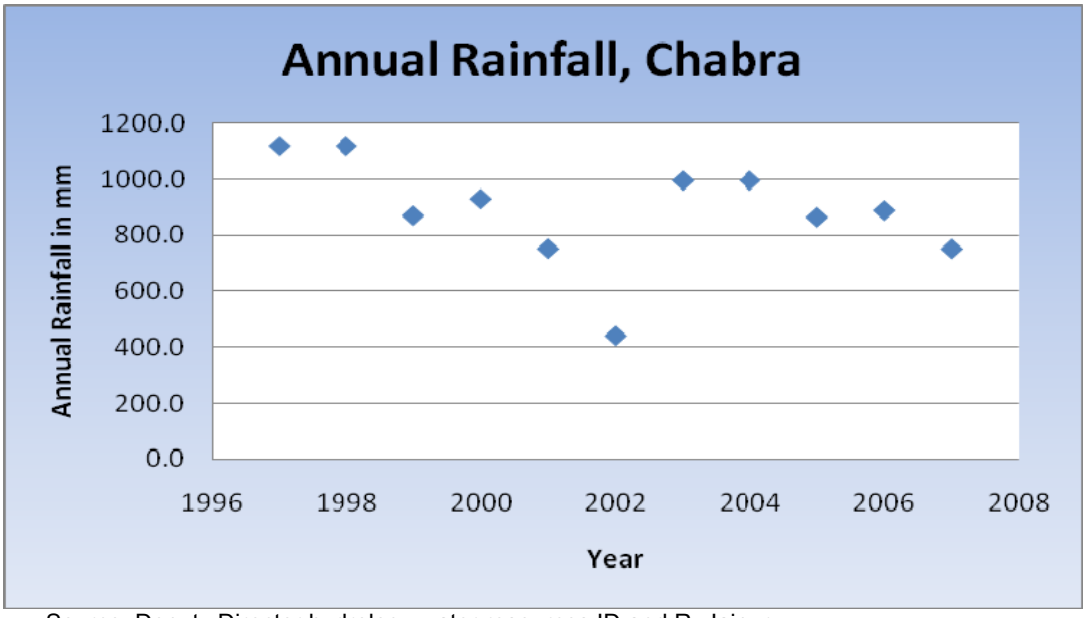
	Months	Rainfall (mm)
1	June	51.8
2	July	441.6
3	August	93.8
4	September	607.4
5	October	0
6	November	0
7	December	0
8	January	0
9	February	0
10	March	31.4
11	April	0
12	May	33.6
13	**Monsoon Rainfall**	**1194.6**
14	**Non monsoon rainfall**	**65.0**
15	**Annual Rainfall**	**1259.6**

(Source: Irrigation Department, Govt. of Rajasthan)

Figure 3.6: Rainfall at Baran and Chabbra during 1997 to 2007.



Source: Deputy Director hydrology water resources ID and R, Jaipur



Source: Deputy Director hydrology water resources ID and R, Jaipur

5. Air Quality

40. There are no data on ambient air quality of Baran and Chabbra Town, which is not subject to monitoring by the Rajasthan State Pollution Control Board (RPCB) as there are no major industries. The nearest station is located at Kota (73 km from Baran). Traffic is the significant pollutant in Baran -Chabbra, so levels of oxides of sulphur and nitrogen are likely to be well within the National Ambient Air Quality Standards (NAAQS). The ambient air quality data is depicted in **Table 3.5.**

Table 3.5: Ambient Air Quality in Kota (Annual Average, 2004; units in µg/m3)

Monitoring Station	Land use	SOx	NOx	RSPM	SPM
Kota Residential, Rural and others area	Residential	7.95	22.85	121	272

Monitoring Station	Land use	SOx	NOx	RSPM	SPM
NAAQ Standard	Residential	60	60	60	140
Kota Industrial area	Industrial	9.66	24.21	132	323
NAAQ Standard	Industrial	80	80	120	360

RSPM: Respirable Suspended Particulate Matter; SPM: Suspended Particulate Matter
Source: Annual Report 2005-2006 Rajasthan State Pollution Control Board

6. Surface Water

41. There is no water quality monitoring station at Baran and Chabbra. It is expected that during monsoon season the water quality will be deteriorated by large volume suspended solid.

7. Geohydrology and Groundwater

42. There are number of National Hydrographic monitoring stations of Central Ground Water Board in and around Baran. Fluctuation of ground water level is shown in **Table 3.6.** In most of the cases ground water table ranged between 2 - 10 m bgl.

Table 3.6: Number and Percentage of National Hydograph Network Station (Baran) with water fluctuation range

Period	No of wells analysed	Range		0-2 m		2-5 m		5-10m		10-20m		20-60m		>60 m	
		Min	Max	No	%	No	%	No	%	No	%	No	%	No	%
Jan-06	20	1.21	46.16	1	5	5	25	10	50	3	15	1	5	0	0
Nov-05	20	1.39	39.06	1	5	10	50	6	30	2	10	1	5	0	0
Aug-05	22	0.65	43.2	4	18.18	9	40.91	5	22.73	3	13.64	1	4.55	0	0
May-05	15	3.1	55.5	0	0	3	20	6	40	3	20	3	20	0	0

Source: Ground water year book 2005-06 Rajasthan, Central Ground Water Board, Jaipur (2007)

The Central Ground Water Board carried out chemical testing of tube well water seasonally. The average concentrations of major constituents are shown in **Table 3.7**. Geohydrological map of the district is shown in **Figure 3.7**.

Table 3.7: Ground Water Quality in and around Baran

Parameters	Maximum Level	Minimum Level	Standard of Drinking water (IS: 10500: 1991)	
			Desirable limit (mg/l)	Maximum Permissible limit (mg/l)
pH	8.03	7.7		
EC (micro-mhos/cm at 25 °C)	2800	640		
Cl (mg/l)	178	21	250	1000
SO_4(mg/l)	1038	12	200	400 (if Mg does not exceeds 30 ppm)
NO_3(mg/l)	47	0	-	100
PO_4(mg/l)	0.25	0.1		
Total Hardness(mg/l)	1040	230	300	600
Ca(mg/l)	120	44	75	200

Parameters	Maximum Level	Minimum Level	Standard of Drinking water (IS: 10500: 1991)	
			Desirable limit (mg/l)	Maximum Permissible limit (mg/l)
Mg(mg/l)	180	24	30	100
Na(mg/l)	235	44	-	-
K(mg/l)	20	1.6	-	-
F(mg/l)	1.3	0.65	1.0	1.5
Fe(mg/l)	7.8	0.14	0.3	1.0
SiO_2(mg/l)	30	12		
TDS (mg/l)	1820	416	500	2000

Note: Total –9 nos. samples
Source: Ground water year book 2005-06 Rajasthan, Central Ground Water Board, Jaipur (2007)

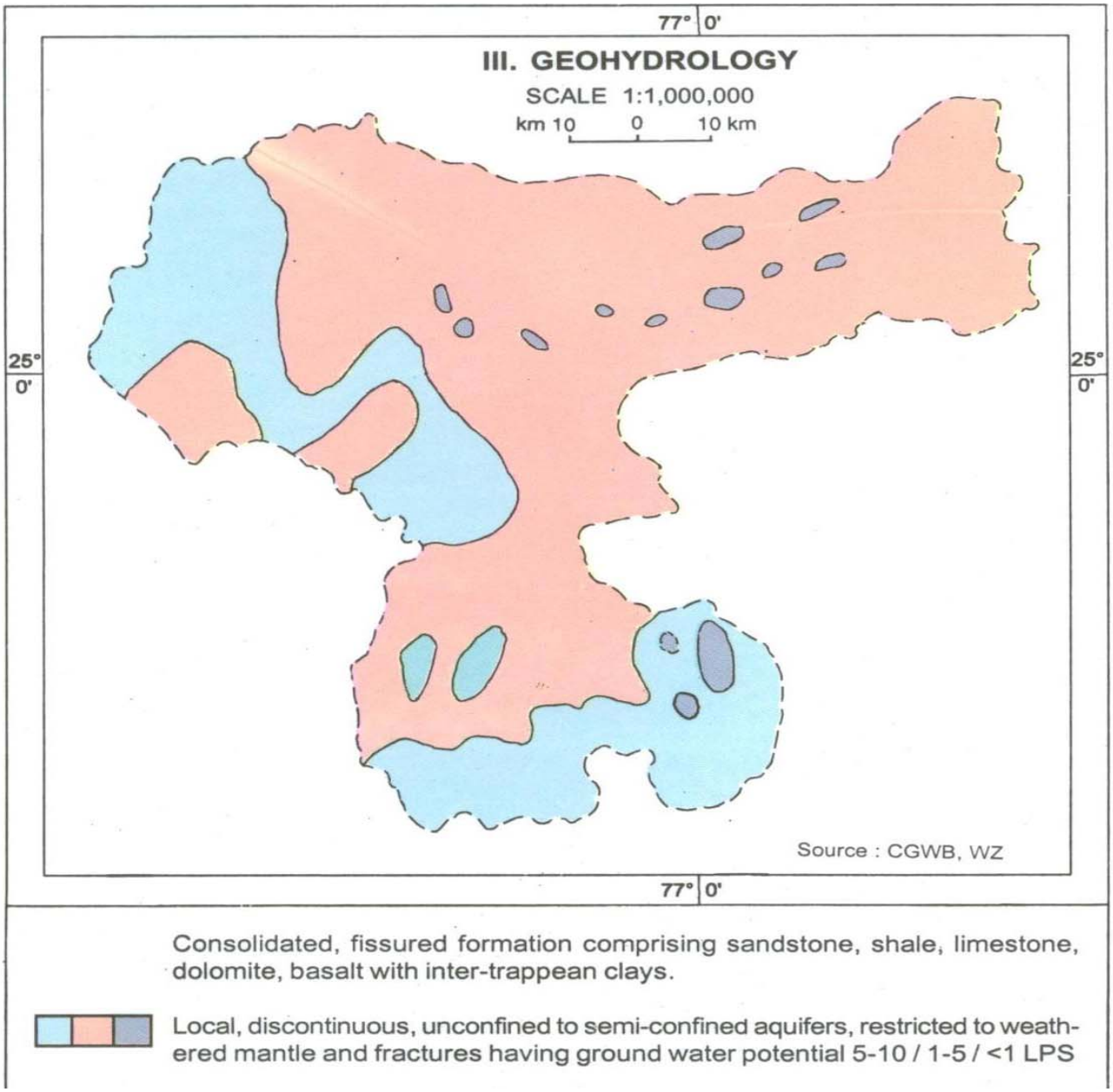
43. Supply water quality as measured by Public Health dept. is shown below. It is noted that ground water contains high level of TDS.

Table 3.8: Present supply water quality at Baran

Total supply per day (lac liter)	Type of Sources Surface / Ground	Ground	Surface	No. of CWR	No. of SR	F^- Min	F^- Max	TDS Min	TDS Max	NO_3^- Min	NO_3^- Max
55.2	**Both (G:S 2:9)**	**2.0**	**9**	**5**	**8**	**0.37**	**0.6**	**296**	**1140**	**4**	**12**

(All values in mg/l unless stated otherwise)

Figure 3.7: Geohydrological map of the Baran district (Source: GSI Resource map)



B Ecological Resources

44. FLORA: This region or province or division in botanical terms, supports good teak forests which, however, been under heavy biotic pressure .Another dominant species is mahuwa. Among other common constituent species are sadad, baheda, dhonkra, and dhav.

45. FAUNA: In Baran district , the wild animals found are striped Hyaena (Hyaena) , jackal (*Canis aureus*) , Baghera (*Panther pardus*) , Monkey (*Macaca mulatta*) , Common Mongoose (*Herpestes edwardsii*) , Indian Fox (*Vulpes bengalensis*) , Blue Bull (*Boselaphus tragocamelus*) etc.

Shergarh wildlife Sanctuary:

The vegetation comprises mixed miscellaneous forests with kaldhi, salar, dhaura, khair etc

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

C. Economic Development

47. Baran, as a district head quarter, has a special administrative status and is a resourced rich region. It continues to be the main regional center for trade and commerce and various socio-economic activities, since major portion of near by Tehsils are irrigated by Chambal Canal System which sourced at Kota and reached to Madhya Pradesh.

48. According to the Census of 1991, the work force participation ratio in Baran is 27.60 percent, which is equal to as for Kota (27.6%) and Jaipur (27.0%) and marginal lower than Udaipur (28.0) and more than the state of Rajasthan (26.6%). **Table 3.9** shows the details of work force participation of Baran. However, as per census 2001, in the Baran town the work force amounts of 22,330 persons out of which main workers 25.13% (19,136) and marginal workers 6.20% (3,194). Categories of workers are as cultivators of 479 nos., Agricultural labors of 342 nos., household industries workers of 2,065 nos. and other workers of19,444 nos.

49. According to the Census of 2001, the work force participation ratio in Chabbra is 31.79 percent, as for Kota (27.6%) and Jaipur (27.0%) and marginal lower than Udaipur (28.0) and more than the state of Rajasthan (26.6%). **Table 3.10** shows the details of work force participation of Chabbra.

Table 3.9: Work Force Participation Rate in Baran

Sector	1991			2001		
	No. of Worker	% to total Worker	% to total Population	No. of Worker	% to total Worker	% to total Population
Primary	1643	10.31	2.85	1445	1.98	1.84
Secondary	4280	26.86	7.42	2757	3.78	3.5
Tertiary	10010	62.83	17.34	68699	94.24	87.33
Total	**15933**	**100.00**	**27.60**	**72901**	**100**	**92.67**

Source: Census of India and Baran Statistical Outline (1980, 1987, 2000, 2004).

Table 3.10: Work Force Participation Rate in Chabbra

Sector	1991			2001		
	No. of Worker	% to total Worker	% to total Population	No. of Worker	% to total Worker	% to total Population
Primary	759	17.37	4.63	762	10.51	3.34
Secondary	735	16.82	4.49	890	12.28	3.90
Tertiary	2,876	65.81	17.55	5595	77.20	24.54
Total	**4,370**	**100.00**	**26.67**	**7247**	**100**	**34.79**

50. Growth of industries and the employment generation of Baran district is furnished in **Table 3.11.**

Table 3.11: The Growth of industries and employment generation of Baran District

Sl. No. / Year	Year	No. of registered Units	Employment
1	1991-92	82	262
2	1992-93	137	418
3	1993-94	188	550
4	1994-95	239	653
5	1995-96	299	797
6	1996-97	375	1085
7	1997-98	468	1330
8	1998-99	576	1799
9	1999-2000	692	2145
10	2000-01	917	2660
11	2001-02	1045	2998
12	2002-03	1174	3316
13	2003-04	1315	3698

Source: District Industries office, Kota

51. **Power status of the area:** There is one power generating unit at Baran. The consumption of electricity by different sectors is shown in Table below.

Table 3.12: Consumption of Electricity in Million Kwh (2003-04)

District	Domestic	Non-Domestic (Commercial)	Industrial	Public Lighting	Public Water Works	District	Domestic
			Small	Medium	Large		
Baran	26.558	6.486	3.12	1.116	6.14	0.852	5.531

1. Land use

52. First Master plan for Baran was prepared in 1988 for 20 years (1988-2001) with land use classification under 7 categories. The draft master plan was notified on 20th December, 1991 for public objections and suggestions. Finally, the Govt. approved the Master Plan per Section 6(3) of Rajasthan Urban Improvement Act, 1959 and notified under section 7 of the said Act in 1993 with a plan period of 20 years assuming that the city population in the year 2011 will increase 1.30 lakhs. The master plan highlighted 200 registered industrial units in Baran employing about 900 workers in 1988. Development around the present area and a separate industrial township between Baran-Shahabad and Baran-Atru state highway has also been envisaged to provide for about 9300 person in the year 2011.

53. **Table 3.13** shows Land use of Baran urban area. **Figure 3.8** indicates proportion of lane use of Baran in the year 2001. **Figure 3.9** shows land use of Baran district as a whole.

54. However the Master plan for Chabbra is a long term proposal envisaged to ensure prospective planning in order to enhance the growth rate of the town through the phased development to be implemented under RUSDIP. As reported, town planning department at Kota had conducted various physical and socio-economic surveys towards the preparation of master plan.

3.13: Baran UA Existing Land Use Pattern

Land Use	1988		2001	
	Area in acres	% of developed area	Area in acres	% of developed area
Residential	330	40.59	1300	44.37
Commercial	110	13.53	220	7.51
Industrial	17	2.09	190	6.48
Government	17	2.09	150	5.12
Recreation	35	4.31	380	12.97
Public/Semi Public	130	15.99	350	11.95
Circulation/Transport	174	21.40	340	11.60
Total Area	**813**	**100.0**	**12,500**	**100.00**

Source: Baran Master Plan, 2001.

Figure 3.8: Land use proportion for Baran Urban area - 2001

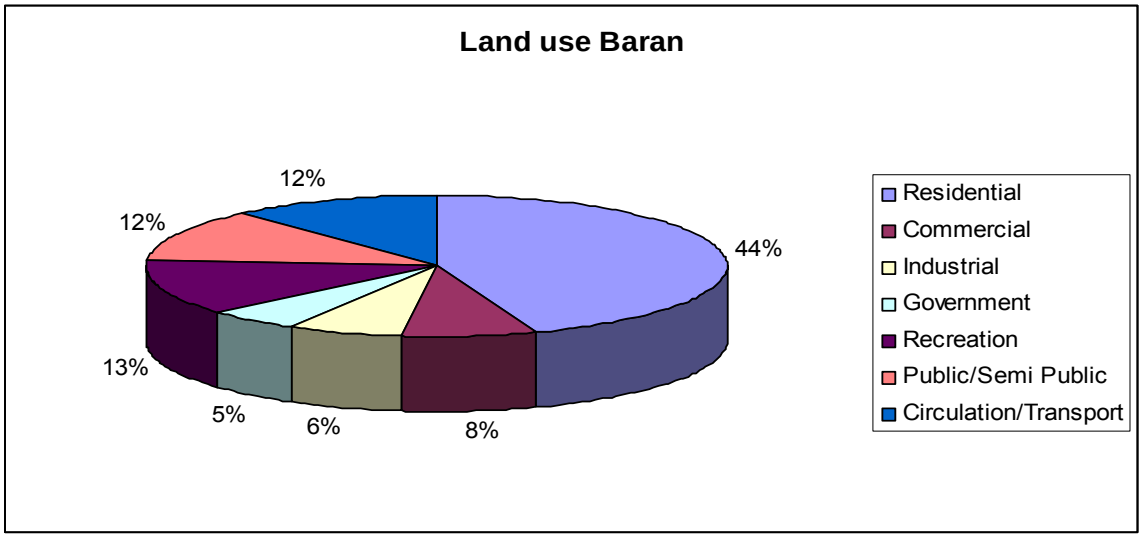
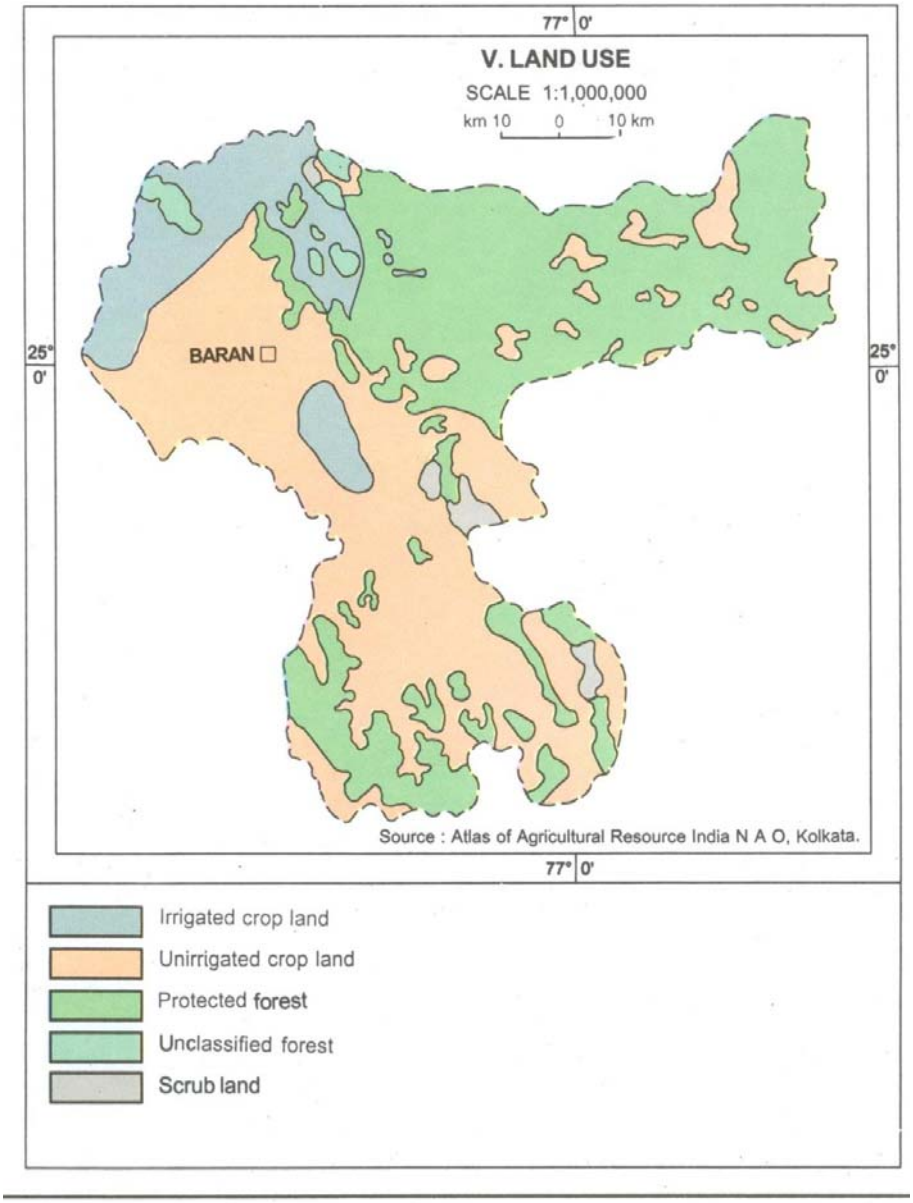


Figure 3.9: Land use of Baran district (Source: GSI Resource map)



55. Chainage wise land use in and around the sub –project site is shown in **Appendix 2.** It is noted that along the ROB, the major land use is commercial/ residential. Some sensitive zones like hospital, water body are exists along the proposed ROB. There is no major impact anticipated on residential areas and religious places.

56. The proposed ROB may not have significant impact in the existing environmental and it will ease the traffic and leads to free flow of traffic in future.

57. Hospital buildings present at chainage 200-250 and 325-375. Necessary provisions shall be worked out during construction phase to avoid noise and dust pollution particularly at this stretch.

Table 3.14: From Level Crossing to Towards Kota Side

S.No.	Chainage wise *in Mts.*	Remarks
1	0-25 25-50	Open plot and BT road joins at 0-25 chainage from left side.
2	50-100	Presence of few shops and open plots
3	100-125	Manihara pond is approximately 200-250 mts away.
4	125-275	Irrigation Dept. Campus
5	275-300	Presence of shops
6	300-400	Presence of few shops and mostly vacant lands

58. A small pond (Manihara pond) located approximately 200 mts away from the RoW and it is used for recreational aspects. A park, developed near the pond and the Shiva temple attracts many people. Necessary provisions shall be worked out during construction phase to check contamination of surface water.

2. Commerce, Industry and Agriculture

59. Baran being the headquarters for District, performs all administrative functions. Traditionally, Baran is a commercial town and the main occupation of the people is agriculture and commercial. The development and expansion of the town took place outside the old town when the Kota-Bina Railway line established in 1906. With the establishment of railway line, gradually different institutions and establishment inflow to the town. All these activities led to residential development to a considerable extend followed by commercial and agricultural. After the completion of 1st phase of Chambal project, the town further developed at a rapid face with facilities such as grain-mandi, grains go-down, hospital, college, etc., featuring along the western limits of the old town.

60. Chabbra is agriculturally a productive area and therefore most of the earlier industries were agro based, but in the last two decades due to the industrial area development by Rajasthan State Industrial Development and Investment Corporation Limited (RIICO), there has been a considerable diversification in the industrial base. The town still has a very good agricultural area in its hinter land. Grain Mandi of 'B' category and warehouse are situated hare. The occupation structure is also shown that majority (77.20%) of the working force is engaged in tertiary sector. Trade and commerce is the principal activity in this area during past few decades. For various historical, traditional, economic reasons the existing central business area continues to function as most important centre for trade and commerce. The Irrigation Department has completed Hinglot Dam, while Lhasi Dam project is under construction. These projects are expected to further spur the growth of agriculture and industries. Recently a Thermal Power Plant has also been proposed in this region by the State Government at Motipura Chowki situated 20 km from the town. Such project also contributes to economic growth of the town and the region.

61. District level data has been analyzed as pertinent information specific to Baran on the industrial units and worker is not available. Most of the business transaction, both wholesale and retail are still carried out in the markets of the old city and it has been graded as class A. recently the area of wholesale market has been extended to accommodate the proposed vegetable market. Presently timber and stone stock yards are found along the *Nallah* and mangrol road on the western periphery of the old town. There are no large scale industries in Baran except a rice mill located on the Atru road. There are few small scale industries like oil and rice mills are located in the existing developed area.

Table 3.15: Type of Industries in Baran District

Name of Industries	No. of Units	Employment
Agro-based	125	527
Textile	16	52
Forest Based	22	88
Paper	16	98
Bubber & plastic based	13	53
Chemical	10	52
Mineral based	15	131
Iron & steel	66	229
Repair & services	90	279
Others	15	44
Total	**386**	**1553**

Source: District Industries office, Kota

62. In and around the Baran and Chabbra city area, there are about 70-80% of lands used for agricultural purpose. Crop production statistics as depicted in **Table 3.16** indicates much more crop production in Rabi season in compared to Kharif season.

Table 3.16: Crop production in around Baran and Chabbra

Type of Crops	Under Rabi Crops 2003-04 (Prod in Tonnes)	Under Kharif Crops 2003-04 (Prod in Tonnes)
Cereals	133188	79170
Pulses	8793	2034
Food Grains	141981	81204
Oilseeds	181662	126569
Others	188985	1318
Total	**512628**	**209091**

(Source: Vital Agricultural statistics 2004-05, Directorate of Agriculture and Statistics, Govt. of Rajasthan)

3. Infrastructure

63. *Water supply*: PHED supplies water to **Baran town** from River Parbati, a perennial river at Baran. There are two more sources one is at Heekar Dev which is 15 km away from this town and another is at Majawatan Dev which is 16 km. Water produced at source is of 6.0 MLD and 1.0 MLD at Heekar Dev and Majawatan Dev respectively. From Heekar Dev, water transmitted is about 5.0 MLD while from Majawatan Dev, water transmitted is of about 0.8 MLD from source to the town by pumping. The PHED officials informed that the present transmission and distribution losses are of 25%. Presently, eleven (11) tube-wells tap ground water of 1.00 MLD for meeting the balance requirement. Per capita water supply based on the present stage supply is approximately 60 lpcd. The water supply of **Chabbra town** is completely depending up of ground water sources. Ground water is being tapped by means of open well and tube wells. The present daily demand of water is about 2.52 MLD and supply is about 1.55 MLD. As reported by the PHED officials, there are 22 nos. tube-well and 38 hand pumps out of which 35 hand pumps are working. It is also reported that the yield of tube wells is about 1.06 MLD (based on pumping of 4.0 hours per day, yield of each-well @ 200 LPM).

64. *Sewerage System:* At present there is no under ground sewerage system in Baran and Chabbra. Majority of house hold (72% for Baran and 85% for Chabbra) are having individual septic tank. Open drains meant for storm water carry wastewater (mainly sludge and in few cases sewage too) from individual households. The storm water drain discharges into natural streams that ultimately join Parbati River in Baran. The untreated wastewater of

Baran ultimately joins the River Parbati, 15 km away of Baran. There is no sewage treatment facility in both the towns.

65. *Sanitation:* A predominant proportion of city households depend on individual sanitation facilities (and illegal connections opening into drains). It is estimated that approximately 72% and 85% of houses (assessed properties) have access to individual sanitation facilities − either septic tanks or pit latrines, within their premises for Baran and Chabbra respectively. Others use the community toilets provided by the Municipal Boards and significant population also resort to open defecation. Most of the domestic sewage for the city is either discharged at open places through surface drains or through local soak-pits.

66. *Drainage*: Presently Baran has a minimal storm water drainage system that exists in the town. As reported by the Municipality Board, Baran covered with 90 km of drain and the overall topography slopes from north to east direction. With the exception of the old town areas, newly developed areas are reported situated at relatively low grade levels which essentially translate in to 'depression' effect, wherein the central portion of the town is at a lower level than the adjoining areas which is also from adjoining areas which also from catchments zone. A numbers of drains/rivers such as Patheda Nallah, Forest Nallah, Ramnagar Nallah, Nalka Nallah, and the Banganga River flow through Baran. The total length of Banganga River is 65 km and the catchments area within the Baran town is about 48.12 sq.km.

67. *Industrial Effluents.* Small industries exists in under RIICO, which are outside the city area and small amount of effluent disposed scattered in local nallahs. As reported by the local MC, the responsibility of effluent disposal is under RIICO's own and could not be connected to the proposed sewer network. The individual industry should treat their effluent to bring it to the required standard before final disposal.

68. *Solid Waste:* Baran with a population of 78,665 (2001) generates about 10 tons of solid waste daily which is 127 gm per capita which is significantly lower than the normative standard of 250 gm per capita while Chabbra generates 8 tons with 22796 population (2001) which is 351 gm per capita which is significantly higher than the normative standard of 250 gm per capita. The major sources of Municipality solid wastes for both the city are domestic, fruits, vegetable markets, hotel, restaurant, street sweeping, hospital, institution/office etc. Presence of a large number of domestic cattle in the towns and tourist inflow also contributes to waste quantity. Significant quantity of waste is generated during the local Fair/festivals that are being held every year is still to be counted and to be encountered in the planning.

69. *For Baran***:** Waste transportation from dust bins and open collection points to waste disposal sites on the outskirts of the city is carried out using tractor by loading manually, which reduces the productivity of vehicles and manpower deployed. It is reported by BMB that each vehicle makes 4 trips per day between the assigned ward. The existing transport fleet of the BMB has a rated capacity of 3 MT per vehicle per day. From the field observations, it was found that the waste was not transported fully and lay scattered in the town in open condition and emanating foul smell and causing public nuisance. It is very much essential to synchronize the operation of collection and transportation of waste. **Table 3.17** shows the Solid waste transport of Baran. In Baran, 6 MT of solid waste transport out of total generation of 10 MT and Chabbra, 2.25 MT transport out of 8.0 MT.

Table 3.17: Solid Waste Transportation

Description	Quantity	Ownership	Capacity	Trips	Waste Transported

	Nos		Tons	Per vehicle/ day	Tons/day
Baran					
Tractors	2	Baran MB	0.75	4	6
Chabbra					
Tractors	1	Chabbra MB	0.75	3	2.25

Source: Respective Municipal Boards.

70. For both the towns, there no are no proper solid waste disposal facilities. In Baran, currently the waste is being disposed off at this site by crude open dumping method mostly along the Jhalawar road and in barren agricultural land. In Chabbra, waste is disposed openly in the outskirts of the town near Kadaipar phatak, along the Gogar road.

4. Transportation

71. Baran and Chabbra comprises a road network of 125.6 km, consisting of 57.6 km bituminous roads, earthen road is of 33.0 km and 35 km cement concrete roads. Only 32.6 km road network is maintained by PWD, which is 26 percent of road length. All remaining roads are maintained by the municipal boards. In the recent past, both municipal boards have invested substantially in upgrading roads to cement concrete roads. **Table 3.18** shows road surface composition at Baran.

Table 3.18: Road Surface Composition, Baran

Road Type	Total length (km)	Dist.
Surface Type		
Concrete Roads	35	27.90
Black Topped Roads	57.5	45.80
Total Surfaced Roads		
WBM Roads		
Earthen and Other Roads	33	26.30
Total Unsurfaced Roads		
Total Road Length	**125.6**	**100.00%**
Agency		
PWD	32.60	26.0
Municipal	80.0	63.70
Krishi Upaj Mandi (KUM)	13.0	10.30
Total	**52.60**	**100.00%**

Source: Municipal Boards.

72. Traffic Study: The Three day Traffic Survey (16.02.2008 to 18.03.2008) was conducted at level crossing location to determine the ADT (Average Daily Traffic) in terms of Nos. & PCUs. **Table 3.19** shows the average daily traffic in Nos. passing through the existing level crossing. **Table 3.20** shows the average daily traffic in PCUs. From the above two tables, it is observed that there is one peak between 1.00PM to 2.00PM. From **Table 3.19** it is also observed that 2-Wheelers, Car, Jeep, Taxi and Cycles are more dominating in this section of road. PCU Values for different vehicles are taken from IRC-86:1983

Table 3.19:-Average Hourly Total Traffic (Nos)

Time	Nos. of Different Vehicles	Total

		2-Wheelers	3-Wheelers	Car, Jeep	Standard Bus	2-axle Truck	3-axle Track	Agri-Trailor	Cycle	
8:00 AM	9:00 AM	96	14	28	7	14	1	5	45	**210**
9:00 AM	10:00 AM	174	20	36	6	16	4	19	52	**328**
10:00 AM	11:00 AM	177	10	56	8	31	1	32	44	**360**
11:00 AM	12:00 PM	189	18	54	8	26	6	26	39	**367**
12:00 PM	1:00 PM	184	15	56	6	19	4	17	34	**335**
1:00 PM	**2:00 PM**	**335**	**35**	**93**	**5**	**31**	**1**	**25**	**69**	**593**
2:00 PM	3:00 PM	254	33	62	9	28	2	27	54	**468**
3:00 PM	4:00 PM	184	15	48	3	19	0	16	39	**325**
4:00 PM	5:00 PM	246	22	52	5	17	2	10	44	**398**
5:00 PM	6:00 PM	195	18	46	5	14	1	11	63	**353**
6:00 PM	7:00 PM	246	28	94	5	27	1	22	87	**510**
7:00 PM	8:00 PM	272	14	79	3	21	2	18	44	**453**
8:00 PM	9:00 PM	146	3	48	4	15	1	11	9	**237**
9:00 PM	10:00 PM	85	7	57	4	18	1	6	9	**187**
10:00 PM	11:00 PM	77	5	32	2	12	0	4	6	**138**
11:00 PM	12:00 AM	9	2	18	0	9	0	6	0	**44**
12:00 AM	1:00 AM	9	1	31	0	20	2	6	0	**69**
1:00 AM	2:00 AM	5	0	14	2	4	2	1	0	**28**
2:00 AM	3:00 AM	1	0	10	1	8	1	3	0	**23**
3:00 AM	4:00 AM	2	0	7	1	13	1	3	0	**28**
4:00 AM	5:00 AM	2	0	11	1	15	2	4	1	**36**
5:00 AM	6:00 AM	5	1	11	1	16	3	6	3	**46**
6:00 AM	7:00 AM	17	4	14	3	15	4	3	6	**67**
7:00 AM	8:00 AM	35	12	17	4	11	4	5	27	**115**
Total		2947	280	973	94	419	44	284	676	**5717**
Total Fast moving Vehicles		**5041**								

Table-3.20:-Average Hourly Total Traffic (PCU)

Time		PCU of Different Vehicles								Total
		2-Wheelers	3-Wheelers	Car, Jeep	Standard Bus	2-axle Truck	3-axle Track	Agri-Trailor	Cycle	
PCU		**0.5**	**0.5**	**1**	**3**	**3**	**3**	**3**	**0.5**	
8:00 AM	9:00 AM	48	7	28	22	41	2	14	23	**185**
9:00 AM	10:00 AM	87	10	36	18	49	13	57	26	**296**
10:00 AM	11:00 AM	89	5	56	23	94	2	97	22	**388**
11:00 AM	12:00 PM	94	9	54	25	78	19	78	20	**377**
12:00 PM	1:00 PM	92	8	56	17	57	11	51	17	**309**
1:00 PM	**2:00 PM**	**168**	**17**	**93**	**15**	**93**	**2**	**74**	**34**	**496**
2:00 PM	3:00 PM	127	17	62	27	83	5	82	27	**429**
3:00 PM	4:00 PM	92	8	48	10	57	1	49	19	**284**
4:00 PM	5:00 PM	123	11	52	16	52	6	29	22	**311**
5:00 PM	6:00 PM	98	9	46	16	42	3	32	32	**277**
6:00 PM	7:00 PM	123	14	94	16	81	2	65	44	**438**
7:00 PM	8:00 PM	136	7	79	9	63	6	53	22	**375**
8:00 PM	9:00 PM	73	2	48	12	46	2	32	5	**219**

Time		PCU of Different Vehicles								Total
		2-Wheelers	3-Wheelers	Car, Jeep	Standard Bus	2-axle Truck	3-axle Track	Agri-Trailor	Cycle	
9:00 PM	10:00 PM	43	4	57	11	54	2	17	5	**192**
10:00 PM	11:00 PM	38	3	32	6	37	0	12	3	**131**
11:00 PM	12:00 AM	5	1	18	1	26	0	17	0	**68**
12:00 AM	1:00 AM	5	1	31	0	61	5	17	0	**119**
1:00 AM	2:00 AM	2	0	14	5	12	6	3	0	**43**
2:00 AM	3:00 AM	0	0	10	3	23	2	9	0	**47**
3:00 AM	4:00 AM	1	0	7	4	38	4	10	0	**64**
4:00 AM	5:00 AM	1	0	11	3	44	7	12	1	**79**
5:00 AM	6:00 AM	3	1	11	4	48	8	17	1	**93**
6:00 AM	7:00 AM	9	2	14	9	46	12	9	3	**104**
7:00 AM	8:00 AM	18	6	17	11	32	11	16	14	**125**
Total		1474	140	973	283	1257	131	852	338	**5447**

Note:- PCU Values for different vehicles are taken from IRC-86:1983

73. Traffic Projection & Justification: The road width in urban areas is designed to accommodate the design peak hour traffic. The design peak hour traffic is estimated based on a simple projection of present peak hour traffic for a design period of 15-20 years (adopted for arterial roads as per IRC-86:1984). The growth rate of different vehicles is estimated by Transport Demand Elasticity Method considering past traffic data, vehicle registration data, change of socio-economic pattern in urban areas, future development plan etc. In absence of such data, it is very difficult to estimate the actual growth rate for different vehicles.

74. In general, the average traffic growth rate for this type of urban areas (Baran) is around 5%. The growth rate as per IRC 37-2001 is 7.5% which is higher than the actual growth at present. The present traffic is projected for both the growth rates i.e. 7.5% & 5% for design period of 20 years and the projected traffic is presented in **Table 3.21.**

75. From above table, it observed that Peak hour on NH-76 at level crossing is 1.00PM to 2.00PM and total peak hour traffic is 593Nos. or 496 PCU.

Table 3.21:-Traffic Projection

Sl. No.	Year	PCU	PCU
Growth Rate		**7.5%**	**5%**
0	2008	496	496
1	2009	534	521
2	2010	574	547
3	2011	617	575
4	2012	663	603
5	2013	713	633
6	2014	766	665
7	2015	823	698
8	2016	885	733
9	2017	952	770
10	2018	1023	808
11	2019	1100	849
12	2020	1182	891
13	2021	1271	936

14	2022	1366	983
15	2023	1469	1032
16	2024	**1579**	1083
17	2025	1697	1138
18	2026	1824	1194
19	2027	1961	1254
20	2028	2108	1317
21	2029	2266	1383
22	2030	2436	1452
22	2031	2619	**1524**

76. As per Table 3.18 of IRC 86:1984, the capacity of 2-lane Road (both way) is 1500 PCU. From the table-3.20 -Traffic Projection, it is observed that two lane road is to be saturated in 2031 considering 5% growth rate which is more realistic. Hence, 2-lane ROB is justified only as per the projected peck hour traffic.

D Social and Cultural Resources

1. Demography

77. According to Census 2001 the population of Baran-Chabbra LPA is 101,461 and spreads over an area of 22.88 sq. km (13 sq.km for Baran and 9.0 sq.km for Chabbra) and organized in 50 wards (30 in Baran and 20 in Chabbra). The average density in the two Municipal Boards is 4,434 persons per sq. km, significantly too high. The LPA has recorded a growth rate of 36-37 percent during the last three. **Table 3.22** indicates the population growth in Baran and Chabbra towns and the corresponding density variations over the last four decades.

Table 3.22: Decadal Population Density, Baran-Chabbra LPA

Year	Area	Total Population		
	(sq. km)	Total	Growth Rate (%)	Density
1961	-	30,322		-
1971	-	39,516	30.32	-
1981	22.88	54,262	37.32	2372
1991	22.88	74,103	36.56	3239
2001	22.88	101,461	36.92	4434

Source: Census of India, 2001

78. Both towns and the LPA of Baran and Chabbra have shown a higher growth rate as compared to the district average. The LPA witnessed a high growth rate in the 1981-2001 and recorded at 36-37 percent growth. Subsequently, the growth rate for both towns individually and also as a whole is compared in the **Table 3.23** which indicates the decadal population variation and the corresponding growth rate for the two towns and the LPA. From the Table, it is very much evident that the Growth rate for Baran is in decreasing pattern and the Growth rate for Chabbra is in increasing pattern

Table 3.23: Decadal Population Growth Trends

Year	Population	Decadal Growth Rate (%)	Population	Decadal Growth rate (%)	Population	Growth Rate (%)
	Baran		Chabbra		Baran & Chabbra	
1961	22764		7558		30,322	
1971	29809	30.95	9707	28.43	39,516	30.32
1981	42000	40.90	12262	26.32	54,262	37.32
1991	57719	37.43	16384	33.62	74,103	36.56

2001	78665	36.29	22796	39.14	101,461	36.92

Source: Census of India, 2001.

Health and educational facilities

79. There are good educational facilities in Baran district, which serve both townspeople and inhabitants of surrounding villages and towns in the hinterland. There are 930 primary schools, 102 secondary and higher secondary schools, 2 general degree colleges, 3 industrial training institutes (ITI). **Table 3.24** shows education facility in the district.

Table 3.24: Educational facility of Baran District

Type	No.
Primary Schools	930
Middle Schools	332
Higher Secondary and Secondary Schools	102
Degree Colleges	2
ITI	3

Source: Rajdarpan ;The official web portal of Rajasthan

80. At the district headquarter Baran has "B" grade district hospital, one maternity and child welfare centre, 3 dispensaries and 4 urban family welfare centres. There are 47 dispensaries/hospitals in the district. **Table 3.25** shows detail of medical facility of the Baran urban area.

Table 3.25: Medical facility at Baran Urban area and district

S.No.	Facilities	Number
1	Hospital	1
2	maternity and child welfare centre	1
3	dispensaries and	3
	Urban Family Welfare Centers	4
4	Total	9

Source: Rajdarpan ;the official web portal of Rajasthan

2. History, culture and tourism

81. Being part of the Hadoti region, Baran- Chabbra has immense tourism potential. The GoR Tourism Policy has identified Baran and Chabbra as destination points in the Hadoti Circuit. Baran is said to have been founded by the Solanki Rajputs during 14th or 15th century. The town drives its presents name because it is believed to have been populated by the inhabitants of twelve (Barah) adjacent villages. The fort, which now lies in complete ruins, was the nucleus of the old city around which the earlier settlement took place near the Banganga River.

82. Chabbra town is populated due to temple of Kula Devi Mataji and Nageswar Shiv Mandir, which is located on the eastern hill top. The town is also popular for Gujor Mataji Fair in the winter on the Bank of River Renuka. The town is named as Chabbra as six main gates constructed in the city wall. Recently the state Government has also funded Chabbra town for heritage conservation of Gugor Fort which is believed to be almost 800 years old. For the above mentioned culture, fair number of domestic tourist attract towards the Baran-Chabbra.

Table: 3.26: Important historical sites for tourist interest at Baran Chabbra

Sl. No.	Name of monument/site	Locality	District
1	Ruins of temples	Ganesh-Ganj or Atru	Baran
2	Yupa Pillars	Badwa	Baran
3	Temple (12 century)	Baran	Baran
4	Ancient ruins and structural remains	Krishnavilas	Baran
5	Old temples, statues and inscriptions	Shergarh	Baran

IV. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES: LOCATION AND DESIGN

83. ADB Environmental Assessment Guidelines require that an IEE should evaluate impacts due to the location, design, construction and operation of the project. Construction and operation are the two activities in which the project interacts physically with the environment, so they are the two activities during which the environmental impacts occur. In assessing the effects of these processes therefore, all potential impacts of the project are identified, and mitigation is devised for any negative impacts. This has been done in Sections I and VI earlier and no other impacts are expected.

84. In many environmental assessments there are certain effects that, although they will occur during either the construction or operation stage, should be considered as impacts primarily of the location or design of the project, as they would not occur if an alternative location or design was chosen.

85. However in the case of this subproject it is not considered that there are any impacts that can clearly be said to result from either the design or location. This is because:

- Most of the individual elements of the subproject are relatively small and involve straightforward construction and operation, so impacts will be mainly localised and not greatly significant;
- Most of the predicted impacts are associated with the construction process, and are produced because that process is invasive, involving trenching and other excavation. However, the routine nature of the impacts means that most can be easily mitigated;
- In one of the major fields in which there could be significant impacts (archaeological), those impacts are clearly a result of the construction process rather than the project design or location, as they would not occur if this did not involve trenching or other ground disturbance.

V. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES: INFRASTRUCTURE CONSTRUCTION

A. Screening out areas of no significant impact

86. From the descriptions given in Section II.C, it is clear that implementation of the subproject should not have major negative impacts because it will affect only one site, at which all construction will be conducted within a relatively small area.

87. Because of this there are several aspects of the environment that 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 5.1**, with an explanation of the reasoning in each case.

Table 5.1: Fields in which construction is not expected to have significant impacts

Field	Rationale
Climate	Short-term production of dust is the only effect on atmosphere
Geology and seismology	Excavation will not be large enough to affect these features
Fisheries & aquatic biology	No rivers or lakes will be affected by the construction work
Wildlife and rare or endangered species	No wildlife and endangered species nearby
Coastal resources	Baran is not located in a coastal area
Development of agriculture, minerals and tourism	There are none of these developments near the site
Population and communities	Construction will not affect population numbers, location or composition If there any impact that will be deal in social impact assessment report

88. These environmental factors have thus been screened out presently but will be assessed again before implementation.

89. Rapid Environmental Impact Assessment checklist along with mitigation measures is given in **Appendix 3.**

B. Road over Bridge (ROB)

1. Construction method

90. As explained above, this subproject will involve construction of a ROB, 7.3 m high, 900 m long, supported on a series of RCC piers.

91. Considering future expansion of two tracks both sides of the existing one as per Railway norms, 1x36.502 m + 2x16.349 m ROB span is proposed at a skew angle of 59 degree for ROB. Besides the ROB span, a few viaduct spans 7 x 11m + 1x 16.90 m viaduct spans at Kota end, 10 x 18m + 1 x 16.90 m viaduct spans at Baran end at both end of ROB are proposed to minimize the acquisition. The salient details of ROB, viaducts, embankment with RE walls, service roads etc. are presented in **Table 2.2** of section II.

92. Construction will begin with the removal of the existing road surface by backhoe diggers. A series of RCC box-sections will then be built, each slightly higher than the preceding one, to form the approach ramps. Foundations will be dug to about 1 m depth, and metal reinforcing bars will be added to form the floor and sides of each box. Portions of these will be encased in wooden shuttering, and concrete (mixed on site) will be poured in and allowed to set. This will be repeated to gradually create each RCC box, which will then be filled with sand and stone, imported on trucks and tipped into each structure. Once each is filled a layer of RCC will be added to the top, with a slight incline, so that the upper surface rises gradually to the 7.3 m height of the ROB.

93. At the same time the foundations for the bridge piers will be excavated by backhoe diggers, and deeper portions will be dug by a drilling machine. Heavy-duty metal reinforcing rods will be placed into the voids, followed by a concrete and aggregate mix. The reinforcing rods will extend out of the foundations to create the structure of each pier, and these will

then be encased in shuttering, into which more concrete will be poured to form each pillar. The pre-cast RCC bridge sections will then be brought in from the manufacturing plant on large vehicles, placed into position by cranes and attached to the piers by heavy-duty bolts and concrete. The pre-cast safety barriers will also be positioned by crane at the edges of the bridge and ramps, after which the tarmac surface will be applied by road-laying machine and roller vehicles, with gravel layers tipped out from trucks.

94. The operation will be conducted by a team of around one hundred men, roughly 50% unskilled labour and 50% with various skills including truck drivers, vehicle and machine operatives, surveyors, foremen and supervisors, etc. The operation should be completed in around 18 months.

2. Physical Resources

95. Although all work will be conducted at a single, relatively small site, construction will involve a great deal of excavation and earth moving over a period of approximately six months, so physical impacts could be quite considerable.

96. During construction time great deal of material, which could cause significant changes in topography, drainage, air quality (dust), soil quality and other features at the extraction site if it were sourced from adjacent land. However these impacts can be avoided relatively easily by utilising readily available source of waste sand and stone, which is:

- Material excavated to create the foundations of the piers that will support the ROB structure (if suitable);

97. Using these sources would have the additional benefit of providing a beneficial use for what would otherwise be large quantities of waste material, so it will be very important to coordinate these activities to enable this to be done.

98. Moving such a large quantity of material could cause further physical impacts, including the creation of dust during dry weather and silt-laden runoff during rainfall, both of which would affect people who live and work near the site and reduce the quality of adjacent land. The Contractor will almost certainly plan the work to ensure that all earthworks are conducted during the dry season to avoid the difficult working conditions that prevail during the monsoon, so this will avoid any problems from runoff. It will however be necessary to prevent dust, so the Contractor should be required to:

- Excavate the bridge foundations at the same time as the access ramps are built so that dug material is used immediately, avoiding the need to stockpile on site;

- Damp down exposed soil and any sand stockpiled on site by spraying with water when necessary during dry weather;

- Use tarpaulins to cover sand and other loose material when transported by truck.

99. Conducting the work in the dry season should avoid any drainage problems from rainfall collecting in the bridge- and ramp- foundations during excavation, and although groundwater often collects in deeper voids, this should also not be a problem at this site because of the very low water table in Baran.

100. The creation of ramps will gradually alter the topography and appearance of the site, and the work to install the pre-cast ROB sections will be especially visible in the local landscape. Visual impacts could be mitigated by erecting wooden fences to screen the site from view, but it is not considered that this will be necessary at this site, which is a

congested road and rail junction with a very disrupted and “busy” appearance, that will not be significantly exacerbated by the construction activities.

3. Ecological Resources

101. There are no protected areas in or around project site of Baran, and no known areas of ecological interest, and there are no trees at the site that need to be removed. The work should therefore have no ecological impacts.

4. Economic Development

102. Although much of this work will be conducted within the ROW of the existing roads and railway, there may be a need to acquire some land at the periphery of the site and for the construction of temporary access roads. This will be obtained through the legal mechanism of the Land Acquisition Act (1894) through which the government purchases the land compulsorily from the owners at a rate that is established on the basis of recent transactions. ADB policy on Involuntary Resettlement requires that no-one should be worse-off as a result of the project, so a Resettlement Plan and Resettlement Framework have been prepared to examine these issues. This establishes that no more than 10% of the total land of any owner or occupant should be acquired, and that if any business premises have to be removed, the owners or tenants should be provided with:

- Compensation equivalent to the amount of business income lost;
- Compensation at replacement cost for any income-generating assets (eg. shop premises) that have to be removed.

103. Certain roadside shops that are not purchased may still lose income because the presence of the construction site will deter customers, and access will be impeded by road closures, the presence of heavy vehicles and machinery, etc. These issues are also dealt with by the Resettlement Plan and Framework, which indicate that these impacts will be mitigated by:

- Keeping road closures to the minimum in terms of frequency, duration and extent;
- Maintaining vehicle and pedestrian access to roadside businesses wherever possible;
- Providing owners and tenants with financial compensation equivalent to the amount of business income lost.

104. Transportation is the other principal economic activity that will be impeded by this work, as the existing road will be removed at the location of the access ramps and gradually replaced by the new embankments. Trains will also have to travel slowly in the vicinity of the site, and when work is conducted close to the line, the train service may need to be interrupted temporarily. These impacts could be significant given the amount of traffic using this crossing and the frequency of the train service. These impacts will need to be mitigated by careful planning of the construction program, in conjunction with the road, rail and municipal authorities and the police, in order to:

- Maintain safe passage for vehicles and pedestrians throughout the construction period;
- Provide effective, well signposted diversions and alternative routes when required;

- Conduct work that requires the closure of roads and the level crossing at times of low traffic volume;

- Conduct work on or close to the railway line at times when there are fewer trains;

- Schedule truck deliveries of soil to the site for periods of low traffic volume.

105. Excavation could also damage existing infrastructure (such as water distribution pipes, electricity pylons, etc) located alongside the roads. It will be particularly important to avoid damaging existing water pipes as these are mainly manufactured from Asbestos Cement (AC), which can be carcinogenic if inhaled, so there are serious health risks for both workers and citizens (see below). It will be important therefore to avoid these impacts by:

- Obtaining details from the Municipal Council of the nature and location of all existing infrastructure, and planning excavation carefully to avoid any such sites if possible;

- Integrating construction of the various infrastructure subprojects conducted in Baran (transport, water supply, sewerage) so that:

    - Different infrastructure is located on opposite sides of the road where feasible;

    - Roads and inhabitants are not subject to repeated disturbance by construction in the same area at different times for different purposes.

5. Social and Cultural Resources

106. Rajasthan is an area with a rich and varied cultural heritage that 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 could uncover and damage archaeological and historical remains. In this case the excavation will occur in and around an existing roadway, so it could be that there is a low risk of such impacts. Nevertheless this should be ascertained by consulting the appropriate authorities and steps should be taken according to the nature of the risk. This should involve:

- Consulting historical and archaeological authorities at both national and state level to obtain an expert assessment of the archaeological potential of the site;

- Considering an alternative transportation sub-project if the site is found to be of medium or high risk;

- Including 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 to the project;

- Developing a protocol for use by the Contractor in conducting any excavation work, to ensure that any chance finds are recognised and measures are taken to ensure they are protected and conserved. This should involve:

    - Having excavation observed by a person with archaeological field training;

    - Stopping work immediately to allow further investigation if any finds are suspected;

- Calling in the state archaeological authority if a find is suspected, and taking any action they require ensuring its removal or protection in situ.

107. There are no modern-day social and cultural resources (such as schools and hospitals) near the site, and no areas that are used for religious or other purposes, so there is no risk of other impacts on such community assets.

108. Although this is not a major residential area, there are some living quarters in the vicinity of the site, so action should be taken to minimise disturbance as far as possible. This will require:

- Consultation with the local community to inform them of the nature, duration and likely effects of the construction work, and to identify any local concerns so that these can be addressed;
- Involving the community in planning the work programme so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times;
- Avoiding conducting noise-generating activities at night;
- Implementing the measures described in Section V.B.2 above to reduce dust;
- Utilising modern vehicles and machinery with the requisite adaptations to limit noise and exhaust emissions, and ensuring that these are maintained to manufacturers' specifications at all times.

109. There is invariably a safety risk when substantial construction such as this is conducted in an urban area, and precautions will thus be needed to ensure the safety of both workers and citizens. The Contractor will be required to produce and implement a site Health and Safety Plan, and this should include such measures as:

- Excluding the public from the site;
- Ensuring that all workers are provided with and use appropriate Personal Protective Equipment;
- Health and Safety Training for all site personnel;
- Documented procedures to be followed for all site activities;
- Accident reports and records; Etc.

110. An additional, particularly acute health risk derives from the fact that, as mentioned above, 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. Precautions have already been introduced into the design of the project to avoid this, of which the most important is that:

- The locations of all new infrastructures will be planned to avoid locations of existing AC pipes so AC pipes should not be discovered accidentally.

111. Given the dangerous nature of this material for both workers and the public, additional precautions should be taken to protect the health of all parties in the event (however unlikely) that AC pipes are encountered. The design consultant should therefore

develop a protocol to be applied in any instance that AC pipes are found, to ensure that appropriate action is taken. This should be based on the approach recommended by the United States Environmental Protection Agency (USEPA)[2], and amongst other things, should involve:

- Training of all personnel (including manual labourers) to enable them to understand the dangers of AC pipes and to be able to recognise them in situ;
- Reporting procedures to inform management immediately if AC pipes are encountered;
- Development and application of a detailed H&S procedure to protect both workers and citizens. This should comply with national and international standards for dealing with asbestos, and should include:
    - Removal of all persons to a safe distance;
    - Usage of appropriate breathing apparatus and protective equipment by persons delegated to deal with the AC material;
    - Procedures for the safe removal and long-term disposal of all asbestos-containing material encountered.

112. Finally, there could be some short-term socio-economic benefits from the construction work if local people are able to gain employment in the construction workforce. To direct these benefits to the communities directly affected by the work, the Contractor should be required to employ at least 50% of his labour force from communities in the vicinity of the site. This will have the added benefit of avoiding social problems that sometimes occur when workers are imported into host communities, and avoiding environmental and social problems from workers housed in poorly serviced camp accommodation.

[2] 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

VI. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES: OPERATION AND MAINTENANCE

A. Screening out areas of no significant impact

113. Because roads and bridges generally operate without the need for major repair and maintenance (see below), there are several environmental factors that should be unaffected once the new ROB begins to function. These are identified in **Table 6.1** 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 6.1: Fields in which operation and maintenance of the completed road improvement is not expected to have significant impacts

Field	Rationale
Climate	Exhaust gases affect air quality but a new road does not alter climate
Fisheries & aquatic biology	There are no rivers or lakes close to the ROB site
Wildlife, forests, rare species, protected areas	No wildlife and forest near location of ROB
Coastal resources	Baran is not located in a coastal area

B. Operation and maintenance of the new ROB

114. The new ROB will have a design life of 30 years, during which time it should require no major repair or refurbishment, beyond routine maintenance, which will include:

- Small scale *ad hoc* repairs of surface damage caused by traffic use or accidents;
- Repairs and replacement of damaged safety barriers and signs;
- Regular unblocking of drains to prevent damage from flooding in the monsoon.

115. The stability and integrity of the bridge should also be monitored periodically to detect any problems and allow remedial action if required.

116. These operations will be the responsibility of the municipal highway department, who will be given training by this programme and provided with an operating budget for these purposes.

C. Environmental impacts and benefits of the operating ROB

1. Physical Resources

117. Once the ROB is completed and operating it will improve the physical environment by removing the severe traffic congestion that is such a feature of this location at present, with the resulting concentration of vehicle noise and pollution. This will be replaced by a modern elevated roadway, which allows the maintenance of a smooth flow of traffic into and out of the town and avoids the obstruction created by the former level crossing.

118. The ROB will however elevate the traffic 7.5 m above ground level, making the traffic and the structure significantly more visible than at present. This would not necessarily be a negative visual impact if the scheme included measures to mask the structure and give it a more pleasing appearance, for example by planting large-growing native trees at the

periphery which would also provide a natural barrier to noise, dust and exhaust gases so the planting of trees should be incorporated into the scheme.

119. When routine repairs are conducted to the road and ancillary facilities (signage, etc), the work will be very small in scale, and conducted manually by small teams of men with simple equipment (shovels, wheelbarrows, tarmac blender, etc). Even if larger vehicles are used to refurbish larger portions of the road, the work will be very short in duration and will not cause significant physical impacts.

120. Although the ROB is located in an area of seismic risk, it will be designed according to standard Indian Engineering Design Codes, which include measures to allow the structure to withstand tremors of the expected magnitude and above. There should therefore be little risk of the structure failing, even if the area is subject to seismic events of greater magnitude than those that have occurred over recent years.

2. Ecological Resources

121. As there are no significant ecological resources in or around the town, the operation of the ROB and the routine maintenance and repair of the road and surroundings will have no ecological impacts. In fact by planting trees near the ROB, there would be some small ecological gain from the planting of trees to mask the visual impact of the structure.

3. Economic Development

122. The ROB will improve the infrastructure of the town by providing a more efficient and effective transportation route, and this should have positive impacts on the overall economy by reducing time spent idle in stationary traffic by delivery vehicles, employees and customers. It may also make further positive contributions to the development of particular sectors, for example by making the area more attractive to tourists and allowing the more efficient transportation of agricultural produce and other goods to and from the town.

123. Traffic may be interrupted temporarily if the road or bridge is repaired and maintained, but this work will be very small in scale, infrequent, and short in duration, so there should be no economic or other implications. To maintain the safety of workers and road-users, such work should be coordinated with the local police department so that adequate warning signs and traffic diversions can be set up when necessary.

4. Social and Cultural Resources

124. Effects of the operating ROB on social and cultural resources in the town will be relatively small in scale and intangible in nature, and are thus difficult to assess and quantify.

125. The citizens of the town will benefit from a more effective transportation route as they will spend less time in stationary traffic exposed to noise, pollution and the associated physical and psychological stresses. Since people commuting on this road will save time, they will socially much better off then before. People may also benefit from an improvement in the economy of the town, although it would require much larger improvements in transportation and other infrastructure for this to be recordable.

126. Repairs to the road and bridge will not be physically invasive so there will be no risk to historical remains, and as there are no areas or resources of social or cultural importance in the vicinity there will be no risk to such features.

VII. INSTITUTIONAL REQUIREMENTS AND ENVIRONMENTAL MONITORING PLAN

A. Summary of environmental impacts and mitigation measures

127. **Table 7.1** lists the potential adverse impacts of the Baran transportation subproject as identified and discussed in Sections IV, V and VI, and the mitigation proposed to reduce these impacts to acceptable levels. The table also shows how the mitigation will be implemented, who will be responsible, and where and when the mitigation activities will take place. The mitigation programme is shown as the quarter of each year in which each activity will occur, which relates to the project programme described in Section II.B. The final column assesses whether the proposed action will successfully mitigate the impact (shown as 0), and indicates that some of the measures will provide an additional benefit (shown as +).

B. Institutional arrangements for project implementation

128. The main agencies involved in managing and implementing the subproject are,

- LSGD is the Executing Agency (EA) responsible for management, coordination and execution of all activities funded under the loan.

- The Implementing Agency (IA) is the Project Management Unit of the ongoing RUIDP, which will be expanded to include a broader range of skills and representation from the Urban Local Bodies (ULB, the local government in each town). Assigned as the RUSDIP Investment Program Management Unit (IPMU), this body will coordinate construction of subprojects across all towns, and ensure consistency of approach and performance.

- The IPMU will be assisted by Investment Program Management Consultants (IPMC) who will manage the program and assure technical quality of design and construction; and Design and Supervision Consultants (DSC), who will design the infrastructure, manage tendering of Contractors and supervise the construction process.

- Investment Program Implementation Units (IPIU) will be established in seven zones across the State to manage implementation of subprojects in their area. IPIUs will be staffed by professionals seconded from government departments (PHED, PWD), ULBs, and other agencies, and will be assisted by consultants from the IPMC and DSC as necessary.

- The IPMU will appoint Construction Contractors (CC) to build elements of the infrastructure in a particular town. The CCs will be managed by the IPIU, and construction will be supervised by the DSC.

- LSGD will be assisted by an inter-ministerial Empowered Committee (EC), to provide policy guidance and coordination across all towns and subprojects. The EC will be chaired by the Minister of Urban Development and LSG, and members will include Ministers, Directors and/or representatives of other relevant Government Ministries and Departments.

- City Level Committees (CLCs) have also been established in each town, chaired by the District Collector, with members including officials of the ULB, local representatives of state government agencies, the IPIU, and local NGOs and CBOs. The CLCs will monitor project implementation in the town and provide recommendations to the IPIU where necessary.

129. **Figure 7.1** shows institutional responsibility for implementation of environmental safeguard at different level.

Figure 7.1: Institutional Responsibly- RUSDIP

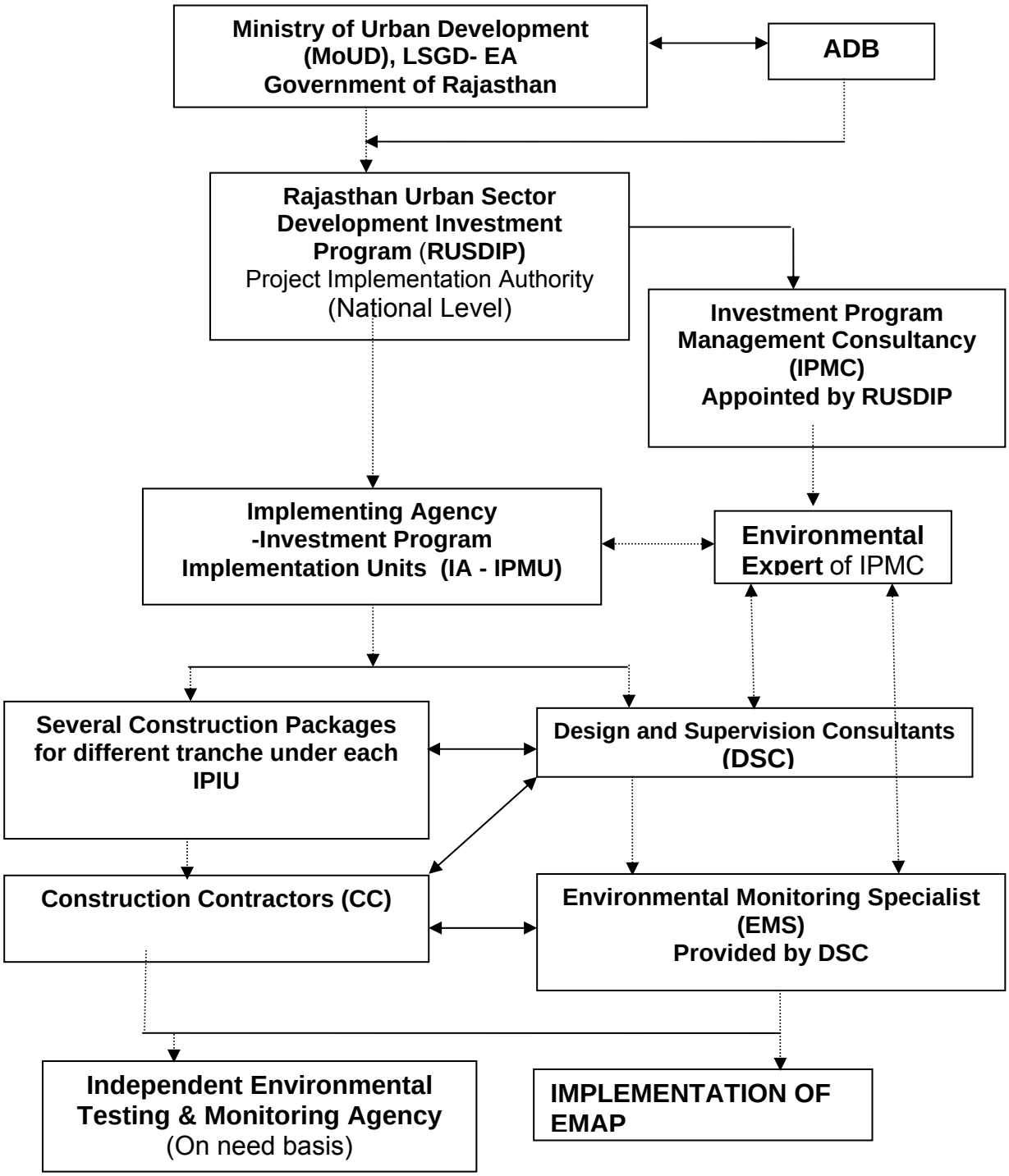


Table 7.1: Environmental impacts and mitigation for the Baran Transportation Subproject (Black = continuous activity; Grey = intermittent)

Potential Negative Impacts	Sig	Dur	Mitigation Activities and Method	Respon sibility	Location	08	2009				2010			
Construction: Road Over Bridge						D	1	2	3	4	1	2	Op	[3]
Excavation of material to fill access ramps will change drainage, air & soil quality, topography at extraction site	M	P	Use waste sand and stone from sewerage subproject and material dug to create bridge pier foundations	DSC and Contractor	STP/ROB									+
Transporting sand and building ramps could create dust	M	T	Use tarpaulins to cover sand when carried on trucks	Contractor	On/off site									0
			Spray ramps and soil stockpiles with water in dry weather	Contractor	ROB site									0
Dust could be blown from soil stockpiled on site	M	T	Excavate foundations at same time as ramps are built so that dug soil can be used immediately without stockpiling	Contractor	ROB site									0
Rainwater may collect in dug areas and wash soil off stockpiles	M	T	Conduct excavation and ground works in dry season	Contractor	ROB site									0
Some owners will lose land needed for the project	M	P	*Purchase land as described in Resettlement Framework	LSGD	ROB site									0
			Avoid taking >10% of the total land of any occupant	DSC	ROB site									0
Some business premises may need to be removed	M	P	*Compensate business owners/tenants for lost income	LSGD	ROB site									0
			*Compensate owners for lost income-generating assets											0
Shops that remain may lose income if access is difficult for customers	M	T	*Compensate owners/tenants for lost business income	LSGD	ROB site									0
			Keep road closure to minimum (frequency, duration)	Contractor	ROB site									0
			Maintain vehicle and pedestrian access when possible											0
Road and rail traffic will be disrupted by construction work	M	T	Plan work with road, rail and town authorities and police	DSC and Contractor	ROB site									0
			Keep road and railway closures to a minimum	Contract	ROB site									0

Sig = Significance of Impact (NS = Not Significant; M = Moderately Significant; S = Significant). Dur = Duration of Impact (T = Temporary; P = Permanent)
D = Detailed Design Period; Op = Period when infrastructure is operating
[3] This column shows impacts remaining after mitigation: 0 = zero impact (impact successfully mitigated); + = positive impact (mitigation provides a benefit)
* Mitigation of these impacts will be provided through a separate Resettlement Plan, see Section VII.B

Potential Negative Impacts	Sig	Dur	Mitigation Activities and Method	Respon sibility	Location	08	2009				2010			
Construction: Road Over Bridge						D	1	2	3	4	1	2	Op	3
			Maintain safe passage of vehicles/pedestrians at all times	or										0
			Provide effective diversions & alternative routes if needed											0
			Conduct work that requires road and railway closure at times when traffic volume is low											0
			Conduct work near railway at times when trains are fewer											0
			Schedule truck sand deliveries for periods of low traffic											0
Existing infrastructure could be damaged by construction	S	P	Determine locations of water pipes, electricity pylons, etc and design scheme to avoid damage	DSC	ROB site									0
			Locate different infrastructure on opposite sides of road											0
Roads/people may be disturbed by repeated excavation	M	T	Integrate subprojects to conduct excavation at same time	DSC/LGD	ROB site									0
Ground disturbance could damage archaeological and historical remains	S	P	Request state and local archaeological authorities to assess archaeological potential of the site	DSC										0
			Select alternatives if site has medium-high potential	DSC										0
			Include state and town historical authorities as project stakeholders to benefit from their expertise	LSGD	ROB site									0
			Develop and apply protocol to protect chance finds (excavation observed by archaeologist; stop work if finds are suspected; state authority to plan appropriate action)	DSC and Contractor										+
People living nearby may be disturbed by noise, dust	M	T	Inform community of work in advance; address concerns	Contractor	ROB site									0
			Plan work with community; avoid work at sensitive times											0
			Avoid conducting noise-generating activities at night											0
			Reduce dust by spraying soil and covering with tarpaulins											0

Potential Negative Impacts	Sig	Dur	Mitigation Activities and Method	Respon sibility	Location	08	2009				2010			
Construction: Road Over Bridge						D	1	2	3	4	1	2	Op	3
			Use modern vehicles/machinery & maintain as specified											0
Workers and the public are at risk from accidents on site	M	T	Prepare and implement a site Health and Safety Plan that includes measures to:	Contractor	ROB site									0
			- Exclude the public from site;											0
			- Ensure that workers use Personal Protective Equipment											0
			- Provide Health & Safety Training (including process of transmission of HIV/AIDS) for all personnel;											0
			- Follow documented procedures for all site activities;											0
			- Keep accident reports and records.											0
Existing water supply system uses AC pipes, and if damaged due to digging etc., the material emissions can be carcinogenic if inhaled as dust particles	S	T	Design all infrastructure to avoid locations of AC pipes	DSC	All sites									0
			Train all construction personnel in dangers of AC pipes and how to recognise them in situ	Contractor	All sites									0
			Develop and apply protocol if AC pipes are encountered. This should include:	DSC and Contractor	ROB site									0
			- immediate reporting of any occurrence to management;	Contractor	ROB site									0
			- removal of all persons to a safe distance;											0
			- use of appropriate breathing apparatus and protective suits by workers delegated to deal with AC material;											0
			- safe removal and long-term disposal of AC material											+
Economic benefits if local people are employed in Contractor's workforce	M	T	Contractor should employ at least 50% of workforce from communities in vicinity of work site	Contractor	ROB site									+
Operation and Maintenance														
New bridge will be more visible than present crossing	M	P	Plant and maintain large growing native trees at periphery	DSC/CC	ROB site									0
Worker safety at risk when conducting road repairs	M	T	Coordinate with police - provide warning signs/diversions	BMB	ROB site									0

130. Resettlement issues will be coordinated centrally by a Resettlement Specialist within the IPMU, who will ensure consistency of approach between towns. A local Resettlement Specialist will also be appointed to IPIUs of zones in which there are resettlement impacts and they will prepare and implement local Resettlement Plans following the framework established in Tranche 1.

131. Environmental issues will be coordinated by an Environmental Specialist within the IPMU/ IPMC, who will ensure that all subprojects comply with environmental safeguards. An Environmental Monitoring Specialist (EMS) who is part of the DSC team will implement the Environmental Monitoring Plan from each IEE (see below), to ensure that mitigation measures are provided and protect the environment as intended. Domestic Environmental Consultants (DEC) will be appointed by each IPIU to update the existing IEEs in the detailed design stage, and to prepare IEEs or EIAs for new subprojects, where required to comply with national law and/or ADB procedure.

C. Environmental Monitoring Plan

132. **Table 7.1** shows that most mitigation activities are the responsibility of the Construction Contractors[4] (CC) employed to build the infrastructure during the construction stage, or the O&M Contractors employed to conduct maintenance or repair work when the system is operating. Responsibility for the relevant measures will be assigned to the Contractors via the contracts through which they are appointed (prepared by the DSC during the detailed design stage), so they will be legally required to take the necessary action. There are also some actions that need to be taken by LSGD in their role as project proponent, and some actions related to the design that will be implemented by the DSC.

133. A program of monitoring will be conducted to ensure that all parties take the specified action to provide the required mitigation, to assess whether the action has adequately protected the environment, and to determine whether any additional measures may be necessary. This will be conducted by a qualified Environmental Monitoring Specialist (EMS) from the DSC. The EMS will be responsible for all monitoring activities and reporting the results and conclusions to the IPMU, and will recommend remedial action if measures are not being provided or are not protecting the environment effectively. The EMS may be assisted by environmental specialists in particular technical fields, and junior or medium-level engineers who can make many of the routine observations on site. Post-construction monitoring will be conducted by the relevant Government Agency (GA) to whom responsibility for the infrastructure will pass once it begins to operate[5].

134. **Table 7.1** shows that most of the mitigation measures are fairly standard methods of minimising disturbance from building in urban areas (maintaining access, planning work to avoid sensitive times, finding uses for waste material, etc), and experienced Contractors should be familiar with most of the requirements. Monitoring of such measures normally involves making observations in the course of site visits, although some require more formal checking of records and other aspects. There will also be some surveys of residents, as most of the measures are aimed at preventing impacts on people and the human environment.

135. **Table 7.2** shows the proposed Environmental Monitoring Plan (EMP) for this subproject, which specifies the various monitoring activities to be conducted during all

[4] During implementation the contractor will submit monthly progress reports, which includes a section on EMP implementation to the IPIU. The IPIU will submit reports to the IPMU for review. The IPMU will review progress reports to ensure that the all mitigation measures are properly implemented. The IPMU will consolidate monthly reports and submit quarterly reports to ADB for review

[5] In the operational period some infrastructure will be the responsibility of the Municipal Boards/Councils, whilst others will be the responsibility of the appropriate branch of the State government (such as PWD, PHED, etc)

phases. Some of the measures shown in **Table 7.1** have been consolidated to avoid repetition, and there has been some re-ordering to present together those measures that relate to the same activity or site. The EMP describes: (i) mitigation measures, (ii) location, (iii) measurement method, (iv) frequency of monitoring and (v) responsibility (for both mitigation and monitoring). It does not show specific parameters to be measured because as indicated above, most measures will be checked by simple observation, by checking of records, or by interviews with residents or workers.

D. Environmental Management and Monitoring Costs

136. Most of the mitigation measures require the Construction Contractors (CC) 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 CC 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. Costs of acquiring land and compensating businesses for loss of income during the construction period **(Table 7.1)** are calculated separately in the budgets for the Resettlement Framework and Resettlement Plans so are also excluded from this analysis.

137. The remaining actions in the Environmental Management Plan are the various environmental monitoring activities to be conducted by the EMS. These have not been budgeted elsewhere, and their costs are shown in **Table 7.3**. The figures show that the total cost of environmental management and monitoring for this subproject as a whole (covering design and construction) is INR 0.74 million, ie US$ 17,210.

Table 7.2: Environmental Management and Monitoring Costs (INR)

Item	Quantity	Unit Cost	Total Cost	Sub-total
1. Implementation of EMP (2 years)				
Domestic Environmental Monitoring Specialist	1 x 3 month	130,000[6]	390,000	
Survey Expenses	Lump Sum	150,000	150,000	540,000
2. Improvement of aesthetics (including plantation)along the bridge	Lump Sum	200,000	200,000	200,000
TOTAL				740,000

[6] Unit costs of domestic consultants include fee, travel, accommodation and subsistence

Table 7.3: Environmental Monitoring Plan

Mitigation Activities and Method	Location	Responsible for Mitigation	Monitoring Method	Monitoring Frequency	Responsible for Monitoring
CONSTRUCTION					
Use waste sand/stone from bridge foundations	ROB site	DSC/CC	Site observations; CC records	Monthly	EMS
Use tarpaulins to cover sand when carried on trucks	On/off site	CC	Observations on/off site	Weekly	EMS
Spray soil ramps and stockpiles with water in dry weather	ROB site	CC	Site observations	Weekly	EMS
Excavate foundations at same time as ramps are built	ROB site	CC	Site observations	Monthly	EMS
Conduct excavation and ground works in dry season	ROB site	CC	Site observations	Monthly	EMS
*Purchase land as described in Resettlement Framework	ROB site	LSGD	Landowner surveys; LSGD records	As needed	IMA[7]
Avoid taking >10% of the total land of any occupant	ROB site	DSC	Landowner survey; DSC records	As needed	IMA
*Compensate business owners/tenants for lost income	ROB site	LSGD	Owner/tenant surveys; LSGD records	As needed	IMA
*Compensate owners for lost income-generating assets	ROB site	LSGD	Owner surveys; LSGD records	As needed	IMA
Keep road and rail closure to a minimum frequency and duration	ROB site	CC	Site observations; CC records	Monthly	EMS
Maintain vehicle and pedestrian access when possible	ROB site	CC	Site observations; shopkeeper survey	Weekly	EMS
Plan work with road, rail and town authorities and police	ROB site	DSC/CC	Design reports	Monthly	EMS
Maintain safe passage of vehicles and pedestrians at all times	ROB site	CC	Site observations; CC records	Weekly	EMS
Provide effective diversions and alternative routes if needed	ROB site	CC	Site observations; CC records	Weekly	EMS
Conduct work requiring road/railway closure at times of low traffic	ROB site	CC	Site observations; CC records	Weekly	EMS
Conduct work near railway at times when trains are fewer	ROB site	CC	Site observations; CC records	Weekly	EMS
Schedule sand deliveries by truck for periods of low traffic	ROB site	CC	Site observations; CC records	Weekly	EMS
Determine locations of infrastructure and design scheme to avoid	ROB site	DSC	DSC records; design reports	As needed	EMS
Locate different infrastructure on opposite sides of roads	ROB site	DSC	Site observation; design reports	Monthly	EMS
Integrate subprojects to conduct excavation at same time	ROB site	DSC/LSGD	Site observation; design reports	Monthly	EMS
Request archaeological authorities to assess potential of all sites	ROB site	DSC	DSC records; design reports	As needed	EMS
Select alternatives if sites have medium or high potential	ROB site	DSC	DSC records; design reports	As needed	EMS
Include state and town historical authorities as stakeholders	ROB site	LSGD	LSGD records; meeting records	As needed	EMS
Develop and apply archaeological protocol to protect chance finds	ROB site	DSC/CC	DSC and CC records; site observations	Weekly	EMS
Inform community of work in advance and address their concerns	ROB site	CC	CC records; resident surveys	Monthly	EMS
Plan work with the community; avoid working at sensitive times	ROB site	CC	Resident surveys; site observations	Weekly	EMS
Avoid conducting noise-generating activities at night	ROB site	CC	Resident surveys; site observations	Weekly	EMS
Use modern vehicles and machinery and maintain as specified	ROB site	CC	Site observations; CC records	Monthly	EMS

[7] Resettlement issues (asterisked) will be monitored by an Independent Monitoring Agency (IMA) established under the Resettlement Framework

Mitigation Activities and Method	Location	Responsible for Mitigation	Monitoring Method	Monitoring Frequency	Responsible for Monitoring
Prepare and implement a site H&S Plan including personal protection from transmission of HIV/AIDS (safety of workers/public)	ROB site	CC	Site observations; CC records	Monthly	EMS
Exclude public from the site	ROB site	CC	Site observations; CC records	Monthly	EMS
Ensure that workers wear Personal Protective Equipment	ROB site	CC	Site observations; CC records	Monthly	EMS
Provide Health and Safety training including process of transmission of HIV/AIDS for all personnel	ROB site	CC	CC records; worker interviews	Monthly	EMS
Follow documented procedures for all site activities	ROB site	CC	Site observations; CC records	Monthly	EMS
Keep accident reports and records	ROB site	CC	CC records	Monthly	EMS
Design infrastructure to avoid known locations of AC pipes	All sites	DSC	DSC records; design reports	As needed	EMS
Train all personnel in dangers and recognition of AC pipes	All sites	CC	Site observations; CC records	Monthly	EMS
Develop and apply protocol if AC pipes are encountered	All sites	DSC/CC	DSC & CC records; site observations	Weekly	EMS
If AC pipes are encountered, report to management immediately	All sites	CC	Site observations; CC records	Weekly	EMS
Remove all persons to safe distance	All sites	CC	Site observations; CC records	Weekly	EMS
Workers handling AC: wear breathing apparatus; protective suits	All sites	CC	Site observations; CC records	Weekly	EMS
All AC material must be removed and disposed of safely	All sites	CC	Observations on and off site; CC records	As needed	EMS
Employ at least 50% of workforce from communities near sites	ROB site	CC	CC records; worker interviews	Monthly	EMS
OPERATION AND MAINTENANCE					
Plant and maintain large growing native trees at periphery of site	ROB site	DSC/CC	Site observations; CC records	As needed	EMS
Coordinate repairs with police – provide warning signs/diversions	ROB site	BMB	Site observations	As needed	GA

VIII. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. Project stakeholders

138. Most of the main stakeholders have already been identified preliminary. If any other stakeholders that are identified during project implementation will be brought into the process in the future. Primary stakeholders are:

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

139. Secondary stakeholders are:

- LSGD as the Executing Agency;
- Other government institutions which handle areas or issues affected by the project (state and local planning authorities, Department of Public Health Engineering, Local Government Dept, Ministry of Environment and Forests, Roads and Highways Division, etc);
- NGOs and CBOs working in the affected communities;
- Other community representatives (prominent citizens, religious leaders, elders, women's groups);
- The beneficiary community in general; and
- The ADB and the Government of India, Ministry of Finance.

B. Consultation and disclosure to date

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

- o Awareness and extent of the project and development components
- o Benefits of Project for the economic and social Upliftment of Community
- o Labour availability in the Project area or requirement of outside labour involvement
- o Local disturbances due to Project Construction Work
- o Necessity of tree felling etc. at project sites
- o Water logging and drainage problem if any
- o Drinking water problem

- Forest and sensitive area nearby the project site
- Movement of wild animal etc.

141. Local populations are very much interested on the project and they will help project authorities in all aspects. Public consultation results specifically on environmental issues are shown in **Appendix – 4**

142. The major outcomes from the public consultation were related to traffic interference during construction and the possible dust and noise problems during constructional phase. Some comments made on the construction vehicles which may create some disturbances to their day to day activities. Requirement of road width widening for Grain Mandi road is highlighted. Also some concerns made on the necessity of proper safety arrangements at constructional site and widening of road before starting constriction.

143. Hence necessary provisions shall be provided to avoid the traffic snarl during the construction. Sprinkling of water at frequent intervals will avoid and curtail the dust emission. Good constructional practices and proper work timings shall avoid noise disturbances to the neighbourhood.

144. The public Consultation and group discussion meeting were conduct by RUIDP on Date 31 May 2008 after advertising in Local NEWS papers. The objective of the meeting was to appraise the stakeholders about the environmental and social impacts of the proposed program and the safeguards provided in the program to mitigate the same. In the specific context of Baran - Chabbra, the environmental and social impacts of the proposed subprojects under Tranche 2 in Baran - Chabbra were discussed.

145. Meetings and individual interviews were held at potentially temporarily affected areas; and local informal interviews were conducted to determine the potential impacts of sub-project construction to prepare the sample Environmental Framework. A town-wise stakeholder consultation workshop was conducted which provided an overview of the Program and sub-projects to be undertaken in Baran - Chabbra; and discussed the Government and ADB's Environment policies acts and potential environment impacts of the sub-projects in Baran - Chabbra. During the workshop, Hindi versions of the Environmental Framework were provided to ensure participants understood the objectives, policy principles and procedures related to Environment, English and Hindi versions of the Environmental Framework have been placed in the Urban Local Body (ULB) office and Environmental Framework will be provided later on. The NGO to be engaged to implement the Mitigation Measures will continue consultations, information dissemination, and disclosure. The Environmental Framework will be made available in the ULB office, Investment Program Project Management Unit and Implementation Unit (IPMU and IPIU) offices, and the town library. The finalized IEE containing Mitigation Measures will also be disclosed in ADB's website, the State Government website, the local government website, and the IPMU and IPIU websites. ADB review and approval of the RP is required prior to award of civil works contracts.

146. **Major Issues discussed during Public consultation are**

(i) Proposed ROB sub project is to ensure proper movement of city traffic round the clock

(ii) Executive agency should give preference to engage internationally reputed contractor like Gammon, HCC, etc as people do not faith about the local contractors in respect of quality of works as well as timely completion of work;

(iii) Livelihood affected households should be given assistance in the mode of cash compensation;

(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;

(vii) Local people have appreciated the ROB proposal of the government and they have ensured that they will cooperate with the Executing Agency during project implementation.

.C. Future consultation and disclosure

147. LSGD will extend and expand the consultation and disclosure process significantly during implementation of RUSDIP. They will appoint an experienced NGO to handle this key aspect of the programme, who will conduct a wide range of activities in relation to all subprojects in each town, to ensure that the needs and concerns of stakeholders are registered, and are addressed in project design, construction or operation where appropriate. The programme of activities will be developed during the detailed design stage, and is likely to include the following:

Consultation during detailed design:

- 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;

- Structured consultation meetings with the institutional stakeholders (government bodies and NGOs) to discuss and approve key aspects of the project.

- Consultation during construction:

- Public meetings with affected communities to discuss and plan work programmes and allow issues to be raised and addressed once construction has started;

- 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;

Project disclosure:

- Public information campaigns (via newspaper, TV and radio) to explain the project to the wider city population and prepare them for disruption they may experience once the construction programme is underway;

- 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;

- 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.

X. FINDINGS AND RECOMMENDATIONS

A. Findings

148. The Project is designed to improve the quality of life of small town residents and enhance the small towns' roles as market, services, and manufacturing centers. It has a strong community development focus reinforced by integrated poverty reduction, health and hygiene improvement investment projects. Moreover, urban residents including nearby the rural residents in surrounding hinterland will benefit from improved roads and bridges allowing better access to urban markets and social services provided in the Project towns. The towns' economies will benefit from enhanced productivity as a result of health improvement, time savings in collecting water, as well as from increased urban efficiency arising from improved roads, bridges, drainage, drinking water and sanitation.

149. During project design, community meetings were held with beneficiaries to discuss sanitation, poverty, resettlement, affordability issues, and environmental concerns. Socioeconomic surveys obtained information and individual views on current situations and future preferences. Potential environmental impacts of urban infrastructure improvements are mainly short-term during the construction period and can be minimized by the proposed mitigating measures and environmentally sound engineering and construction practices.

150. The process described in this document has assessed the environmental impacts of the Railway-Over-Bridge (ROB) proposed under the Baran Urban Transport and Roads Subproject. Potential negative impacts were identified in relation to both construction and operation of the improved infrastructure, but no impacts were identified as being due to either the project design or location. Mitigation measures have been developed to reduce all negative impacts to acceptable levels. These were discussed with specialists responsible for the engineering aspects, and as a result some measures have already been included in the outline designs for the infrastructure. These include:

- Locating all activities within the ROW of existing roads, to avoid the need to acquire land or relocate people;

151. This means that the number of impacts and their significance has already been reduced by amending the design.

152. Regardless of these and various other actions taken during the IEE process and in developing the project, there will still be impacts on the environment when the ROB is built and when it is operating. This is mainly because of the relatively large size of the structure, its location at a busy road and rail intersection, and the fact that the work involves some excavation so there could be a risk of uncovering historical remains from the rich cultural history of Rajasthan. Because of these factors the most significant impacts are on the physical environment, the human environment, and the cultural heritage.

153. During the construction phase, impacts mainly arise from the need to import a large quantity of waste soil to fill RCC box-units built to raise the level of the approach roads, and because the work will inevitably cause some disruption to road and rail traffic. These are common impacts of construction in urban areas, and there are well developed methods for their mitigation. These include:

- Covering soil during transportation and when stored on site;

- Watering exposed soil during dry and windy weather;

- Planning work with the appropriate authorities to minimise disruption of road/rail traffic.

154. There could also be a need to acquire a small amount of land at the periphery of the site, which includes a thin strip inside the boundary of some establishments. Such impacts are also frequently encountered and are dealt with by a combination of the legal process and additional measures required by ADB policy on Involuntary Resettlement. Actions are discussed in a separate Resettlement Plan and Resettlement Framework, and include:

- Acquisition of land through the GoI Land Acquisition Act, through which the market value is paid, based on an analysis of recent transactions;

- Ensuring that no more than 10% of the land of a single owner or occupant is acquired;

- Providing additional compensation for loss of business and income-generating assets.

155. One field in which impacts are much less routine is archaeology, and here a series of specific measures have been developed to avoid damaging important remains. These include:

- Assessing the archaeological potential of the site, and selecting an alternative subproject if the site is considered to be of medium or high risk;

- Including archaeological, cultural and historical authorities and interest groups as project stakeholders to benefit from their expertise;

- Developing a protocol for use in conducting all excavation to ensure that any chance finds are recognised, protected and conserved.

156. Special measures were also developed to protect workers and the public from exposure to carcinogenic asbestos fibres in the event that Asbestos Cement pipes used in the existing water supply system are uncovered accidentally during excavation work. These are to:

- Avoid all known sites of AC pipes when the locations of new infrastructure are planned in the detailed design stage;

- Train all construction personnel to raise awareness of the dangers of AC and enable early recognition of such pipes if encountered;

- Develop and apply a protocol to protect workers and the public if AC pipes are encountered (including evacuation of the immediate area, use of protective equipment by workers, and safe removal and disposal of AC material).

157. 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 the construction site to provide them with a short-term economic gain;

- Plant large-growing trees at the periphery of the site to mask it from view and give it a more natural and pleasing appearance.

158. These and the other mitigation and enhancement measures are summarised in **Table 7.1,** which also shows the location of the impact, the body responsible for the mitigation, and the programme for its implementation.

159. Once the ROB is completed, it will operate with routine maintenance (such as occasional repairs of the road, safety barriers and signs), which will be small-scale, infrequent and short in duration and should not affect the environment. The only mitigation required in this period is to plan any maintenance work with the town authorities and police to ensure adequate precautions are taken to maintain the safety of workers and road users.

160. The main impacts of the operating ROB will be beneficial in improving the infrastructure of the town by providing a more efficient and effective transport route, which should improve the overall economy by reducing time spent idle in traffic by delivery vehicles, employees and customers. The general environment will also be improved at this location as the daily concentration of vehicular noise and pollution from exhaust gases will be removed.

161. **Table 7.1** also assesses the effectiveness of each mitigation measure in reducing each impact to an acceptable level. This is shown as the level of significance of the residual impact (remaining after the mitigation is applied). This shows that all impacts will be rendered at least neutral (successfully mitigated), and that certain measures will produce a benefit (in addition to the major benefits provided by the operating schemes).

162. Mitigation will be assured by a programme of environmental monitoring conducted during both construction and operation to ensure that all measures are provided as intended, and to determine whether the environment is protected as envisaged. This will include observations on and off site, document checks, and interviews with workers and beneficiaries, and any requirements for remedial action will be reported to the IPMU.

B. Recommendations

163. There are two straightforward but essential recommendations that need to be followed to ensure that the environmental impacts of the project are successfully mitigated. These are that LSGD should ensure that:

- All mitigation, compensation and enhancement measures proposed in this IEE report (Table 7.1) and in the Resettlement Framework for the RUSDIP are implemented in full, as described in these two documents;

- The Environmental Monitoring Plan proposed in Section VII.C of this report and the internal and external monitoring proposed in the Resettlement Framework are also implemented in full.

X. CONCLUSIONS

1. The environmental status of the proposed improvements in urban transport and road (ROB) sector in Baran Town has been assessed. Issues related to Involuntary Resettlement were assessed by a parallel process of resettlement planning and will be compensated by measures set out in detail in the Resettlement Framework for the subproject.

2. The overall conclusion of both processes is that providing the mitigation, compensation and enhancement measures are implemented in full, there should be no

significant negative environmental impacts as a result of location, design, construction or operation of the subproject. There should in fact be some small benefits from recommended mitigation and enhancement measures, and major improvements in quality of life and individual and public health once the scheme is in operation.

3. There are no uncertainties in the analysis, and no further studies are required to comply with ADB procedure or national law.

Appendix – 1

Photographs

Annexure II A Photographs

ROB

	
Proposed ROB at NH 76	Proposed ROB at NH 76
	
Proposed ROB at NH 76	Proposed ROB at NH 76
	
Proposed ROB at NH 76	

Appendix- 2

Baran ROB

Chainage wise Land use and possible Impact

Tab. No. 1. From Level Crossing to Towards Baran Side

S.No.	Chainage wise *in Mts.*	Remarks
1	0-25 25-50 50-75	Presence of Foot path shops/petty shops
2	75-100	Open plot area
3	100-125	Shops and residential buildings
4	125-150	Godown and other buildings
5	150-175	Open plot area
6	175-200	Commercial buildings (National Insurance Company ltd.,)
7	200-250	Hospitals and Godown present in this area
8	250-300	Shops
9	300-325	Residential buildings
10	325-375	Hospitals (Radhakrishna hospital) area.
11	375-500	Residential buildings

Appendix – 3

Rapid Environmental Assessment (REA) Check List for Baran ROB

Country/Project Title: Construction of 2 Lanes ROB at level crossing no. 37 on NH 76 at Baran

Sector Division: BCH/BR/01

Item	Screening Questions	Yes/No	Remarks
A	Is the project area adjacent to or within any of the following environmentally sensitive areas?		
	▪ Cultural heritage site	No	There is no cultural heritage site present near the influence area of the proposed ROB site
	▪ Protected area	No	There are no protected areas in the proximity of Baran town, and no special ecological interest around the proposed landfill site. It is covered only by secondary scrub vegetation.
	▪ Wetland	No	There are no wetlands near the project area.
	▪ Mangrove	No	There is no Mangrove forest near the project area.
	▪ Estuarine	No	There is no estuarine environment near project area.
	▪ Buffer zone of protected area	No	The proposed project area doesn't come near any buffer zone of protected area.
	▪ Special area of protecting biodiversity	No	The proposed project doesn't falls within any special area for protecting biodiversity.
	▪ Bay	No	Presence of bay is not applicable to this area.
B	**Potential Environmental Impacts** Will the project cause…		
	• Encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills and quarries?	Yes	Some temporary impacts on disfiguration of landscape by road embankments, cuts, fill which can be mitigated by adopting good constructional practices. Also necessary mitigation measures will be provided in the EMP. There are no historical / cultural areas near to the proposed ROB location and hence the impact is nil.
	• Encroachment of precious ecology (e.g. sensitive or protected	No	There is no encroachment of precious ecology in the proposed ROB location and hence the impact is nil.

	areas)?		
	• Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?	No	There are no chances of canal/river crossing. The proposed ROB alignment is on the existing road, hence there is no chance of alteration of surface water. Also good constructional practices will be adopted to avoid any disfiguration of landscape.
	• Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?	Yes	A small pond is located approximately 200 m away from the ROW and it is used for recreational aspects. A park, developed near the pond and the Shiva temple attracts many people. The worker camps will be provided with adequate sanitation facilities. Hence there are no chances of significant impact to the surface water quality.
	• Increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing.	Yes	There may be chances of air emissions during excavation and the civil works activities shall not exceed normal emissions for general building activities of a similar nature. Adequate mitigation measures will have to be incorporated to provide for proper mitigation measures and their implementation shall be monitored during construction.
	• Noise and vibration due to blasting and other civil works?	Yes	Generation of noise during construction will not exceed normal emissions for general building construction activities. The contractor shall ensure that there shall be no noise problem to the residents. Nevertheless, the contractor shall carry out noise measurements at frequencies and locations to be agreed with the employer's representative and carryout measures to control it whenever and wherever needed.
	• Dislocation or involuntary resettlement of people?	No	The proposed ROB is on Level Crossing No. 37 KHA at Kota-Baran- Shivpuri Road (NH 76). Hence dislocation or involuntary resettlement of people is very minimal.
	• Other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?	Yes	Some chances of air emissions during excavation and the civil works activities, which shall not exceed normal emissions for general building activities of a similar nature. Proper mitigation measures will be provided and their implementation shall be monitored during construction.
	• Hazardous driving conditions where construction interferes with	No	This will be averted by providing adequate safety measures at the constructional site. The contractor shall

	pre-existing roads?		appoint dedicated safety officers and submit his safety plans for approval from the employer's representative.
	• Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?	Yes	This will be mitigated by providing adequate sanitation facilities for the workers at the construction camps.
	• Creation of temporary breeding habitats for mosquito vectors of disease?	Yes	Water logging at the construction site and poor sanitation condition at worker's camp may lead to breeding habitats for mosquito and other vectors. This can be averted by good constructional practices and providing adequate sanitation facilities at he worker's camp. Also it is the responsibility of the contractor to avoid water logging at construction site and at worker's camp.
	• Dislocation and compulsory resettlement of people living in right-of-way?	No	
	• Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life?	No	Alternate routes will be provided to avoid traffic congestion.
	• Increased noise and air pollution resulting from traffic volume?	Yes	There may be chances in increase of traffic volume in future which substantially increase the noise and air level of that area. Plantation of trees along the sides of ROW may reduce some noise and air emission level. Development of green belt can be included in the detailed design.
	• Increased risk of water pollution from oil, grease and fuel spills and other materials from vehicles using the road?	No	There are no water bodies very near to the proposed ROB.

Appendix- 4

KOTA BARAN ROAD RAILWAY CROSSING ROB BARAN

1. PUBLIC CONSULTATION- ENVIRONMENT

Issues discussed

- Awareness and extent of the project and development components
- Benefits of Project for the economic and social Upliftment of Community
- Labour availability in the Project area or requirement of outside labour involvement
- Local disturbances due to Project Construction Work
- Necessity of tree felling etc. at project sites
- Water logging and drainage problem if any
- Drinking water problem
- Forest and sensitive area nearby the project site
- Movement of wild animal etc.

1. Date & time of Consultation *12.05.08, 12PM*
2. Location *RAILWAY OVER BRIDGE SITE AT BARAN*

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

Sr. No.	Key Issues/Demands	Perception of community
1	Awareness of the project – including coverage area	Yes
2	In what way they may associate with the project	Local Resident/ Beneficiary
3	Presence of any forest, wild life or any sensitive / unique environmental components nearby the project area	No
4	Presence of historical/ cultural/ religious sites nearby	No. Chabutra mata ji chabutra jind baba, which is 20-30 m away form the railway crossing.
5	Un favorable climatic condition	No
6	Occurrence of flood	No
7	Drainage and sewerage problem facing	No
8	Present drinking water problem – quantity and quality	No
9	Present solid waste collection and disposal problem	NA
10	Availability of labor during construction time	Local labor available
11	Access road to project site	Yes B.T. Road
12	Perception on tree felling and afforestation	Yes, agreed

Sr. No.	Key Issues/Demands	Perception of community
13	Dust and noise pollution and disturbances during construction work	Yes, Dust and noise problem
14	Setting up worker camp site within the project locality	Near project locality
15	Safety of residents during construction phase and plying of vehicle for construction activities	-First aid facility, -Movement of traffic should not interfere daily activity.
16	Conflict among beneficiaries down stream users – water supply project using of river water	NA
17	Requirement of enhancement of other facilities	No
18	Whether local people agreed to sacrifice their lands (cultivable or not) for beneficial project after getting proper compensation	NA

NAME AND POSITION OF PERSONS CONSULTED

SH.MADAN LAL AGRAWAL

KIRANA SHOPKEEPER

2. PUBLIC CONSULTATION- ENVIRONMENT

1 Date & time of Consultation *12.05.08, 12.35PM*

2 Location *KOTA BARAN RAILWAY CROSSING ROB SITE*

Table: Issues of the Public Consultation- Design phase

Sr. No.	Key Issues/Demands	Perception of community
1	Awareness of the project – including coverage area	YES
2	In what way they may associate with the project	BENEFICIARY
3	Presence of any forest, wild life or any sensitive / unique environmental components nearby the project area	No
4	Presence of historical/ cultural/ religious sites nearby	No
5	Un favorable climatic condition	No
6	Occurrence of flood	No
7	Drainage and sewerage problem facing	No
8	Present drinking water problem – quantity and	No

Sr. No.	Key Issues/Demands	Perception of community
	quality	
9	Present solid waste collection and disposal problem	NA
10	Availability of labour during construction time	Local labor available
11	Access road to project site	B.T. Road
12	Perception on tree felling and afforestation	NA
13	Dust and noise pollution and disturbances during construction work	Yes, Dust and noise problem
14	Setting up worker camp site within the project locality	Near project site
15	Safety of residents during construction phase and plying of vehicle for construction activities	Construction vehicle should not disturb their daily activity
16	Conflict among beneficiaries down stream users – water supply project using of river water	NA
17	Requirement of enhancement of other facilities	No
18	Whether local people agreed to sacrifice their lands (cultivable or not) for beneficial project after getting proper compensation	NA

NAME AND POSITION OF PERSONS CONSULTED

SH. AMIT LAL (PAN SHOP)

3. PUBLIC CONSULTATION- ENVIRONMENT

1 Date & time of Consultation 12.05.08, 12.45

2. Location NEAR ROB KOTA BARAN ROAD

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

Sr. No.	Key Issues/Demands	Perception of community
1	Awareness of the project – including coverage area	YES
2	In what way they may associate with the project	TRANSPORTER
3	Presence of any forest, wild life or any sensitive / unique environmental components nearby the project area	NO
4	Presence of historical/ cultural/ religious sites nearby	NO
5	Un favorable climatic condition	NO
6	Occurrence of flood	NO
7	Drainage and sewerage problem facing	N.A.
8	Present drinking water problem – quantity and	N.A.

Sr. No.	Key Issues/Demands	Perception of community
	quality	
9	Present solid waste collection and disposal problem	N.A.
10	Availability of labour during construction time	Local labour available
11	Access road to project site	BT ROAD
12	Perception of villagers on tree felling and afforestation	N.A.
13	Dust and noise pollution and disturbances during construction work	Dust and noise problem
14	Setting up worker camp site within the project locality	Near project site
15	Safety of residents during construction phase and plying of vehicle for construction activities	Proper safety arrangement should be made for proper movement of construction vehicle road should be widened.
16	Conflict among beneficiaries downstream users – water supply project using of river water	N.A.
17	Requirement of enhancement of other facilities	No
18	Whether local people agreed to sacrifice their lands (cultivable or not) for beneficial project after getting proper compensation	Govt. land available

NAME AND POSITION OF PERSONS CONSULTED

SH. SATYA PRAKASH AGARWAL

4. PUBLIC CONSULTATION- ENVIRONMENT

1 Date & time of Consultation 12.05.08, 1.00PM

2 Location NEAR ROB KOTA BARAN RAILWAY CROSSING BARAN SIDE

Table: Issues of the Public Consultation- Design phase

Sr. No.	Key Issues/Demands	Perception of community
1	Awareness of the project – including coverage area	Yes
2	In what way they may associate with the project	-
3	Presence of any forest, wild life or any sensitive / unique environmental components nearby the project area	No
4	Presence of historical/ cultural/ religious sites nearby	No
5	Un favorable climatic condition	No
6	Occurrence of flood	No
7	Drainage and sewerage problem facing	No
8	Present drinking water problem – quantity and quality	No
9	Present solid waste collection and disposal problem	NA

Sr. No.	Key Issues/Demands	Perception of community
10	Availability of labor during construction time	Yes
11	Access road to project site	Yes BT Road
12	Perception on tree felling and afforestation	Yes, agreed to help the authority
13	Dust and noise pollution and disturbances during construction work	Dust and Noise Problem
14	Setting up worker camp site within the project locality	Neat Project Site
15	Safety of residents during construction phase and plying of vehicle for construction activities	Proper Traffic Movement
16	Conflict among beneficiaries downstream users – water supply project using of river water	NA
17	Requirement of enhancement of other facilities	Require More Road Width For Grain Mandi Loaded Tracks, Tractor Etc. Not Suitable For Grain Mandi Transportation
18	Whether local people agreed to sacrifice their lands (cultivable or not) for beneficial project after getting proper compensation	Govt. Land Available

NAME AND POSITION OF PERSONS CONSULTED

SH. SHANKAR LAL NAGAR (TRACTOR AGENCY)

5. PUBLIC CONSULTATION- ENVIRONMENT

1. Date & time of Consultation 12.05.08 1.30PM

2. Location KOTA BARAN ROB SITE KOTA SIDE

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

Sr. No.	Key Issues/Demands	Perception of community
1	Awareness of the project – including coverage area	Yes
2	In what way they may associate with the project	-
3	Presence of any forest, wild life or any sensitive / unique environmental components nearby the project area	No
4	Presence of historical/ cultural/ religious sites nearby	No
5	Un favorable climatic condition	No
6	Occurrence of flood	No
7	Drainage and sewerage problem facing	No
8	Present drinking water problem – quantity and quality	No
9	Present solid waste collection and disposal problem	NA

Sr. No.	Key Issues/Demands	Perception of community
10	Availability of labour during construction time	Yes. Labor is available
11	Access road to project site	BT Road
12	Perception on tree felling and afforestation	Yes
13	Dust and noise pollution and disturbances during construction work	Dust and noise problem
14	Setting up worker camp site within the project locality	Project locality
15	Safety of residents during construction phase and plying of vehicle for construction activities	Proper traffic movement
16	Conflict among beneficiaries down stream users – water supply project using of river water	NA
17	Requirement of enhancement of other facilities	-
18	Whether local people agreed to sacrifice their lands (cultivable or not) for beneficial project after getting proper compensation	Govt. Land available

NAME AND POSITION OF PERSONS CONSULTED

SH. LALIT SONI TEA SHOP