Initial Environmental Examination

(New Additional Proposal)
Road Subproject is already in execution. Scope of work under execution includes widening and strengthening of various city roads. Enhancement in work proposed to above includes widening and straighten of other towns roads in Dholpur town.

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India: Rajasthan Urban Sector Development Investment Program- Dholpur Roads Improvement Subproject (TR-03)

Prepared by Local Self Government Department for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 15 August 2012)

Currency Unit	=	Indian rupee/s (Re/Rs)
Re1.00	=	$0.0181
$1.00	=	Rs55.175

ABBREVIATION

ADB	-	Asian Development Bank
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
LSGD	-	Local Self-Government Department
MFF	-	Multitranche Financing Facility
MoEF	-	Ministry of Environment and Forests
NAAQS	-	National Ambient Air Quality Standards
OD	-	Outer Diameter
OHSR	-	Over Head Service Reservoir
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
STP	-	Sewerage Treatment Plant
ToR	-	Terms of Reference
UA	-	Urban Agglomeration
UIDSSMT	-	Urban Infrastructure Development Scheme for Small and Medium Towns
USEPA	-	United States Environmental Protection Agency

WEIGHTS AND MEASURES

lakh	–	100 thousand = 100,000
crore	–	100 lakhs = 10,000,000
µg/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

NOTES

(i) The fiscal year (FY) of the Government of India and its agencies begins on 1 April and ends on 31 March. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2011 begins on 1 April 2011 and ends on 31 March 2012.

(ii) In this report, "$" refers to US dollars.

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EXECUTIVE SUMMARY

1. **Introduction and Regulatory Framework:** Rajasthan Urban Sector Development Investment Program (RUSDIP) is intended to optimize social and economic development in 15 selected towns in the State, particularly district headquarters and towns with significant tourism potential. RUSDIP Phase II 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. RUSDIP will improve infrastructure through the design and implementation of a series of subprojects, each providing improvements in a particular sector (water supply, sewerage, drainage, road, solid waste etc) in one town.

2. The IEE of subprojects has been prepared as per applicable ADB Environment Policy (2009). Projects are screened for their expected environmental impacts and are assigned to Category A, B, C and F1. RUSDIP has been classified by ADB as environmental assessment category B (some negative impacts but less significant than category A).

3. This is the Initial Environmental Examination (IEE) report for the Dholpur road-transport sector. It discusses the generic environmental impacts and mitigation measures relating to the location, design, construction and operation of physical works proposed under this subproject.

4. Project Description: The sub-project is located in Dholpur Town, the headquarters of Dholpur district, in the eastern part of Rajasthan. The main component of the sub-project is strengthening and widening of the roads in Dholpur town. IEE of Dholpur road sector subprojects was approved earlier (RUSDIP/TR-03/DLP/ST/01) sub-project involving:

(i) Gurudwara Road - Palace Tiraha to Fubbara Chowk Road via Gurudwara (Length - 630m);
(ii) Nagar Palika Road/ Gaurav Path - Hardeo Nagar Tiraha to Water Works Chauraha (Length – 1,008m), and Muchkund Road- Water Works to Mangal Bharti Hanuman (2,331 m).

5. The package (RUSDIP/TR-03/DLP/ST/02) covers widening, strengthening & improvement of six roads namely:

(i) Gulab bagh to Housing Board Road;
(ii) Jagdish Talkies Tiraha to Sapau Road Police Line;
(iii) Fabbara Chouraha to Patpara Mohalla;
(iv) Zubli Chouraha to Patpara Mohalla;
(v) Hardey Tiraha to Futa Darvaza; and
(vi) Government Hospital to Jail Road.

and the package (RUSDIP/TR-03/DLP/ST/03) covers widening, strengthening & improvement of ten roads namely:

(i) Ondela Road;
(ii) Bari Road to Muchkund Road (ITI road);
(iii) Jagan Chauraha to Station Road;
(iv) Roadways Bus stand to Top Tiraha (Santar Road);
(v) Rajakhera Bypass to Baghel Colony via Govind Vatika;
(vi) Kalimai Road Railway crossing to Bajariya Tiraha;
(vii) Chopra Temple near Nursary to Saipau road via Hundawal nagar, Gurumel road;
(viii) Mangal Bharti Hanuman Mandir to Muchkund Road;
(ix) NH to Rajakhera bypass railway crossing and Kalimai raod from Narrow gauge track to Rajakhera bypass bridge; and

(x) Jagdish tiraha puliya to nursery road.

6. Description of Environment: The Dholpur city is located at 770 53' E Longitude and 260 24' N Latitude. The average elevation is 502 m above the mean sea level. Dholpur is located in high level terrain of Chambal valley and is having rocky formation of disintegrated rock and not a much fertile zone. The general slope of the city is from west to east, which is also the direction of drainage. Nearly, all ephemeral streams flow in this direction. Dholpur town lies in low damage risk zone with of Zone II. The area is less prone to earthquakes as it is located on relatively stable geological plains based on evaluation of the available earthquake zone information. Major parts of the district falls within the flood plain of the Chambal river system. As such much of the district is covered by Alluvium and Aeolian sand of Quaternary age. Soil of the region falls within rainfall zone of 500- 700 mm. The soil is generally alluvial in nature which prone to water logging. Also nature of recently alluvial calcareous has been observed. The climate of Dholpur town is generally dry. The average maximum temperature during summer is 48°C and minimum during winter can go down to nearly 2°C. Humidity in air has been known to drop to as low as 20 percent. It is only during the southwest monsoon that the humidity increases to nominal levels of 70 percent or more. The normal annual rainfall is 614.74 mm and the highest rainfall was recorded as 1,032.2 mm in 1995. The Ambient Air and Noise quality was monitored in May 2012 in Dholpur town. The results of air quality monitoring shows that levels of particulate matter (particle size ≤10µm) are higher than the standards. Traffic is the only significant source of pollutant in Dholpur so levels of oxides of sulphur and nitrogen are within the National Ambient Air Quality Standards (NAAQS). Water quality (tested by PHED) from existing tube wells, especially around the city centre, has deteriorated significantly with a total dissolved solids having increased from 1000 ppm to 3500 ppm thereby rendering water unsuitable for human consumption. The results also indicate higher concentration of nitrate (10 percent samples) and iron (30 percent samples) than recommended levels prescribed by the Indian standards on drinking water. In and around the sub-project area, no endangered species of flora and fauna has been reported

7. Dholpur, being the district headquarters for Dholpur District, performs all administrative and revenue functions required of a district center. Traditionally, Dholpur is a commercial town and the main occupation of the people is agriculture and commercial. According to the Census of 2001, the work force participation ratio in Dholpur is 24.25 percent, which is marginally lower when compared with cities such as Kota (27.6%), Jaipur (27.0%), Udaipur (28.0) and the state of Rajasthan (26.6%). Out of the total area of 32.03 Sq. km (3200 ha), only 700 ha area is urbanized, the southern portion is covered by rocky ground and the northern portion is agriculture area. Out of total developed area of 593 ha, 50.1% are is under residential and 14.9% area is under commercial and industrial development. Dholpur is an important center for trade and commerce in the District. Art works occupies an important place in the city economy and basically the craft includes stone carving. The trade and commerce activities can be broadly classified into two categories namely the organized and unorganized markets. During the last century, Dholpur remained industrially backward. It mainly depended on agriculture and few cottage industries. Quarrying of building stone was the only activity which provided employment to the comparatively large section of the population.

8. Water supply to Dholpur is from two different sources; one source groundwater sources comprising tube well and open wells and other one is surface water from perennial River Chambal. Groundwater is tapped through open wells (8 nos.) and tube-wells (14 nos.).There are no records available for the quantum of ground water supplied to the town. In the case of surface based source, raw water is presently pumped from River Chambal through an intake well constructed 30 years back. Raw water is then treated at an old filter plant of capacity 5.4

MLD is at PHED campus and a newly constructed filter plant of capacity 9.6 MLD is at Sagarpada. There is no underground sewage system in Dholpur Town at present. Only few households have their individual septic tanks. The disposal of waste and effluent of septic tank is through the open drains. Presently the road in Dholpur Town is equipped with open drains, but most of the drains are silted resulting in overflow and resulting flooding in monsoon. The present estimated generation of solid waste is 58.90 MT/D and collection is about 60-65% of the total waste generated in town. Dholpur comprises a road network of 175 km, consisting of 40 km concrete roads, 8 km bituminous roads, and 64 km of water bound macadam roads and earthen road of 63 km. and 45.5 km of BT road under PWD provides a road surface composition in Dholpur.

9. According to Census 2001, the population of Dholpur Urban Agglomeration is 97,795 and spreads over Dholpur Municipal Council (organized into 37 wards, 35 nos. M & 2 nos OG).The total spread of the Urban Agglomeration is approximately 32.03 sq. km. According to the census, in 2001 only 25-30% of the population was in paid employment, significantly lower than both the state and national averages (42.1 and 39.1% respectively). There are good educational facilities in Dholpur town, which serve both townspeople and inhabitants of surrounding villages and towns in the hinterland. There are 938 primary schools, 641 nos. upper primary school, 203 nos. secondary and higher secondary schools, plus 17 degree colleges and three industrial training institutes (ITI) in Dholpur district. As the district headquarters town, Dholpur is the main centre for health facilities in the area and there is a district general hospital, 1 CHC, 22 primary health centers in the district. The main attractions in Dholpur are Talab Shahi and Muchkund Lake. This picturesque lake and the palace were built in the year 1617 AD as a shooting Lodge for Mughal Prince Shah Jahan. Muchkund is about 5.0 Km from Dholpur and is named after Raja Muchkund.

10. **Potential environmental impacts and mitigation measure:** All pre-construction (design), construction, and operation activities that are likely to impact on environment were identified, and evaluated to assess their magnitude, duration, and potential receptors in consultation with the stakeholders. 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 during design phase.

11. No protected area is located near the proposed roads, except few temples located along the proposed road. Temporary shifting of shops may be required during widening of the road.

12. During project implementation the impacts are consider on physical environment like water, air, soil, noise; on biological environment, like flora and socio-economic environment (which is positive in some extent) and sensitive receptors. All the impacts are temporary and for short duration. In all the cases mitigation measures i.e. control of air, dust pollution, checking of water and noise pollution, protection of biological environment and minimize the social impacts are taken care. Safety measures, both occupational and social are considered and those are depicted in this report. Traffic management plan will be implemented during construction of roads. During operation phases there are few positive socio-economic impacts will be anticipated.

13. **Institutional responsibility and Environmental management and monitoring plan:** LSGD is the Executing Agency (EA) responsible for management, coordination and execution of all activities funded under the loan. 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 IEE, to ensure that mitigation measures are provided and protect the environment as intended.

14. Implementation of Environmental management plan and monitoring frequency will be taken care during construction phase. Most the mitigation activities are the responsibility of the Construction Contractors (CC) employed to build the infrastructure during the construction stage, or the O&M contractors employed to conduct maintenance or repair work when the project road is in operational stage. Responsibility for the relevant measures will be assigned to the contractor via the contract 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 capacity as project proponent, and some actions related to the design that will be implemented by the DSC. Mitigation measures are fairly standard methods of minimising disturbance to nearby residents 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. Environmental management and monitoring cost for the sub-project has been estimated as 0.94 million Rupees.

15. **Public consultation, information disclosure and grievance redress mechanism:** Public consultation with primary and secondary stakeholders has been conducted to understanding the local issues and public views regarding the possible impact. The group discussion meeting was conduct by RUIDP. The issues like, 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 etc. On the basis of outcome of consultation the action plan has been developed. 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.

16. The project authority will establish a mechanism to receive and facilitate resolution of affected persons' concerns, complaints and grievances about the project's environmental performance.

17. **Recommendation and Conclusion:** 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 and in the Resettlement Framework for the RUSDIP are implemented in full, as described in these two documents and the Environmental Monitoring Plan proposed in IEE and the internal and external monitoring proposed in the Resettlement Framework are also implemented in full.

18. This initial environmental examination (IEE) ascertains that the subproject is unlikely to cause any significant environmental impacts. Few impacts were identified attributable to the proposed subproject, all of which are localized and temporary in nature and can be easily mitigated with minor to negligible residual impacts. There are no uncertainties in the analysis, and no additional work/study is required to comply with ADB procedure.

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 Multi-tranche 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 (some negative impacts but less significant than category A). The impacts of subprojects prepared according to ADB Environment Policy (2009) 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 to be 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.

1. ADB Policy

5. ADB's Environment Policy (2009) requires the consideration of environmental issues in all aspects of the Bank's operations, and the requirements for Environmental Assessment as described in its Operations Manual (OM). 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:

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

(ii) **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.

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

(iv) **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 categorized 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.

2. National Law

8. The GoI EIA Notification of 2006 and its amendments till date (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 prior to 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 categorizes the project as either B1 (requiring EIA study) or B2 (no EIA study), and prepares TOR for B1 projects within 60 days. On completion of the study and review of the report by the EAC, the SEIAA issues the 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 Common[1] Municipal Solid Waste Management Facilities (CMSWMF), where EC is

[1] For the purpose of EIA Notification, common municipal solid waste management facilities may be referred as centralized MSW facility for an given town, city, region. It is further to mention a common facility need not have surrounding ULBs included.(Technical EIA Guidance Manual for CMSWMF).

required for all Common Municipal Solid Waste Management Facilities. Thus the Environmental Clearance (EC) is not required for this subproject however to fulfill ADB procedure and IEE need to be prepared and approved by ADB.

12. The summary of environmental regulations and mandatory requirements for the proposed subproject is shown in Table 1.1

Table 1.1: Applicable Environmental Regulations and Legislations and its Applicability

Acts/Guidelines	Purpose	Applicability to subproject
The EIA notification, 2006 (and its subsequent amendments in 2009) provides for categorization of projects into category A and B, based on extent of impact	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 categorized as A or B depending on the scale of the project and the nature of its impacts. Categories A projects require Environmental Clearance from the National Ministry of Environment and Forests (MoEF). Category B projects require environmental clearance from the State Environment Impact Assessment Authority (SEIAA).	Not applicable The sub project is not included in schedule of environmental impact assessment notification 2006 and its subsequent amendments till dates so it is not categories as either Category A or Category B. As a result, environmental clearance is not required, either from the state or the central Government.
The Wildlife Conservation Act, 1972,	Clearance from state and national wildlife boards, Central Empowered Committee of Hon'ble Supreme Court of India and the State Wildlife Department, as applicable.	Not Applicable
Rajasthan Forest (Conservation) Act, 1953	Clearance from Forest department for cutting of trees, if any.	Applicable
The Ancient Monuments and Archaeological Sites and Remains Act, 1958, and the rules, 1959 provide guidance for carrying out activities, including conservation, construction and reuse in and around the protected monuments.	Permission from the Archaeological Survey of India for carrying out any construction activities within the prohibited and regulated areas of the ancient monuments and archaeologically protected sites.	Not Applicable
Water (Prevention and control of pollution) Act, 1974, as amended Air (prevention and control of pollution) Act, 1981, as amended and	Consent to Establish (CTE) and Consent to Operate (CTO) from the RSPCB for setting up of hot mix plants, wet mix plants, stone crushers and diesel generators (if installed for construction). To be obtained by the Contractor, prior to construction.	Applicable
Water (Prevention and Control of Pollution) Cess Act, 1977 including Rules	Applicable to all activities, which discharge effluents as a result of process or operations	Applicable
Public Liability and Insurance Act 1991	Protection form hazardous materials and accidents.	Applicable
Noise Pollution (Regulation and Control Act) , 2000	The standards for noise for day and night have been promulgated by the MoEF for various land uses. DG sets at construction	Applicable

Acts/Guidelines	Purpose	Applicability to subproject
	sites should be provided with acoustics enclosures.	
Central Motor Vehicle Act 1988 and Central Motor Vehicle Rules1989	To check vehicular air and noise pollution. All vehicles in Use shall obtain Pollution Under Control (PUC) certificates by the contractor	Applicable
Child Labour Act 1986	No child shall be employed or permitted to work in any of the scheduled occupations	Applicable

3. Review and Approval Procedure

13. 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. 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.

4. Scope of Study

14. This IEE has been prepared for the Dholpur road sector project. It discusses the generic environmental impacts and mitigation measures relating to the location, design, construction and operation of physical works proposed under this subproject.

II. DESCRIPTION OF THE PROJECT

A. Type, Category and Need

15. This is a transportation sub-project, and as explained above it has been classified by ADB as Category B sub-project, as it is not expected to have major negative environmental impacts. Under ADB procedures such projects require an IEE to identify and mitigate the impacts, and to determine whether further more detailed study is required or not. 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. This is one of the series of subprojects designed by the RUSDIP that are intended to raise the standards of the municipal infrastructure and services of Dholpur and the other urban centers to those expected of modern Asian towns.

B. Location, Size and Implementation Schedule

16. The sub-project is located in Dholpur, the headquarters town of Dholpur district, in the eastern part of Rajasthan. The infrastructure will consist of widening of 3 road sections in package RUSDIP/TR-03/DLP/ST/01, 5 road sections in package RUSDIP/TR-03/DLP/ST/02 and 10 road sections in package RUSDIP/TR-03/DLP/ST/03 within the Dholpur town (Figure 2.1).

17. The identified road stretches passes from various small commercial/residential area of Dholpur town. Due to inadequate carriageway width, the road becomes congested resulting into low speeds and to possibility of accidents. There are number of schools, commercial buildings,

hospitals and other important locations in the town connected by these road stretches to other parts of the state through NH-3 which gets disturbed due to traffic congestion. Therefore, widening and strengthening of these road stretches is absolutely necessary to ease traffic situation within the town, to provide relief and time savings to through traffic and to reduce accidents, congestion and operating expenses of the vehicles

18. Detailed design started in the beginning of year 2010 and construction is expected to be completed by the end of the 2013.

C. Description of the Subproject

1. Existing Road and traffic at Dholpur

19. Dholpur comprises a road network of 175 km, consisting of 40 km concrete roads, 8 km bituminous roads, and 64 km of water bound macadam roads and earthen road of 63 Km. and 45.5 km of BT road under PWD .

20. Project Road Stretches : In Dholpur Town, 2 (two) road stretches were identified for development in package RUSDIP/TR-03/DLP/ST/01, six road stretches in RUSDIP/TR-03/DLP/ST/02 and ten road stretches in package RUSDIP/TR-03/DLP/ST/03.

21. **Existing Road Features:** The existing roads have the following features :

22. **Roads under package** (RUSDIP/TR-03/DLP/ST/01)

(i) Gurudwara Road: - Palace to Fubbara Road via Gurudwara starts near the Rani Palace and terminates at the Fubbara Chowk of the Gaurav Path. The existing bituminous paved portion of the road is 3.5m with average 2.0m wide earthen shoulder on either side of the road. The length of the road stretch is 630m. The road has approx. ROW of 12m.

(ii) Nagar Palika to Muchkund Road:-

(a) *Part A) Hardeo Nagar Tiraha to Water Works Chauraha i.e. Gaurav Path/ Nagar Palika Road:* starts from the Hardeo Nagar Tiraha and terminates at NH-3 crossing. The existing bituminous paved portion of the road is 5.5m with average 4.0m earthen shoulder on either side of the road. The length of the road stretch is 1,008m. The road has approx. ROW of 30m.

(b) *Part B) Water Works to Manal Bharti Hanuman i.e. Muchkund Road:* starts at the NH-3 crossing with Gaurav Path and terminates near the Muchkund temple. The existing bituminous paved portion of the road is 3.0m with average 2.5m earthen shoulder on either side of the road. The length of the road stretch is 2,331m. The road has approx. ROW of 21m.

23. **Roads under package (RUSDIP/TR-03/DLP/ST/02):** six road stretches has been adopted for development in Dholpur town under this package. The existing roads have the following features:

(i) Gulab bagh to Housign board Road: - Gulab Bagh to Housing board road originates from Gulab bagh and it connects Badi town with Dholpur. The existing bituminous paved portion of the road is 5.5 m with average 1.0m wide earthen shoulder on either side of the road. The length of the road stretch is 3082m. The road has approx. ROW of 30m.

(ii) Jagdish Talkies Tiraha to Policeline Road: - This is the diverging road from Gulabagh to housing board road at Jagdish talkies tiraha. It connects further with

Sapau town. Police line is located on this road which make it important road. The existing bituminous paved portion of the road is 7.0m. Condition of the paved surface is fair. The length of the road stretch is 2009 m.

(iii) Fabbara Chouraha to Patpara Mohalla Road: - Fabbara chouraha to Patpara Mohall road is colony road. The existing cement concrete pavement width is 4 m and is in poor condition. It is small connecting link of 294 m. Available building to building distance is around 11.6 m. Drain is present on left hand side only.

(iv) Zubli Chouraha to Patpara Mohalla Road: - Zubli chourah to Patpara Mohalla is also a colony road. The existing bituminous paved portion of the road is 3.5 m with. The length of the road stretch is 554 m. Available building to building distance is varying and it around 7 m to 11 m. Condition of the road is poor. Studying the past records and observing the requirement of habituated area, it is suggested to replace the flexible pavement with rigid one.

(v) Hardev Tiraha to Futa darvaza Road: - This road connects old Dholpur city to rest of the city. The length of the road stretch is 652 m and because of it's topographic features, it can divided into two sections of 300 and 352 m. The portion of the stretch near hospital has bituminous paved road of 5 m and available building to building distance is around 12 to 15 m. The other segment near futa darvaza has only 3.0 m carriageway and its building to building distance is only 7.0 m. This portion is heavily congested and ribbon development of commercial activities is all around the road. Observing the availability of ROW, it has been found that this road has no major scope of development; only provision of footpath can be provided in first 300m of this road.

(vi) Govt Hospital to Jail Road: - This road diverge from Hardev tirah to Futa darvaza road at Govt hospital and goes till central Jail. This road also acts as one of connecting link to railway station. The existing bituminous paved portion of the road is 5.0 m wide. The length of the road stretch is 712 m. Available building to building distance is around 12 m. Condition of the road is fair to poor.

24. **Roads under package RUSDIP/TR-03/DLP/ST/03:** RUIDP has adopted ten roads of Dholpur city for upgradation under sub-project ST/03. The existing roads have the following features:

(i) Ondela Road: Ondela road originates from NH-3 and connects Dholpur to Ondlea. The stretch of 1 km considered for development is 5.5 m wide and 60% of the stretch is paved with cement concrete and rest is Bituminous. The existing bituminous paved portion of the road is 5.5 m with average 1.0m wide earthen shoulder on either side of the road. The road has approx. ROW of 100feet. Being a industrial area road the ratio of commercial traffic is high. Seeing the commercial traffic and future expansion it is planned to widen this stretch to four lanes divided with 1.2 m median.

(ii) Bari road to Muchkund road: - This is the connecting link between Muchkund and Bari road. The existing bituminous paved portion of the road is 3.5m. Condition of the paved surface is poor. The length of the road stretch is 900 m.

(iii) Jagan chauraha to Station Road: - Jagan chauraha to station road is colony road. The existing bituminous pavement width is 3.5 m and is in poor condition. Available building to building distance is around 7.90 m. Drain is present on one side only. Cement concrete road of 3.75 m width with 1.0m wide shoulders of interlocking tiles is proposed for improving the upgradation of road.

(iv) Roadways Bus stand to top tiraha (Santar Road): - Santar road is one of main market road of Dholpur city. The existing bituminous paved portion of the road is 5.5 m with. The length of the road stretch is 512 m. Available building to building

width is around 15 m. Condition of the road is poor. Seeing the intensity of traffic and pedestrians it is suggested to widen the road to 10.5 m with footpath with 1.5 m footpath.

(v) Rajakhera bypass to Baghel colony Road: - This road starts from Rajakhera bypass near overbridge and passes via govind vatika. This is a colony road which has very few traffic. Existing BT road of 3.75 m (avg) is completely damaged. The length of the road is around 1.10 km and ROW is 30 to 35 feet. A new cement concrete pavement of 3.75 m with drain on both side is proposed for this road.

(vi) Kalimai road railway crossing to Bajariya tiraha: - Kalimai road is busy market road with shops of both side of road. The existing Cement concrete road is 5.5 m and is in good condition. There is 1.0 m wide drain present on the edge of pavement. There is no major scope for development of this road. Analyzing the existing topography of this stretch, it is suggested to provide shoulders of Interlocking tiles of 1.5 m width on one side of the road.

(vii) Chopra temple near Nursery to Saipau road (Gurumel road): - This is basically a connecting link between Saipau road and NH-3. The existing stretch is 3.3 m with bituminous paved surface. Existing pavement condition is very poor. This road passes through open fields and all the waste and rainy water of nearby areas collect around this road. Seeing the possibilities of waterlogging, it is advised to replace the existing flexible pavement with new Cement concrete road. Length of road is 1.70 km.

(viii) Mangal Bharti Hanuman Mandir to Muchkund road: - mangal Bharti hanuman mandir is ancient hindu temple and during the days of religious importance heavy traffic of pilligrammes is observed on this road. In first package of road development the Muchkund road is already widen to 7.0 m. The stretch now in consideration for upgradation is also the extension of that road till final destination i.e Muchkund temple. Therefore this road is now planned to get widen to 5.5 m with shoulders.

(ix) NH-3 to Rajakhera bypass railway crossing: - This road also originated from NH-3 and connects Dholpur town with Rajakhera town. The 300 m stretch considered for development is connecting link of traffic from NH to newly constructed Railway over bridge. This width of stretch is planned to commensurate with ROB and service road.

(x) Jagdish Tiraha puliya to Nursery road via shiv nagar: - This is a colony road with no pavement. The entire waste water of nearby area collects on this 30 ft passage and it remain water logged throughout the year. Analysing the basic requirement It is planned to provide box drain of 1.0 m X 1.0 m on one side and 300 mm wide vibropressed drain on other. The road pavement would be of cement concrete.

25. **Sub-soil investigations:** Sub-soil investigations by digging trial pits were conducted in order to examine the existing road crusts for the identified road stretches. The investigations revealed the following results.

Table 2.1: Details of Existing Road Crust of Proposed Roads

Sl. No.	Road Stretch	Details of the Road Crust
1	Palace to Fubbara Road via. Gurudwara	Base/ Sub-base Course – 275 mm Bituminous Course – 40 mm
2	Hardeo Nagar Tiraha to Water Works	Base/ Sub-base Course – 350 mm

Sl. No.	Road Stretch	Details of the Road Crust
	Chauraha i.e. Gaurav Path	Bituminous Course – 20 mm
3	Water Works to Mangal Bharti Hanuman i.e. Muchkund Road	Base/ Sub-base Course – 150 mm Bituminous Course – 40 mm
4	Ondela road	Base/ Sub-base Course – 200 mm Bituminous Course – 80 mm
5	Bari road to Muchkund road	Base/ Sub-base Course – 260 mm Bituminous Course – 40 mm
6	Roadways Bus stand to top tiraha (Santar Road)	Base/ Sub-base Course – 200 mm Bituminous Course – 80 mm
7	Kalimai road railway crossing to Bajariya tiraha	Base/ Sub-base Course – 225 mm Bituminous Course – 80 mm
8	Chopra temple near Nursery to Saipau road (Gurumel road)	Base/ Sub-base Course – 225 mm Bituminous Course – 20 mm
9	Mangal Bharti Hanuman Mandir to Muchkund road	Base/ Sub-base Course – 250 mm Bituminous Course – 40 mm
10	NH-3 to Rajakhera bypass railway crossing	Base/ Sub-base Course – 200 mm Bituminous Course – 100 mm

26. **Details of Sharp Horizontal Curves and Sharp Vertical Curves:** 1 (One) No. Sharp Horizontal curve is there in the Palace to Fubbara Road via. Gurudwara. 2 (Two) No. Sharp Horizontal curve is there in the Badi road, sharp horizontal curve on Jagan tiraha road and other one on Baghel colony road. Due to constraints of ROW and to avoid Land Acquisition, the curve is not been considered for modification. No other sharp horizontal curve or sharp vertical curve is there in the road stretches.

27. **Details of Major and Minor Intersections:** 1 No. of Major Intersection is there at the end of Gaurav Path and starting of Muchkund Road with NH-3. 3 (three) nos. of 3-legged Minor intersections are there at the start of Gaurav Path, start of Palace to Fubbara Road and at the end of Palace to Fubbara Road. 4 more intersections i.e. Gulab Bagh Tiraha, Jagdish Talkies Tiraha, Hardev Tiraha and Fabbara Chowk are there in the project road under ST/02 sub-project and 2 minor intersections are Ondela road junction and Rajakhera bypass junction on roads under ST/03 sub-project.

28. **Details of Cross Drainage Structures:** The following are the existing cross drainage structures in the road stretches.

Table 2.2: Details of Cross Drainage Structure

Sl. No.	Road Name	Type	Width	Condition
1	Palace to Fubbara Road via. Gurudwara	Slab Culvert	0.60m	Fair
2	Water Works to Mangal Bharti Hanuman	Slab Culvert	1.5m	Fair
3	Jagdish Tirah to Police line Road	Slab Culvert	1.20m	Fair
4	Jagdish Tirah to Police line Road	Slab Culvert	1.2 m	Fair
5	Jagdish Tirah to Police line Road	Slab Culvert	1.2 m	Fair

29. **Details of area of submergence:** The central stretch of approx. 100m length in Palace to Fubbara Road via. Gurudwara, Fabbara chouraha to Patpara mohalla and Zubli chouraha to Patparra mohalla suffer from submergence during the heavy rains in monsoon due to blocked

and insufficient existing side drains is under submergence during the heavy rains in monsoon due to blocked and insufficient existing side drains. The modifications in the vertical profile of the stretch will resolve the problem.

30. **Pavement Condition:** The pavement condition of the road stretches are poor with cracks, ravelling, edge failure and pot holes. Rutting is not seen in the road stretches. The pavement is proposed to be overlaid with bituminous material for proper functioning of the same.

31. The following will be the key outcomes from the Subproject:

(i) Predominant traffic will be served
(ii) Avoid any accident
(iii) Saving of time
(iv) Fuel saving
(v) Traffic congestion will be eased
(vi) Social & Environmental hazards to be improved
(vii) No psychological barrier

2. Design Features:

32. Salient design features are discussed below;

(i) **Design Life.** The design life for urban roads as laid down in Clause 3.3.3.2 of IRC: 37-2001 is 20 years which is considered for design of pavements.

(ii) **Classification of Road.** These roads carries through and continuous traffic but offering somewhat lower level of mobility and as such is classified as sub arterial road as per IRC: 86-1983 “Geometric Design Standards for Urban Roads in Plains” for the purpose of geometric design and space standard. The road passes through plain terrain.

(iii) **Design Speed.** Being an sub arterial road, a design speed of 60 km/hour has been adopted as per IRC: 86-1983

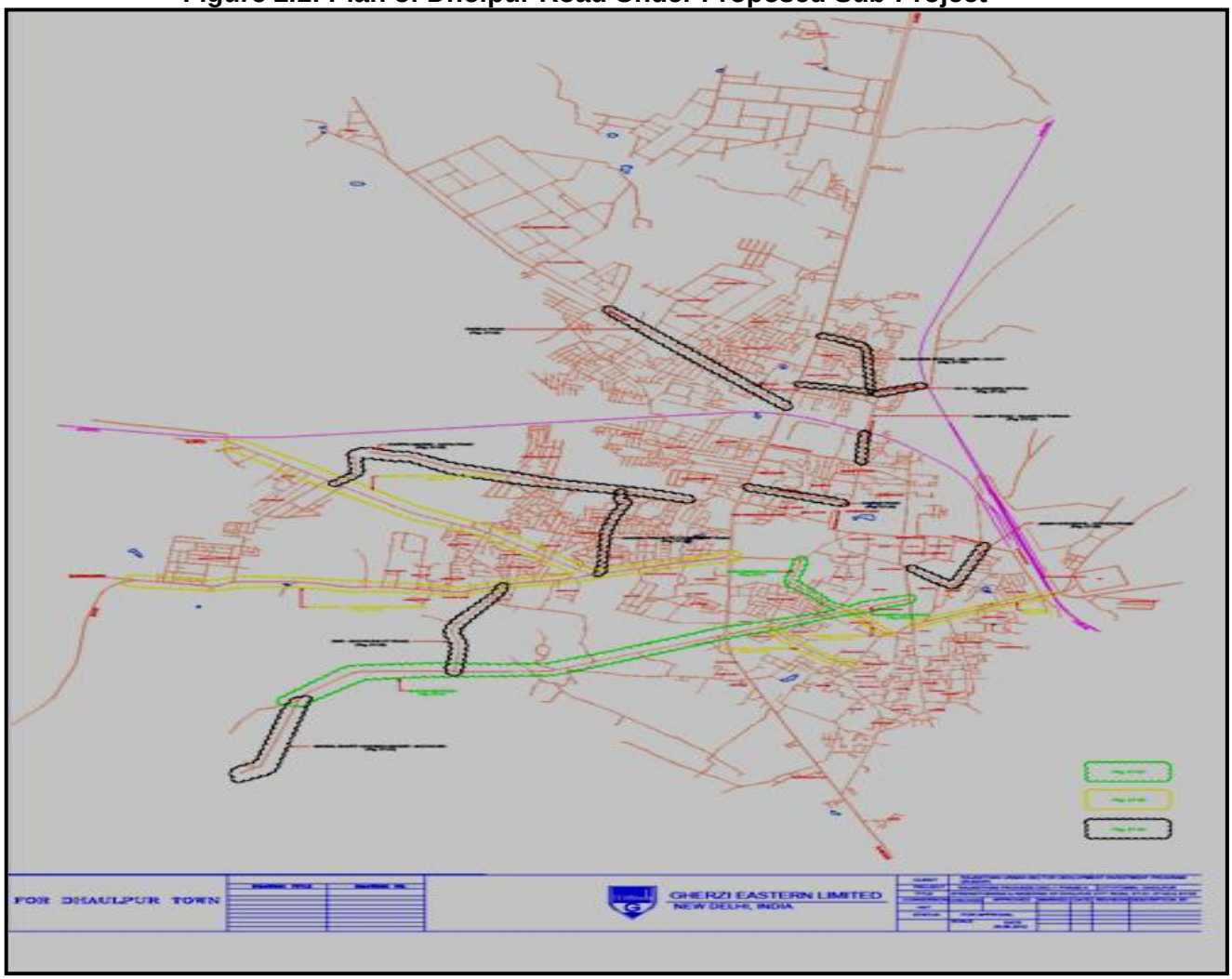
(iv) **Geometric Design - Horizontal Alignment.** There are no sharp curves on the existing alignment. The existing horizontal curves are considered adequate for the design speed of 60 km/hour. As mentioned earlier, the achievable practical speed on road will be around 50 km/hour keeping in view of numerous cross-roads by the road side.

(v) **Geometric Design - Vertical Alignment.** The gradient of the existing road is fairly flat. No major change in the vertical alignment of the road is therefore proposed.

(vi) **Growth Rate.** The classified traffic volume count was not undertaken in past on this road and it is not possible to extrapolate the growth rates from the past trends. The growth rate has been taken as 7.5 per cent per year as per IRC: 37-2001 for the fast moving vehicles such as Cars, Jeeps, Two wheelers, Light Commercial Vehicles, Buses, Trucks, Agricultural Tractor Trailers and Auto-rickshaws as given in the guidelines of the Indian Road Congress.

33. The recommendations for crust thickness have been made as per Plate 2 of IRC: 37-2001.

Figure 2.1: Plan of Dholpur Road Under Proposed Sub-Project



III. DESCRIPTION OF THE ENVIRONMENT

A. Physical Resources

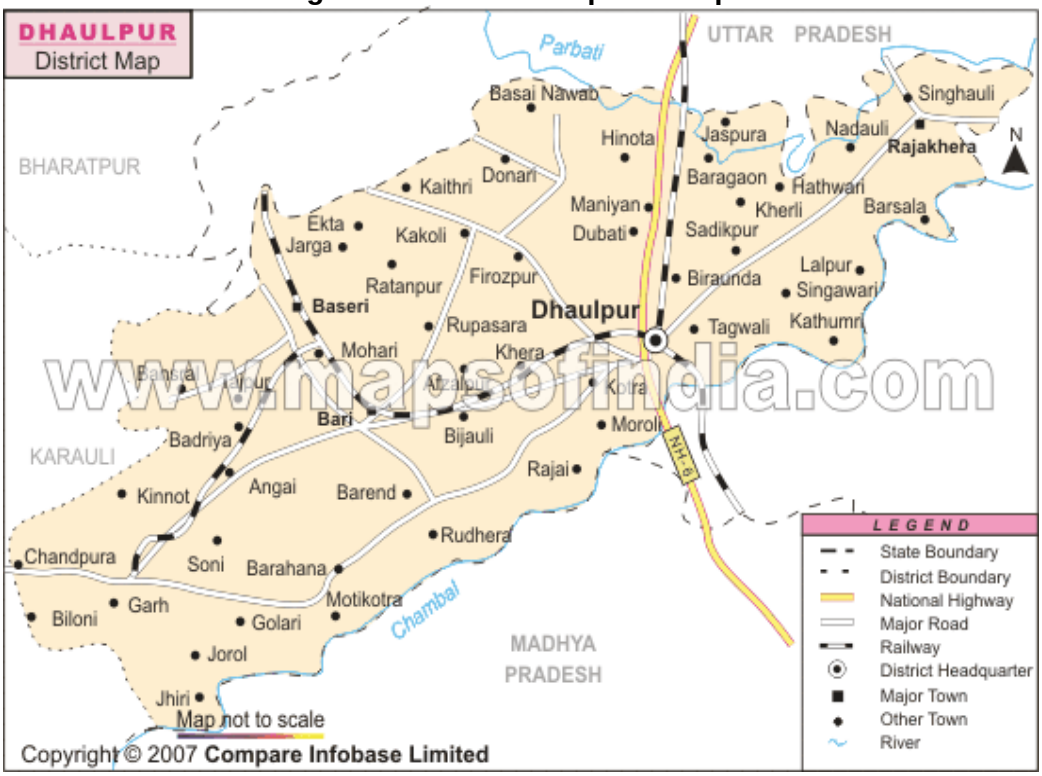
1. Location

34. The Urban Agglomeration (UA) of Dholpur is located abutting territories of Uttar Pradesh and Madhya Pradesh and is Eastern gateway of Rajasthan. Dholpur is 270 kms from state capital Jaipur whereas the world famous Taj Mahal at Agra is only 55 Kms. The Gwalior city of Madhya Pradesh is at 60 kms on south. A bridge over river Parvati connects Dholpur with Uttar Pradesh and another bridge on river Chambal links it with Madhya Pradesh. National Highway number 3 passes through Dholpur and it is well connected with Agra, Gwalior and major cities of Rajasthan like Bharatpur, Alwar, Jaipur etc. by road network. It also falls on the rail network and is well connected with cities of North as well as South India. Dholpur is located on highlands along River Chambal and comprises of three kinds of landforms. The North & Northwest part is sandy, Western part is hilly and the South & Southeast part falls under Chambal Valley. The ravenous landform along River Chambal called 'Daang' in local dialect used to be famous hideout for dreaded dacoits of Chambal region. Dholpur is an important centre for trade and

commerce in the District. Applique works occupies an important place in the city economy and basically the craft includes stone carving.

35. This town has a historic famous fort named Shergadh rebuilt by then ruler Shershah Suri. There is one palace which was built by Mughals. This town has been of historic importance and there are offices of archaeological department of Govt. of India who are care takers of makbara's Masjid. There are there historic gate surround the city. These gates are Delhi Gate in north east, Udaibhan gate in north and Gwalior gate in south east. District map of Dholpur is shown in Figure 3.1.

Figure 3.1: District Map of Dholpur



2. Topography, Drainage, Natural hazard and Drought

36. **Topography:** The Dholpur city is located at 770 53' E Longitude and 260 24' N Latitude. The average elevation is 502 m above the mean sea level. Dholpur is located in high level terrain of Chambal valley and is having rocky formation of disintegrated rock and not a much fertile zone. The Dholpur city is divided into three main topographies viz., the northern region is characterized by sand dunes, western by hilly ranges, there is perennial river namely Chambal river at eastern to south western region. The area is plain having alluvial and sandy soil and slopes towards eastern direction.

37. **Drainage:** The general slope of the city is from west to east, which is also the direction of drainage. Nearly, all ephemeral streams flow in this direction. The old settlement area was originally located on the rocky side to provide an easy drainage system on either side but the future expansion of the city took place towards the northern and southern direction.

38. **Natural Hazards- Earthquake:** Dholpur town lies in low damage risk zone with of Zone II. The area is less prone to earthquakes as it is located on relatively stable geological plains based on evaluation of the available earthquake zone information. Figure 3.2 depicts the earthquake zones of Rajasthan. Figure 3.3 indicates natural hazard zones of Dholpur.

39. **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

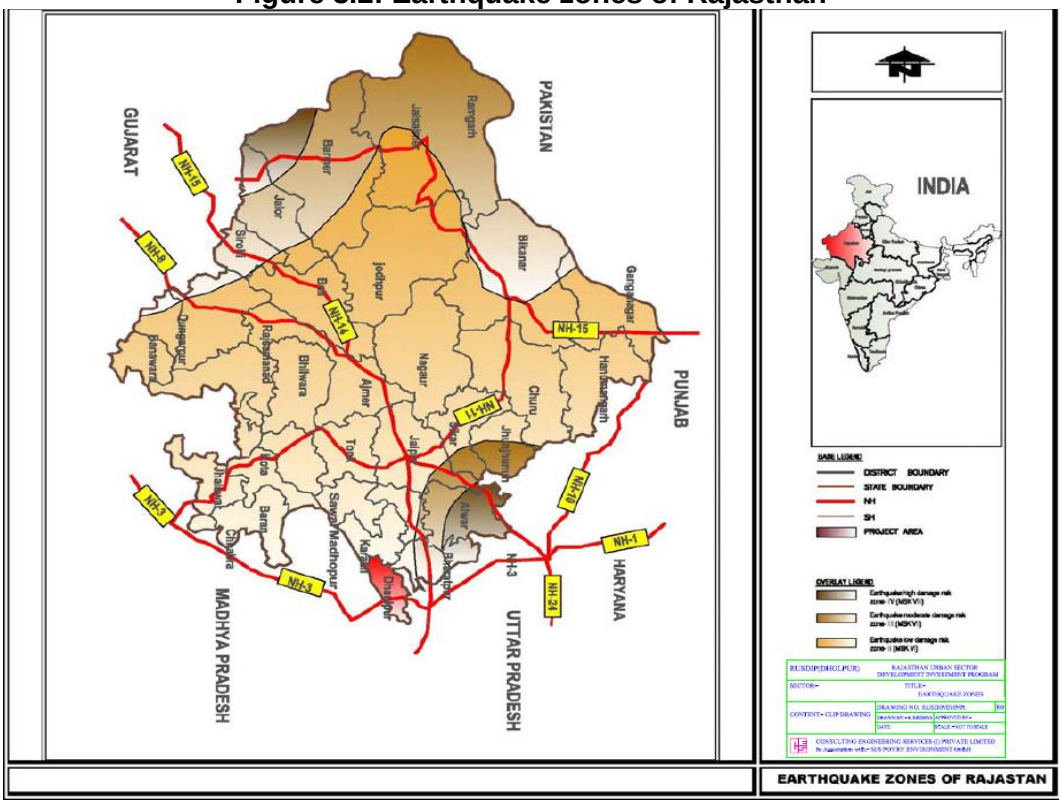
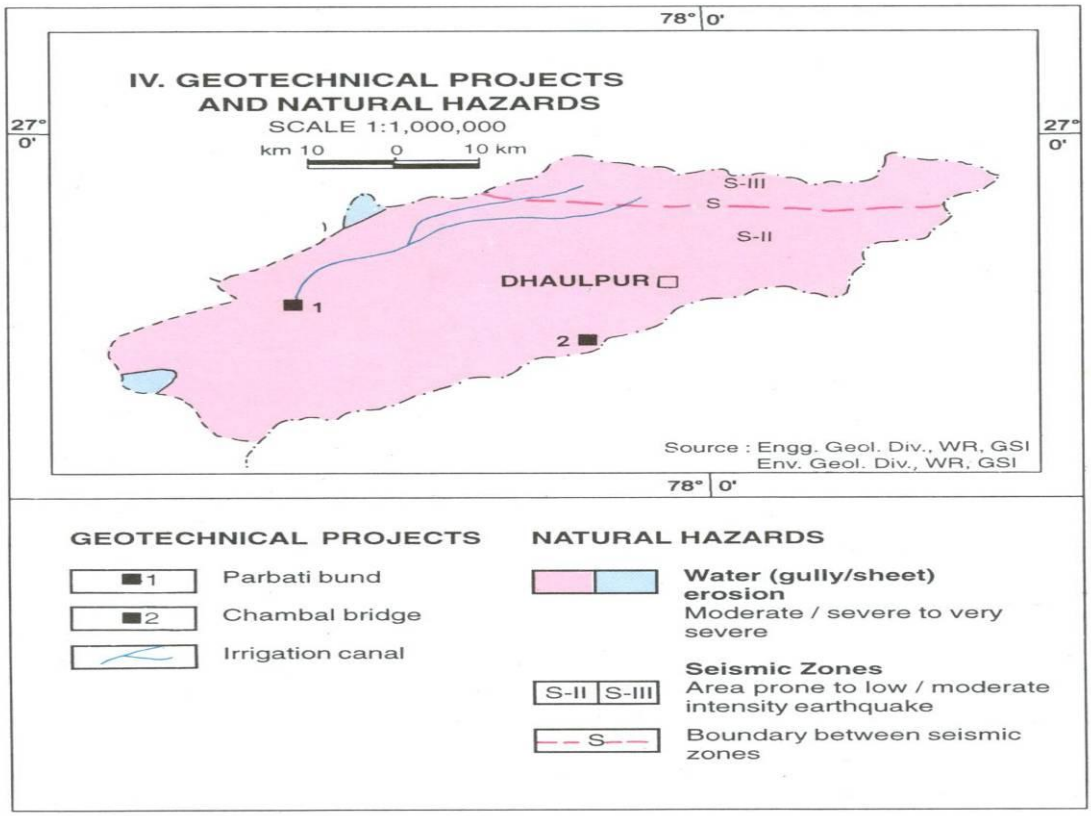


Figure 3.3: Natural Hazard Map of Dholpur (Source: Gsi Resource Map)



3. Geology, Geomorphology, Mineral Resources and Soil

40. Major parts of the district falls within the flood plain of the Chambal river system .As such much of the district is covered by Alluvium and Aeolian sand of Quaternary age. The area experiences semi-arid climate and the annual rain fall is 657 mm.

41. The southern part of the district exposes the Rewa and Bhander Groups of Rocks belonging to the Vindhyan Super Group .The Rewa Group is represented by the Inargarh sandstone .Its outcrops are exposed west of Baseri and northwest of Sepau. The shirbu shale occurs with interbeds of limestone which are exposed west of Baseri and north- west of Border. Geology and mineral map of Dholpur shown in Figure 3.4, while geomorphological map of Dholpur depicted in Figure 3.5.

42. Mineral Resources: Dholpur district is a leading producer of sandstone .The white – spotted reddish sandstone of the Upper Bhander Group is extensively quarried as building stone southwest of Dholpur and in other Parts of the district. The different quarries produce 30 to 60 cm wide and 2 to 3 m long slabs and tiles .The district has yielded excellent stones for the monumental structures in Delhi Agra and other cities of Northern India.

Figure 3.4: Geology and Mineral Map of Dholpur District (Source: GSI Resource Map)

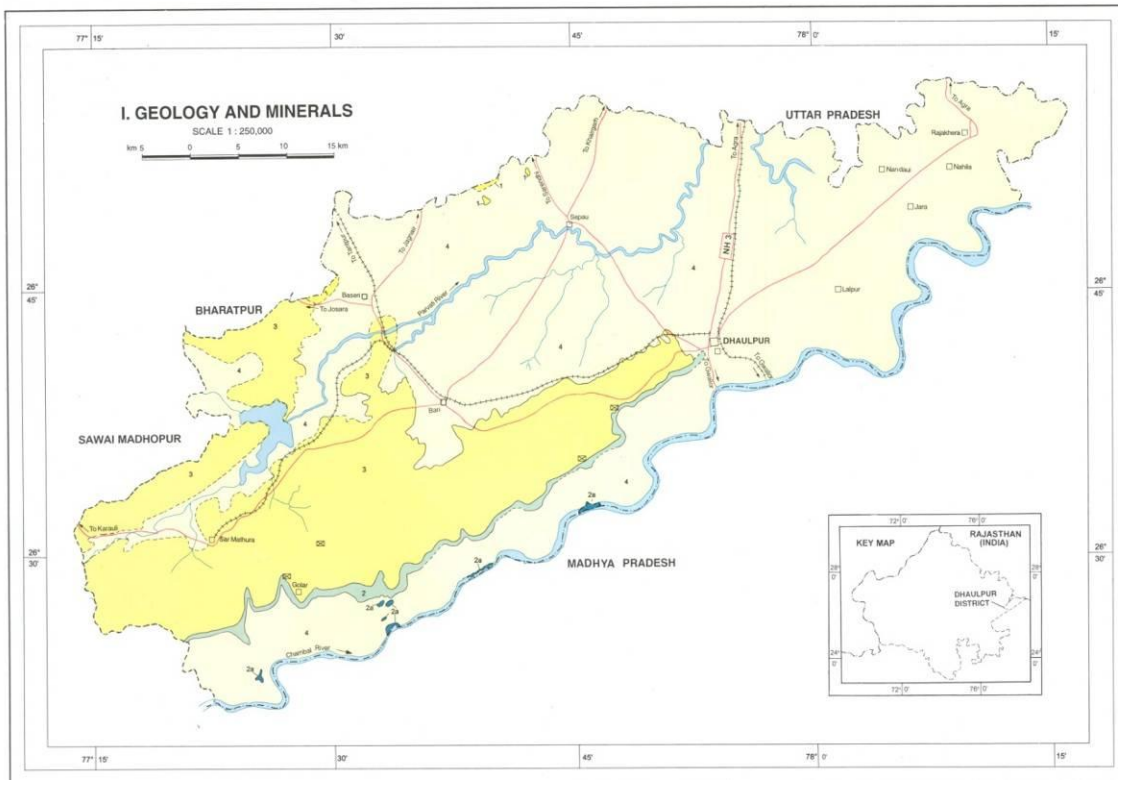
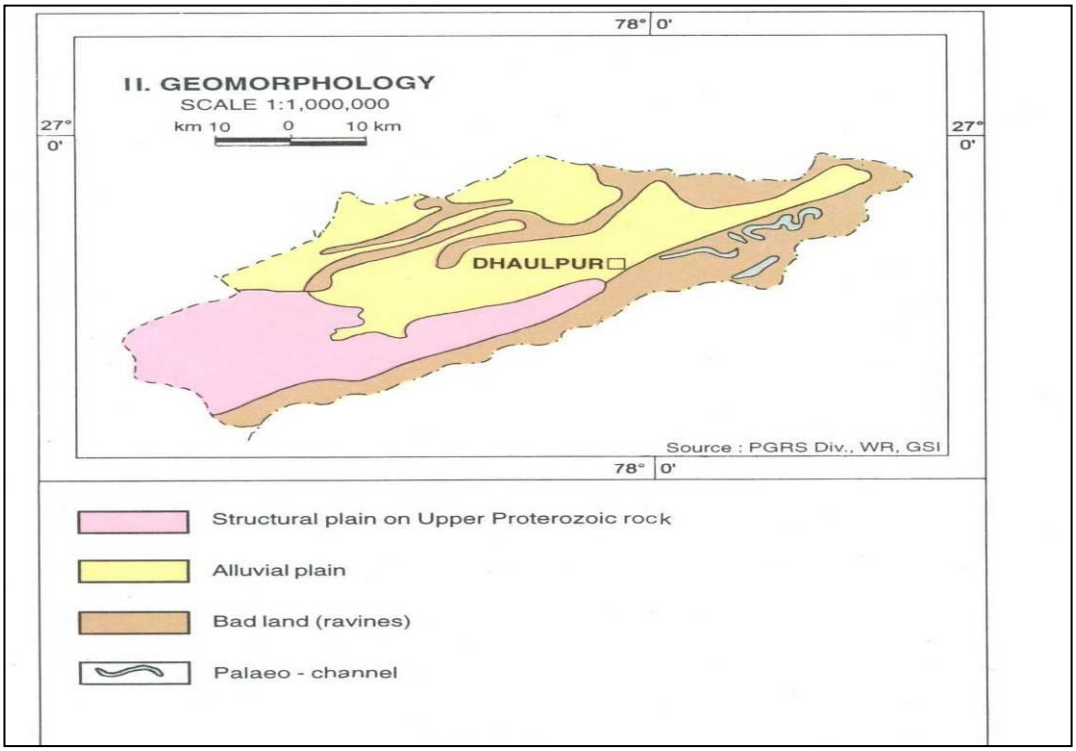


Figure 3.5: Geomorphology of Dholpur District (Source: GSI Resource Map)



43. Soil characteristics: Soil of the region falls within rainfall zone of 500- 700 mm. The soil is generally alluvial in nature which prone to water logging. Also nature of recently alluvial calcareous has been observed. Table 3.1 shows nutrient level in the Dholpur soil including area coverage of saline and sodic soil. The nutrient status of the Dholpur soil is graded as low to medium level.

Table 3.1: Fertility Status – Major Nutrients and Problematic Soils of Dholpur District

	Nutrient			Saline Soil(Ha)	Sodic or Alkali(Ha)
	N	P	K		
Status	L	M	M	5373	20121

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

4. Climate

44. The climate of Dholpur city is generally dry. The average maximum temperature during summer is 48°C and minimum during winter can go down to nearly 2°C. Humidity in air has been known to drop to as low as 20 percent. It is only during the southwest monsoon that the humidity increases to nominal levels of 70 percent or more. The normal annual rainfall is 614.74 mm and the highest rainfall was recorded as 1,032.2 mm in 1995. The prevailing wind direction is generally from southwest to northeast in summer and north to northwest during winter.

45. The rainfall over Dholpur is scanty and is concentrated over four months 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 total rainfall over last 20 years is compiled and shown in Table 3.2. Seasonal Rainfall data for the recent year (2007) is shown in Table 3.3. Figure 3.6 shows yearly variation (1997-2007) of rainfall at Dholpur.

Table 3.2: Past Rainfall Data of Dholpur

S. No.	Year	Rainfall in mm
1	1991	262.4
2	1992	853.7
3	1993	898.9
4	1994	549.2
5	1995	1032.2
6	1996	803.7
7	1997	678.8
8	1998	775.6
9	1999	613.6
10	2000	443.5
11	2001	409.0
12	2002	299.5
13	2003	649.4
14	2004	640.7
15	2005	784.1
16	2006	303.0
17	2007	620.0
18	2008	1319.6
19	2009	521.0
20	2010	975.5
	Average of 20 years	13433.4 / 20 =671.67 mm

Source: Irrigation Department, Govt. of Rajasthan and official website of Rajasthan, 2009.

Table 3.3: Rainfall at Dholpur in recent year (2011)

	Months	Rainfall (mm)
1	January	0.0
2	February	9.0
3	March	0.0
4	April	0.0
5	May	3.0
6	June	120.0
7	July	275.0
8	August	106.0
9	September	233.0
10	October	0.0
11	November	0.0
12	December	0.0
15	Annual Rainfall	746.0

5. Air Quality

46. Ambient Air Quality Monitoring was carried out at various locations in Dholpur town in May-June 2012. The results of air quality monitoring are shown below in Table 3.4. It may be observed from the Table 3.4 that levels of particulate matter (particle size ≤10µm) are higher than the standards. Traffic is the only significant source of pollutant in Dholpur so levels of oxides of sulphur and nitrogen are within the National Ambient Air Quality Standards (NAAQS). Similarly Noise Level Monitoring was done in the May-June 2012, as shown in Table 3.5.

Table 3.4: Ambient Air Quality in Dholpur

Monitoring Station	Sulphur Dioxide as SO2 (mg/m3)	Oxides of Nitrogen as NO2 (mg/m3)	Carbon Monoxide as CO (mg/m3)	PM10 (mg/m3)	PM 2.5 (mg/m3)
RUIDP Office	8.09	17	>0.5	89.39	43.3
Dholpur Bus Stand	9.9	18.1	>0.5	139.3	55.5
Agriculture Office, RIICO Road	9.9	19.9	>0.5	125.5	57.6
WTP Dholpur	9.3	17.9	>0.5	133.3	54.7
Permissible limits as per CPCB Notification, New Delhi, 18th November, 2009 (24 Hours)	80	80	2*, 4#	100	60

Where: *= Maximum limits for 8 hourly monitoring, #= Maximum limits for 1 hourly monitoring.
Source: Onsite Monitoring done by RUIDP

Table 3.5: Result of Noise Monitoring at Different Locations

SN.	Location	Land Use	Observation Value [in dB(A)] L Daytime			Observation Value [in dB(A)] L Night Time		
			Lmax	Lmin	Leq	Lmax	Lmin	Leq
1	RUIDP Office	Residential	66.30	43.50	60.94	60.90	42.70	52.62
2	Near Water Treatment Plant	Commercial	80.20	50.10	64.28	70.10	48.10	54.28
3	Near Bus Stand	Commercial	82.90	58.20	74.18	78.10	53.20	70.10
4	Near Agriculture Office,RIICO Rd.	Commercial	80.80	53.10	64.16	67.10	48.10	54.20
5	Radhavihari Mandir	Commercial	66.80	45.10	57.20	64.80	43.20	54.10
6	Near Gen. Hospital (J.L Road)	Commercial	75.80	54.20	64.18	68.10	43.60	54.80
7	Near Umadutt Mahila College	Commercial	65.90	48.20	61.11	61.30	43.00	53.87

SN.	Location	Land Use	Observation Value [in dB(A)] L Daytime			Observation Value [in dB(A)] L Night Time		
			Lmax	Lmin	Leq	Lmax	Lmin	Leq
Standard Limits in dB(A) Leq, [THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000]		Residential	-	-	55	-	-	45
		Commercial	-	-	65	-	-	55

Source: On site monitoring done by RUIDP (2012).

6. Surface Water

47. The Chambal River is passing through Dholpur district. But there is no monitoring station at Dholpur. The monitoring has been carried out by pollution control board at Rangpur Kota. The data on DO, pH, BOD and Electrical conductivity is given in Table 3.6. During 2006 to 2007 DO, pH and BOD ranged from 4.97 – 8.40 mg/l, 7.51– 8.84 and 0.77 – 5.95 mg/l respectively.

Table 3.6: Chambal River Water Quality (2009-10)

Date of Sample Collection	Dissolved Oxygen (mg/lt)	PH	BOD (mg/lt) (3 days at 27o C)	Total Coliforms, MPN/100ml
15/4/2009	4.84	8.77	28	1.44
5/20/2009	2.94	8.92	28	3.68
6/17/2009	5.34	8.94	28	2.44
7/17/2009	4.56	7.83	28	2.7
8/14/2009	4.75	5.59	20	2.82
9/16/2009	4.93	8.9	150	2.95
10/15/2009	5.21	5.31	150	3.4
11/13/2009	4.79	7.84	28	4.58
12/9/2009	6.4	8.45	93	3.15
1/6/2010	5.05	7.92	28	3.91
2/15/2010	6.8	7.98	93	3.1
3/21/2010	5.34	8.19	20	1.61

Source: Annual Report 2009-2010 Rajasthan State Pollution Control Board

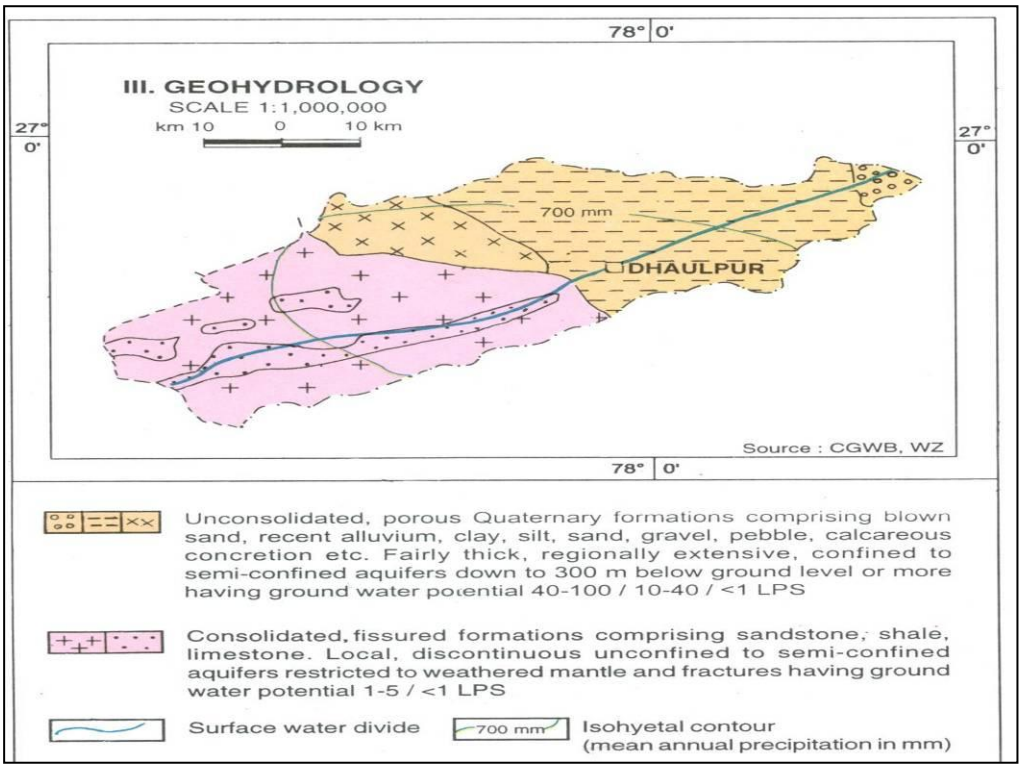
7. Geohydrology and Groundwater

48. Geohydrological map of the Dholpur district is shown in Figure 3.8. For broadly grouping geological formations from ground water occurrence and movement considerations, the various lithological units have been classified into two groups on the basis of their degree of consolidation and related parameters. These are:

(i) Porous Formations – unconsolidated formations
(ii) Fissured formations – consolidated sedimentary rocks.

49. On an average 60-70 % of the district area (mostly north and eastern part of the district) covered with porous formations.

Figure 3.8: Geohydrological Map of Dholpur (Source: GSI Resource Map)



50. There are number of National Hydrographic monitoring stations of Central Ground Water Board in and around Dholpur. Fluctuation of ground water level is shown in Table 3.7. In most of the cases ground water table ranged between 10-20 m bgl.

Table 3.7: Number and Percentage of National Hydrograph Network Stations with Water Fluctuation Range

Period	No of wells analyzed	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	18	6.29	30.08	0	0	0	0	3	16.67	11	61.11	4	22.22	0	0
Nov-05	17	3.39	27.17	0	0	2	11.76	1	5.88	10	58.82	4	23.53	0	0
Aug-05	17	3.36	28.09	0	0	1	5.88	2	11.76	10	58.82	4	23.53	0	0
May-05	20	5.99	42.47	0	0	0	0	5	25	10	50	5	25	0	0

Source: Ground water year book 2005-06 Rajasthan, Central Ground Water Board, Jaipur (2007-08).

51. The Central Ground Water Board carried out chemical testing of tube well water seasonally. The average concentrations of major constituents are shown in Table 3.8.

Table 3.8: Ground Water Quality in and around Dholpur

Parameters	Maximum Level	Minimum Level	Standard of Drinking water (IS: 10500: 1991)	
			Desirable limit (mg/l)	Maximum Permissible limit (mg/l)
pH	9.18	7.5		
EC	15380	390		
Cl (mg/l)	5964	21	250	1000
SO4(mg/l)	630	5	200	400 (if Mg does not exceeds 30 ppm)
NO3(mg/l)	715	3.5	-	100
PO4(mg/l)	1.2	0		
Total Hardness(mg/l)	3360	100	300	600
Ca(mg/l)	240	8	75	200
Mg(mg/l)	691	17	30	100
Na(mg/l)	2668	8	-	-
K(mg/l)	41	0.78	-	-
F(mg/l)	3.7	0.49	1.0	1.5
Fe(mg/l)	3.01	0.01	0.3	1.0
SiO2(mg/l)	42	5		
TDS	9997	254	500	2000

Note: Total – 18 nos. samples
Source: Ground water year book 2005-06 Rajasthan, Central Ground Water Board, Jaipur (2007-08)

52. Water quality (tested by PHED) from existing tube wells, especially around the city centre, has deteriorated significantly with a total dissolved solids having increased from 1000 ppm to 3500 ppm thereby rendering water unsuitable for human consumption. The results also indicate higher concentration of nitrate (10 percent samples) and iron (30 percent samples) than recommended levels prescribed by the Indian standards on drinking water. As reported by PHED, the turbidity of raw water from Chambal varies widely in rainy season due to flood. It is therefore recommended that as far as possible existing tube wells should be abandoned.

53. Table below shows chemical quality of supply water as recently measured by PHED. It is noted that TDS level is more or less high. Also it is observed that at present supply water contains fluoride.

Table 3.9: Present Supply Water Quality at Dholpur

Total supply per day (lac liter)	Type of Sources Surface/ Ground	Ground	Surface	No of CWR	No. of SR	F- Min (ppm)	F- Max (ppm)	TDS Min (ppm)	TDS Max (ppm)	NO3- Min (ppm)	NO3- Max (ppm)
120	Both (G:S 9.1:90.9)	9.1	90.9	4	7	0.4	0.7	547	1292	10	80

B. Ecological Resources

54. **Flora:** The common species of this region found in this district are kumta, babul (Accasia nilotica), arunj (Terminalia arjuna), dhok (Anogeissus pendula), bekal, chhonkar (Prosopis cineraria , pilu (Salvadora oleoides), kair (Accacia catechu), shisham (Dalbergia sissoo), siris (Albizzia lebbek), thor (Euphorbia royleana), and dhamasa (Fangonia arabica).

55. **Fauna:** The typical fauna of the oriental region in this district is represented by ghadiyal (Tomistoma schlegelii), mor (Pavo cristatus) , Bandar (Macaca mulatta), langur (Presbytis entellus), bagh (Panthera tigris), baghera (Panthera pardus) and kala hiran (Antilope cervicapra).

56. Wildlife and wild lands go together. The district has varied wildlife because there are different habitats varying from thick dhok forests to open thorn forests, from hills to ravines and flat lands, numerous wetlands in the form of perennial rivers; seasonal rivulets; extensive agricultural fields to grasslands and naturally the variety of wildlife is equally variable.

57. In and around the sub-project area, no endangered species of flora and fauna has been reported.

C. Economic Development

58. Dholpur, being the district headquarters for Dholpur District, performs all administrative and revenue functions required of a district center. Traditionally, Dholpur is a commercial town and the main occupation of the people is agriculture and commercial. However some developments can be seen now a day in the town in form of industries and commercial activities. Dholpur is also a cultural town depicting original Rajasthani heritage.

59. According to the Census of 2001, the work force participation ratio in Dholpur is 24.25 percent, which is marginally lower when compared with cities such as Kota (27.6%), Jaipur (27.0%), Udaipur (28.0) and the state of Rajasthan (26.6%).

60. Power status of the area: At Dholpur there is one gas power project of capacity of 110 Mwh. The consumption of electricity by different sectors is shown in Table below.

Table 3.10: Consumption of Electricity in Million Kwh (2003-04, 2004-05)

District	Domestic	Non-Domestic (Commercial)	Industrial			Public Lightings	Public Water Works
			Small	Medium	Large		
Dholpur (2003- 04)	14.128	3.854	6.11	6.549	15.52	0.012	3.943
Dholpur (2004-05)	18.126	4.584	6.976	9.006	19.361	0.050	4.599

(Source: Statistical Abstract, Rajasthan, 2009)

1. Land use

61. Under the Rajasthan Urban Improvement Act, 1959, the Master plan for Dholpur is prepared for the year 1999-2023. The state Government issued a notification, under Sec 3(1) of Rajasthan Urban Improvement Act, 1959 and required preparation of the Dholpur Master Plan comprising 32 revenue villages. This was required to ensure that housing schemes and industrial development should occur in a concurrent manner with efficient provision of basic urban facilities such as housing, schools, dispensaries, parks and recreation centre etc. A survey had been carried out by the Town planning Department, Dholpur, on various physical and socio-economic characteristics of Dholpur town to prepare the Draft Master Plan. The Draft Master Plan was notified in January, 1998 for public objections and suggestions. Finally the government approved the Master Plan as per the said Act and notified the same under Section 7 of the said act on May, 2000 with a projection that the city population in 2023 will grow to 1.68 lakhs. Out of the total area of 32.03 Sq. km (3200 ha), only 700 ha area is urbanized, the southern portion is covered by rocky ground and the northern portion is agriculture area. Out of

total developed area of 593 ha, 50.1% are is under residential and 14.9% area is under commercial and industrial development.

Table 3.11: Dholpur Urban Area Land use pattern

Land Use	1999	
	Area in acres	% of developed area
Residential	743	50.1
Commercial	80	5.4
Industrial	140	9.5
Government	24	1.6
Recreation	21	1.4
Public/Semi Public	204	13.8
Circulation/Transport	270	18.2
Developed Area	1482	100
Agriculture	80	-
Government reserved area	142	-
Other vacant and undeveloped land	40	-
Urbanized Area	1744	-

Source: Dholpur Master Plan, 1999-2023.

Figure 3.12: Land Use Proportion for Dholpur Developed Area

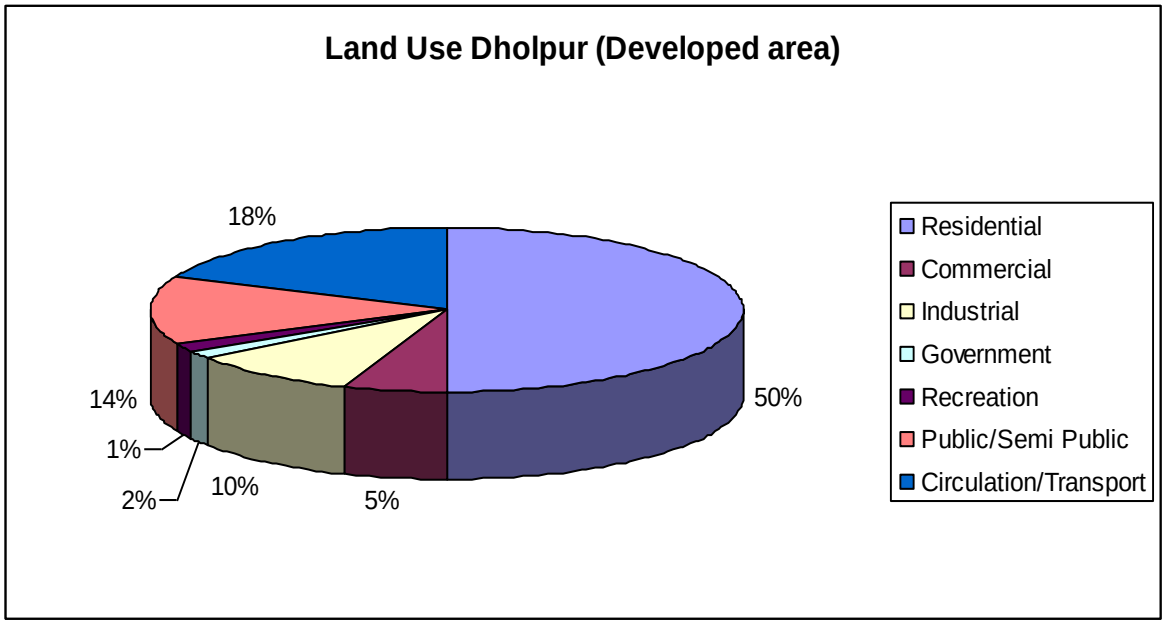
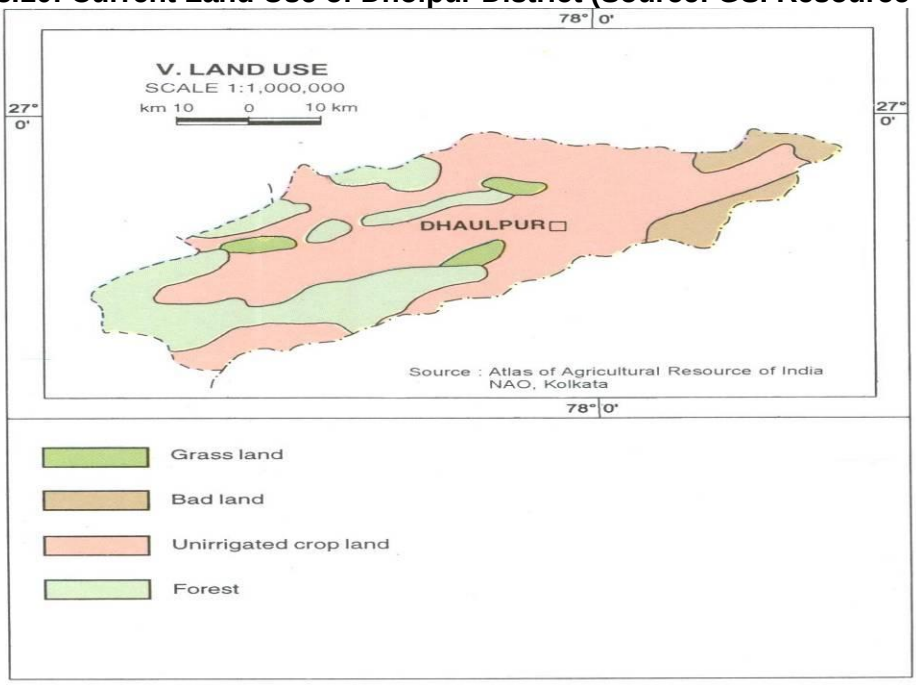


Figure 3.10: Current Land Use of Dholpur District (Source: GSI Resource Map)



2. Commerce, Industry and Agriculture

62. Dholpur is an important center for trade and commerce in the District. Art works occupies an important place in the city economy and basically the craft includes stone carving. The trade and commerce activities can be broadly classified into two categories namely the organized and unorganized markets. Presently there are 5 market complexes; Vegetable market at Nusingh road, Lal bazzar, Kirana Bazzar and few general stores at Hospital road, medical shops are functioning in the town. Also street shops have developed along some of the major road, such as Collectorate office, along NH-3. Other than the organized sector, there are a number of unorganized markets in the town. There has been a rapid growth in the commercial sector during the recent past. Hotel and transportation based units have shown appreciable growth. In addition, food & grocery items and clothes are the other organized commercial sectors showing an increase. Auto spare parts and repair centers are predominant along NH 3. Several of the commercial activities such as wholesale markets are located close to the city palace. These activities are not related to tourism but attract a number of vehicles for transportation of goods/materials thereby adding to the congestion and traffic problems. Other than the organized sector, there are large numbers of unorganized vendors seen in the town especially in Lal bazaar. Accordingly, the field visit and discussion with the various stakeholders, certain degree of concentration has been observed in the location of these unorganized markets and this may pave way for planned construction of market complexes, Kiosks in the developed parts of the town within the framework of the Development plan. Rajasthan's strong economic performance during the 80's and the early 90's reflected well in Dholpur.

63. During the last century, Dholpur remained industrially backward. It mainly depended on agriculture and few cottage industries. Quarrying of building stone was the only activity which provided employment to the comparatively large section of the population. Baroli, Bari, Baseri, Sirmathura were important place where building and millstone were quarried. These quarries have been famous for quality stone and have been worked on for several centuries. Industrial

activity in recent year has declined and may spurt pursuant to urbanization along the NH-3 and improved links to other industrial regions of the state.

64. In and around the Dholpur city area, there are about 80% of lands used for agricultural purpose. Crop production statistics as depicted in Table 3.13 indicates double the total crop production during Rabi season in compare to Kharif season and that basically due to oilseed production during Rabi season.

Table 3.13: Crop production in around Dholpur (in Tonnes)

Type of Crops	Rabi Crops 2008-09	Kharif Crops 2008-09
Cereals	188045	122208
Pulses	3387	800
Food Grains	191432	123008
Oilseeds	104311	1555
Others	42783	2632
Total	338526	127196

Source: Statistical Abstract, Rajasthan, 2009-10.

3. Infrastructure

65. **Water supply:** Water supply to Dholpur is from two different sources; one source groundwater sources[2] comprising tube well and open wells and other one is surface water from perennial River Chambal. Groundwater is tapped through open wells (8 nos.) and tube-wells (14 nos.).There are no records available for the quantum of ground water supplied to the town. In the case of surface based source, raw water is presently pumped from River Chambal through an intake well constructed 30 years back. Raw water is then treated at an old filter plant of capacity 5.4 MLD is at PHED campus and a newly constructed filter plant of capacity 9.6 MLD is at Sagarpada. Treated water is being supplied through 7.0 nos of overhead service reservoirs (OHSR) to the residents. The present supply of the city is reported as 100 lpcd. Average Ground water table depth is 20.0 m.

66. **Sewerage System:** There is no underground sewage system in Dholpur City at present. Only few households have covered with individual septic tanks. The disposal of waste and effluent of septic tank is through the open drains. Presently the open drains, which have been constructed by Municipal Board, convey the sullage and sewage which is leading to unhygienic and unsanitary conditions. As reported by the Dholpur MC, there is 13,000 nos. individual disposal systems covering 65,000 population and 1000 nos. of septic tanks covering 5000 population. Besides individual disposal systems, 20 nos. seats exists as Public Convenience systems (Sulabh Sauchalaya) covering 500 population.

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

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

Drainage: Presently the road in Dholpur city is equipped with open drains, but most of the drains are silted resulting in overflow and resulting flooding in monsoon. As reported by DMB, the total length of drains is approximately 20 Km. An efficient network of storm water drains and outfall system is required to drain out storm water runoff. When the rainfall is maximum, main area like Jagan Chourah, Santer road and Gadapura are significantly inundated. The DMB has already reportedly conducted a survey of the entire city to prepare a drainage scheme through local agency in 2004. The general elevation of Dholpur is approximately 502 m above Mean Sea Level and the overall topography is from East to West direction of the City. There is no existence of major drain for catchment area of the City.

68. **Industrial Effluents:** Small industries exist under RIICO, which is out side 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 must treat their effluent to bring it to the required standard before final disposal.

69. **Solid Waste:** The present estimated generation of solid waste is 58.90 MT/D and collection is about 60-65% of the total waste generation. Major source of generation of waste in Dholpur town is domestic. In addition to household (domestic) solid waste, the main waste generation sources in the town are vegetable and fruit markets, commercial including hotels and eateries, construction activities, and other tourism related activities – Dholpur attracts some number of tourists. Existing collection, transportation and disposal system of Dholpur is described in Section II.

4. Transportation

70. **Road Network:** Dholpur comprises a road network of 175 km, consisting of 40 km concrete roads, 8 km bituminous roads, and 64 km of water bound macadam roads and earthen road of 63 km. and 45.5 km of BT road under PWD provides a road surface composition in Dholpur. Physical growth of the city has resulted in a corresponding increase in vehicular traffic greater than that of the city's population growth due to improving economic status of the city. The existing transport network in Dholpur are:

(i) The road network within town is maintained by Dholpur MB and the PWD.
(ii) PWD maintain approximately a total length of 45.50 Km comprising of NH-3 Agra-Gwalior road, Dholpur- Karoli road and SH-5 Gulabbag to Bharatpur road.
(iii) Dholpur MB maintaining 175 km of road including Kachha road also.
(iv) In case of availability of public surface transport system, regular buses ply between Agra, Gwalior, and other major cities like Bharatpur, Alwar, Jaipur etc.
(v) The present system of traffic management and control at intersections is mostly manual.
(vi) The traffic and transportation system is inadequate and requires significant.

71. **Traffic Demand Assessment:** The 3 days x 24 hours Traffic Volume Count Survey were conducted at the 3 (three) identified road stretches under ST/01 package to determine the ADT (Average Daily Traffic) in terms of Nos. & PCUs. Table 3.14, 3.15 and 3.16 shows the average daily traffic in Nos. and PCUs for the road stretches. PCU Values for different vehicles are taken from IRC-86:1983.

Table 3.14: Average Hourly Traffic in Nos. and PCUs

TRAFFIC VOLUME COUNT SURVEY, DHOLPUR									
	Palace Gate To Fubbara Via Gurudwara Link Road								
	Average Daily Traffic								
Hours	Car/Jeep/Van/Taxi	Three Wheelers	Buses	Motor cycles and Scooters	Cycle/Rikshwa	Trucks	Agri. Tractors	Total (Nos.)	Total (PCU)
0-1	5	0	0	7	7	27	1	47	92
1-2	4	2	0	2	4	16	0	28	57
2-3	8	0	0	4	1	8	0	22	36
3-4	4	0	0	16	7	14	0	41	54
4-5	7	3	0	24	29	4	7	75	51
5-6	7	1	1	34	15	3	3	64	45
6-7	7	0	0	23	12	4	9	55	47
7-8	12	3	0	27	34	4	6	86	57
8-9	22	5	3	151	206	12	9	409	202
9-10	28	1	0	210	254	10	14	517	236
10-11	42	7	4	193	256	12	4	518	250
11-12	44	10	2	249	205	13	11	535	282
12-13	49	6	4	272	110	5	18	464	268
13-14	61	10	2	278	248	5	33	638	331
14-15	59	13	5	228	230	17	34	585	348
15-16	58	4	4	227	183	3	8	486	245
16-17	63	3	1	201	164	13	17	462	266
17-18	77	2	0	208	268	11	7	574	280
18-19	87	5	2	284	208	11	9	607	330
19-20	58	8	0	208	188	17	11	490	274
20-21	52	1	4	126	47	14	1	246	181
21-22	33	3	5	56	28	17	1	143	137
22-23	11	0	2	19	12	14	4	62	76
23-24	15	2	0	28	24	27	0	96	118
Total	813	91	40	3076	2741	279	209	7250	4262
PCU Factor	1.00	1.00	3.00	0.50	0.20	3.00	1.50		
Total PCU	**813**	**91**	**120**	**1538**	**548**	**838**	**314**	**4262**	

Table 3.15 Average Hourly Traffic in Nos. and PCUs

Hours	Hardeo Nagar Tiraha to Water works Chauraha on NH-3								
	Average Daily Traffic								
	Car/Jeep/Van/Taxi	Three Wheelers	Buses	Motor cycles and Scooters	Cycle/Rikshwa	Trucks	Agri. Tractors	Total (Nos.)	Total (PCU)
0-1	6	0	0	10	8	22	1	48	96
1-2	6	1	0	3	4	13	1	28	57
2-3	7	0	0	4	1	8	0	20	35
3-4	5	0	0	14	9	12	0	39	65
4-5	8	2	0	23	29	4	7	73	101
5-6	7	1	1	31	20	4	4	68	83
6-7	7	1	0	19	14	4	7	51	68
7-8	9	3	0	23	31	4	8	78	109
8-9	23	4	3	151	189	10	11	391	536
9-10	25	1	0	198	226	10	11	472	625
10-11	41	5	5	172	242	9	5	479	666
11-12	43	10	2	231	191	12	13	501	609
12-13	46	6	4	255	161	6	19	496	559
13-14	53	10	3	246	230	6	30	578	718
14-15	56	13	6	230	233	14	28	580	751
15-16	54	3	4	199	164	3	11	439	524
16-17	55	3	1	194	158	13	15	440	537
17-18	73	1	0	224	241	11	7	558	712
18-19	82	6	2	270	196	12	7	575	666
19-20	63	7	0	212	178	16	9	486	597
20-21	48	1	4	109	43	12	1	218	239
21-22	32	2	4	53	27	16	2	136	178
22-23	11	0	2	21	17	13	4	68	107
23-24	15	2	0	27	22	24	0	90	145
Total	776	84	41	2920	2634	256	201	6912	8781
PCU Factor	1.00	1.00	3.00	0.50	2.00	3.00	1.50		
Total PCU	**776**	**84**	**122**	**1460**	**5269**	**769**	**301**	**8781**	

Table 3.16: Average Hourly Traffic in Nos. and PCUs

TRAFFIC VOLUME COUNT SURVEY, DHOLPUR									
	Water Works Chauraha To Mangal Bharti Hanuman Temple, Muchkund Road								
	Average Daily Traffic								
Hours	Car/Jeep/Van/Taxi	Three Wheelers	Buses	Motor cycles and Scooters	Cycle/Rikshwa	Trucks	Agri. Tractors	Total (Nos.)	Total (PCU)
0-1	5	0	1	4	0	2	0	12	16
1-2	5	0	0	1	0	3	0	9	15
2-3	3	0	0	0	0	0	0	3	3
3-4	0	0	2	0	0	4	0	6	18
4-5	0	0	0	4	0	0	0	4	2
5-6	6	1	0	3	0	0	2	12	12
6-7	6	3	0	2	6	0	8	26	36
7-8	2	1	0	8	4	2	4	21	27
8-9	2	4	2	8	3	1	8	28	37
9-10	3	0	1	7	2	6	5	24	39
10-11	2	3	1	16	6	9	6	43	65
11-12	8	3	5	16	8	2	4	46	63
12-13	2	2	1	11	10	4	6	37	55
13-14	3	3	0	14	10	3	4	38	49
14-15	6	1	2	11	6	3	2	32	43
15-16	2	1	1	22	5	2	10	43	48
16-17	6	3	4	22	12	1	4	52	66
17-18	4	2	1	31	5	2	7	52	52
18-19	4	2	0	24	7	0	6	43	42
19-20	8	0	0	17	3	2	3	33	33
20-21	8	8	0	13	1	3	2	36	37
21-22	6	0	0	12	0	0	0	18	12
22-23	4	0	0	7	0	0	0	11	8
23-24	3	0	0	3	0	0	0	6	5
Total	99	37	21	256	90	49	83	636	780
PCU Factor	1.00	1.00	3.0	0.50	2.00	3.0	1.50		
Total PCU	**99**	**37**	**63**	**128**	**180**	**148**	**125**	**780**	

72. **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. In general, the average traffic growth rate for this type of urban areas (Dholpur) 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.

73. As per Table-3 of IRC 86:1984, the capacity of 2-lane Road (both way) is 1500 PCU.

D. Social and Cultural Resources

1. Demography

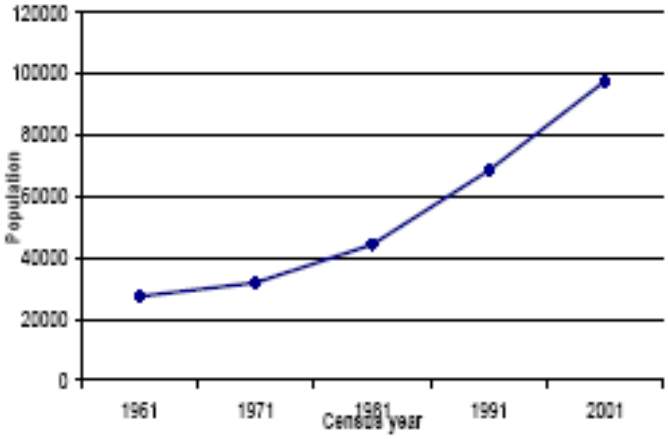
74. According to Census 2001, the population of Dholpur Urban Agglomeration is 97,795 and spreads over Dholpur Municipal Council (organized into 37 wards, 35 nos. M & 2 nos OG).The total spread of the Urban Agglomeration is approximately 32.03 sq. km. The UA supports an average density of 3,053 persons per sq. km. While the UA witnessed a high growth between 1981 and 2001 on account of induced industrial development, the growth rate fell substantially during the last decade i.e. 1991-2001, primarily because of the failure of the single most important commercial growth along Bari road and Agra road. Table 3.17 indicates the demographic characteristics for the UA. There are two nos. of OG (Tagawali rural and Purani Chhawni) exists in the adjacent of MC area and are considered in the planning.

Table 3.17: Population Growth in Dholpur town

Year	Population Dholpur Town	Growth Rate (%)	Area Sq. Km	Density Persons/sq. km
1901	13310			
1911	19922	3.17		
1921	16206	-18.65		
1931	19586	20.86		
1941	21311	8.81		
1951	20651	-3.10		
1961	27412	32.74	-	-
1971	31865	16.24	-	-
1981	44375	39.26	32.03	1385
1991	68533	54.44	32.03	2140
2001	97795	42.70	32.03	3053

Source: Census of India, 2001.

Figure 3.11: Growth Trend of Dholpur



75. Occupational structure of Dholpur urban area is given in Table 3.18.

Table 3.18: Occupation Structure in Dholpur UA

S.No.	Category of Business	Working Population as per 1991 census	
1.	Agriculture, agriculture labour, Forestry, mining and allied works	2746	16.42
2.	Industries and cottage industries	3137	18.75
3.	Construction	896	5.36
4.	Business & Trading	2767	16.54
5.	Transport	1206	7.21
6.	Others	5975	35.72
	Total	**16727**	**100.00**

Source: Dholpur Master plan.

76. Overall literacy rate in Dholpur district is 60.13%, reported at 75.09% for males and 41.84% for females, which is slightly less than literacy in the state as a whole, which is 60.4% overall, and 75.7% for males and 44.0% for females. In Dholpur town, the overall literacy rate is 70.80% of which male 80.51% and female 59.65%.

77. The sex ratio is however significantly below the natural 1:1 ratio; being 827 females per 1000 males, lower than both the state and national averages (921 and 929 respectively).

78. According to the census, in 2001 only 25-30% of the population was in paid employment, significantly lower than both the state and national averages (42.1 and 39.1% respectively). This indicates that most of the townspeople are engaged in the informal sector earning a living from small trading, casual labor, etc.

2. Health and Educational Facilities

79. There are good educational facilities in Dholpur district, which serve both townspeople and inhabitants of surrounding villages and towns in the hinterland. There are 938 primary schools, 641 nos. upper primary school, 203 nos. secondary and higher secondary schools, plus 17 degree colleges and three industrial training institutes (ITI).

Table 3.19: Educational facility of Dholpur District

Primary School	938
Upper Primary School	641
Secondary and Senior Secondary School	203
Siksha Karmi Vidyalaya	83
Madarasa	32
College	17
I.T.I.	3
D.I.E.T.	1
Sanskrit College	1

Source: Official website Govt. of Rajasthan; Statistical Abstract, Rajasthan 2009.

80. As the district headquarters town, Dholpur is the main centre for health facilities in the area and there is a district general hospital, 1 CHC, 22 primary health centers in the district. The detail of the health facilities given in Table 3.20.

Table 3.20: Health facility Dholpur District

General Hospital	1
CHC	3
PHC	22
Sub Centre	156
T.B. Clinic	1
Ayurvedic Hospital	1(A Category)
Ayurvedic Aushadhalya	52
Homoeopathic Hospital	1
Unani Hospital	1

Source: Official website Govt. of Rajasthan, 2009.

3. History, Culture and Tourism

81. According to the epics, Dholpur was initially known as Dhawalgiri. Sikandar Lodi (of the Delhi sultanate fame) conquered it in 1501. Babur subsequently conquered the city in 1526 and Dholpur was under Mughal rule. It is also believed that during Humayun's rule, the city was moved northwards to avoid erosion by river Chambal.

82. The main attractions in Dholpur are Talab Shahi and Muchkund Lake. This picturesque lake and the palace were built in the year 1617 AD as a shooting Lodge for Mughal Prince Shah Jahan. Muchkund is about 5.0 Km from Dholpur and is named after Raja Muchkund. It was also believed that the Mughal emperor Akbar built the enclosures adjoining the Lake.

83. Dholpur is a good tourist palace and located 55 km away from Agra and 60 km away from Gwalior and NH-3 connect the town to Agra and Gwalior. The tourist flow in the town is limited and still to be accounted.

Muchkund Lake at Dholpur

84. The Department of Tourism through Rajasthan Tourism Development Corporation and Rajasthan State Hotel Corporation Ltd (public sector entities) and Rajasthan Institute of Tourism and Travel Management (society) is responsible for tourism development in the State. The Archaeology Survey of India (ASI) and the State Department of Archaeology and Museums are responsible for conservation of cultural and heritage sites in the State. The Rajasthan Tourism Policy, 2005, provides the framework for tourism development and promotion in the State. The Rajasthan Heritage Conservation Bill, 2005, provides the framework for conservation of cultural and heritage sites in the State.

85. The Department of Tourism has identified that the attraction of Muchkund Lake is now become less due to non availability of water in the lake. During the discussion with the local people it was found that the pathway of water coming to the lake is almost closed due to silting activity and that should be cleared for the want of water during rainy season comes into the Lake, the water can fill the lake and the beautifulness of this lake can modified. The adjoining area of the lake is also required to be modified to increase the attraction to both domestic and foreign tourists.

IV. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES: LOCATION AND DESIGN

86. 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 V and VI later on and no other impacts are expected.

87. 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.

88. 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:

(i) 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;
(ii) 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;
(iii) 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

89. 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 be limited to construction site affect and will be conducted within a relatively small area at a time.

90. 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	Dholpur 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 local population, location or composition If there any impact that will be deal in social impact assessment report

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

92. Rapid Environmental Impact Assessment checklist along with mitigation measures is given in Annexure-I.

B. Road Construction

1. Construction method

93. Road construction is generally started with Clearing and Grubbing of the area of construction. Thereafter Survey work will be carried out including fixing of TBM. After survey

earthwork will be done including items like excavation, cutting, loosening & re-compacting, filling vide embankment /sub grade. Then Sub base will be prepared i.e. Granular sub base / Drainage layer. Thereafter Base course will be prepared i.e. Wet Mix Macadam /Water Bound Macadam. Dense Bituminous Macadam and finally wearing course will be laid. Then finally road marking, road signage, road furniture is fixed. In case of drainage requirement drain are constructed along with preparation of base and sub-base of the road.

94. The construction work 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 construction work is expected to 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 sub base of the road.

97. Large scale excavation is not required as (i) upgradation and widening work will be done on existing alignment and (ii) embankment of road is not so high (less than ½ meter in general). Additional excavated material would have the additional benefit of providing a beneficial use for local resident to balance the low lying area.

98. Moving excavated 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:

(i) Excavate the earth through cutting and filling up for embankment should be done at the same time for using the earth materials, avoiding the need to stockpile on site;
(ii) Damp down exposed soil and any sand stockpiled on site by spraying with water when necessary during dry weather;
(iii) 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 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 Dholpur.

3. Ecological Resources

100. There are no protected areas in or around (within radius of 10 km of proposed subprojects) project site of Dholpur, and no known areas of ecological interest. The work should

therefore have no ecological impacts. There are few trees of common species at the site that may be removed during construction.

4. Economic Development

101. Although much of this work will be conducted within the ROW of the existing roads, 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:

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

102. 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 the Resettlement Plan and Framework, which indicate that these impacts will be mitigated by:

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

103. 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. These impacts will need to be mitigated by careful planning of the construction program, in conjunction with the road, and municipal authorities and the police, in order to:

(i) Maintain safe passage for vehicles and pedestrians throughout the construction period;
(ii) Provide effective, well signposted diversions and alternative routes when required;
(iii) Conduct work that requires the closure of roads and the level crossing at times of low traffic volume;
(iv) Schedule truck deliveries of soil to the site for periods of low traffic volume.

104. 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:

(i) 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;

(ii) Integrating construction of the various infrastructure subprojects conducted in Dholpur (transport, water supply, sewerage) so that: (a) different infrastructure is located on opposite sides of the road where feasibly; and (b) 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

105. 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:

(i) Consulting historical and archaeological authorities at both national and state level to obtain an expert assessment of the archaeological potential of the site;
(ii) Considering an alternative transportation sub-project if the site is found to be of medium or high risk;
(iii) 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;
(iv) Developing a protocol for use by the contractor in conducting any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved. This should involve: (a) having excavation observed by a person with archaeological field training; (b) stopping work immediately to allow further investigation if any finds are suspected; and (c) calling in the state archaeological authority if a find is suspected, and taking any action they require its removal or protection in site.

106. There are no modern-day significant 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.

107. Most of the sub-project roads alignments are within vicinity of residential/semi-commercial area, so appropriate action should be taken to minimize disturbance as far as possible. This will require:

(i) 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;
(ii) Involving the community in planning the work programme so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times;
(iii) Avoiding conducting noise-generating activities at night;
(iv) Implementing the measures described in Section V.B.2 above to reduce dust;
(v) 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.

108. There is invariably a safety risk when any construction 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:

(i) Excluding the public from the site;
(ii) Ensuring that all workers are provided with and use appropriate Personal Protective Equipment;
(iii) Health and Safety Training for all site personnel;
(iv) Documented procedures to be followed for all site activities;
(v) Accident reports and records; etc.

109. During construction of roads green house gas (GHG) emission may result from burning of fuel in hot/spot mix plant. Proper safety arrangement, measurement of GHG emitted and moreover plantation in and around the road site is necessary for protection of environment and control of global warming.

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 infrastructure wlll be planned to avoid locations of existing 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),[3] and amongst other things, should involve:

(i) 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;
(ii) Reporting procedures to inform management immediately if AC pipes are encountered;
(iii) 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: (a) removal of all persons to a safe distance; (b) usage appropriate breathing apparatus and protective equipment by persons delegated to deal with the AC material; and (c) procedures for the safe removal and long-term disposal of all asbestos-containing material encountered.

112. The excavated silt from the existing drain will be disposed of in the dumpsite selected Near Tagavali village on government owned land which is out side the town and 4.0 km away from the nearest habitation. A map showing the location of the disposal site is presented in Annexure-IV.

113. 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

[3] 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

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.

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

A. Screening out Areas of No Significant Impact

114. Because roads generally operate without the need for major repair and maintenance (see below), there are several environmental factors that should be unaffected once the widened road 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 roads
Wildlife, forests, rare species, protected areas	No wildlife and forest near location of roads
Coastal resources	Dholpur is not located in a coastal area

B. Operation and Maintenance of New Widened Road

115. The widened road will have a design life of 10-15 years, during which time it should require no major repair or refurbishment, beyond routine maintenance, which will include:

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

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

117. 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 road

1. Physical Resources

118. Once the new road 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.

119. This would be necessary of planting (where space is available) large-growing native trees at the road 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.

120. 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.

121. Although the road is located in an area of seismic risk zone II which is considered as low risk zone, 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

122. As there are no significant ecological resources in or around the town, the operation of the road and the routine maintenance and repair of the road and surroundings will have no ecological impacts. In fact by planting trees near the road, there would be some small ecological gain from the planting of trees to improve aesthetic environment.

3. Economic Development

123. The widening and up-gradation of sub-project roads 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 of the region 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.

124. Traffic may be interrupted temporarily if the road 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

125. Effects of the operating road 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.
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 than 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 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 so such risk is not expected.

VII. INSTITUTIONAL REQUIREMENTS AND ENVIRONMENTAL MONITORING PLAN

A. Institutional arrangements for project implementation

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

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

(ii) 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.

(iii) 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.

(iv) 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.

(v) 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.

(vi) 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.

(vii) 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.

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

1. Responsible for carrying out Mitigation Measures

129. During construction stage, implementation of mitigation measures is the construction contractor's responsibility while during operation stage (O & M), contractor and PWD Department will be responsible for the conduct of maintenance or repair works.

130. To ensure implementation of mitigation measures during the construction period, contract clauses for environmental provisions will be part of the civil works contracts. Contractors' conformity with contract procedures and specifications during construction will be carefully monitored by IPIU.

2. Responsible for carrying out Monitoring Measures

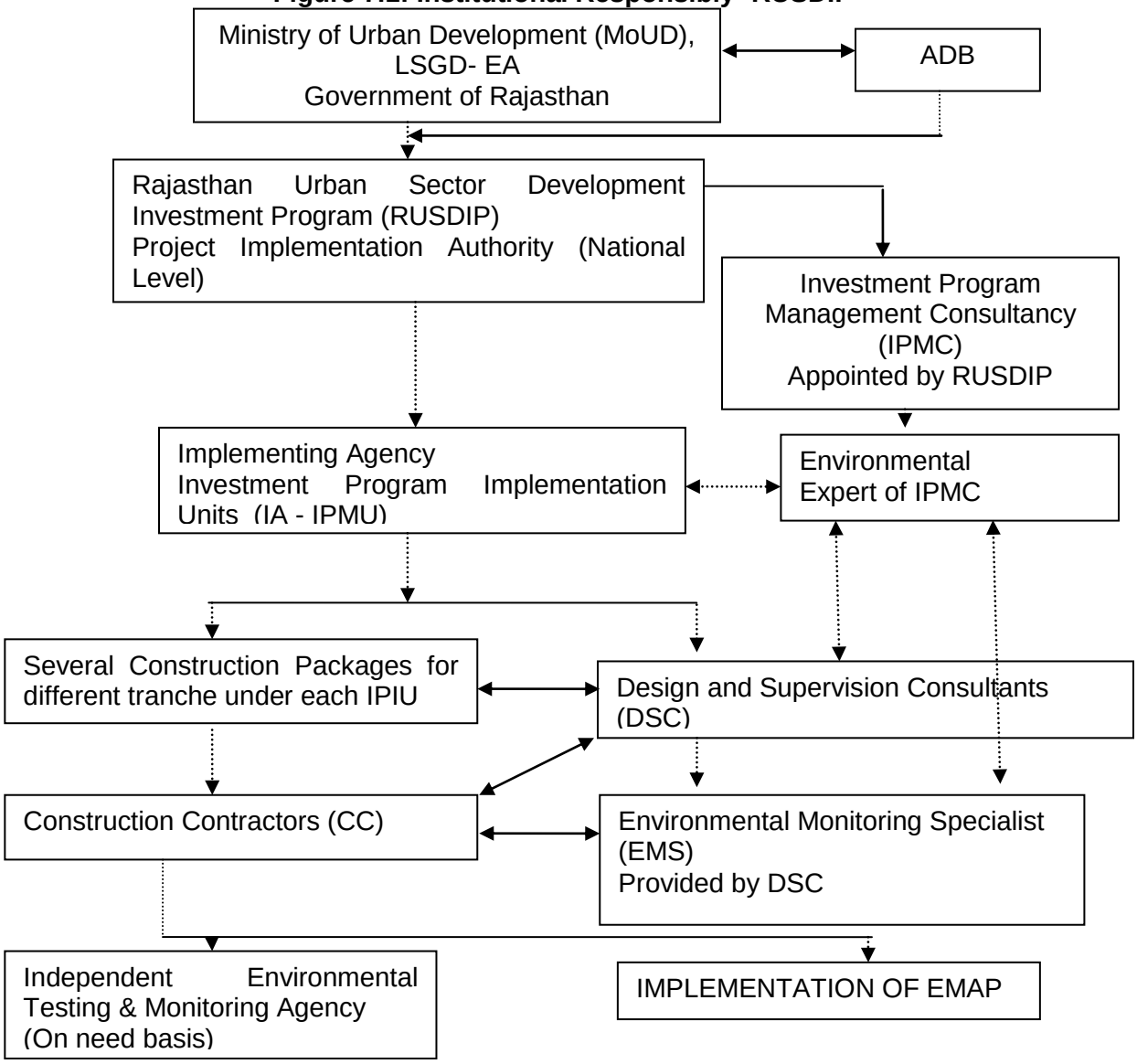
131. During construction, DSC's Environment Safeguards Officer and the designated representative of IPIU will monitor the construction contractor's environmental performance. In IPIU one Engineer is also look after the Social and Environmental Safeguards at site.

132. During the operation stage, monitoring will be the responsibility of PWD department.

3. Responsible for Reporting

133. LSGD will submit Bi-annually reports to ADB on implementation of the EMP and ADB Mission will review in detail the environmental aspects of the Project on need basis. Any major accidents having serious environmental consequences will be reported immediately.

Figure 7.1: Institutional Responsibly- RUSDIP



B. Environmental Mitigation Plan

134. Tables 7.1 to 7.3 shows the potential adverse environmental impacts, proposed mitigation measures, responsible parties, and estimated cost of implementation. This EMP will be included in the bid documents and will be further reviewed and updated during implementation.

C. Environmental Monitoring Program

135. Tables 7.4 to 7.5 show the proposed environmental monitoring program for this sub-project. It includes all relevant environmental parameters, description of sampling stations, applicable standards, and responsible parties. Monitoring activities during the detailed engineering design stage will from part of the baseline conditions of the subproject sites and will be used as the reference for acceptance of restoration works by the construction contractors.

Table 7.1: Anticipated Impacts and Mitigation Measures – Pre-construction Environmental Mitigation Plan

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
Environmentally-sensitive Areas	A few trees may be cut and vegetation (mostly shrubs and grasses) will be cleared in the sub-project area	(i) Inventory the trees to be cut; (ii) Obtain tree-cutting permit from Municipal Board/Council and/or District Collector; and (iii) Include in the bid documents provisions on replacement of 3 trees for every one tree cut during construction.	Design and Supervision Consultants (DSC) in close coordination with the Municipal Board/ Investment Program Implementation Unit (IPIU)	(i) Inventory of trees; (ii) Tree-cutting permit; (iii) Location and number of trees replaced for every one tree cut
Utilities	Telephone lines, electric poles and wires, water and sewer lines within the existing right-of-way (ROW) will be affected.	(i) Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction phase; and (ii) Require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.	DSC	(i) list of affected utilities and operators; (ii) bid document to include requirement for a contingency plan for service interruptions
Social and Cultural Resources	Ground disturbance can uncover and damage archaeological and historical remains	(i) Consult Archaeological Survey of India (ASI) to obtain an expert assessment of the archaeological potential of the site; (ii) Consider alternatives if the site is found to be of medium or high risk; (iii) Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available; and (iv) Develop a protocol for use by the construction contractors in conducting any excavation work, to ensure that any chance finds are recognised and measures are taken to ensure they are protected and conserved.	IPIU and DSC	Chance Finds Protocol
Construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas.	Disruption to traffic flow and sensitive receptors	(i) Prioritize areas within or nearest possible vacant space in the subproject sites; (ii) If it is deemed necessary to locate elsewhere, consider sites that will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply	IPIU and DSC to determine locations prior to award of construction contracts.	List of selected sites for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		systems; (iii) Do not consider residential areas; (iv) Take extreme care in selecting sites to avoid direct disposal to nallah/water body or in areas which will inconvenience the community.		
Sources of Materials	Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution.	(i) Prioritize sites already permitted by the Mining Department; (ii) If other sites are necessary, inform construction contractor that it is their responsibility to verify the suitability of all material sources and to obtain the approval of IPIU; and (iii) If additional quarries will be required after construction is started, inform construction contractor to obtain a written approval from IPMU.	IPIU and DSC to prepare list of approved quarry sites and sources of materials	(i) list of approved quarry sites and sources of materials; (ii) bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary.

Table 7.2: Anticipated Impacts and Mitigation Measures – Construction Environmental Mitigation Plan

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
Sources of Materials	Extraction of rocks and material from unauthorised sites may cause general scouring resulting in continuous degradation of town regime.	(i) Use quarry sites and sources permitted by government; (ii) Verify suitability of all material sources and obtain approval of investment Program Implementation Unit (IPIU); (iii) If additional quarries will be required after construction has started, obtain written approval from PMU; and; (iv) Submit to DSC on a monthly basis documentation of sources of materials.	Construction Contractor	Construction Contractor documentation
Air Quality	Emissions from construction vehicles, equipment, and machinery used for excavation and construction resulting to dusts and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons	(i) Consult with IPIU/DSC on the designated areas for stockpiling of clay, soils, gravel, and other construction materials; (ii) Excavate the ground at the same time as the roads are built so that dug material is used immediately, avoiding the need to stockpile on site; (iii) Damp down exposed soil and any stockpiled on site by spraying with water when necessary during dry weather; (iv) Use tarpaulins to cover sand and other loose	Construction Contractor	(i) Location of stockpiles; (ii) complaints from sensitive receptors; (iii) heavy equipment and machinery with air pollution control devices (iii) ambient air monitoring results for respirable particulate matter (RPM) and particulate matter (PM 2.5); (iv) vehicular

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		material when transported by trucks; and (v) Fit all heavy equipment and machinery with air pollution control devices which are operating correctly.		emissions such as sulphur dioxide (SO2), nitrous oxides (NOx), carbon monoxide (CO), and hydrocarbons
Surface water quality	Mobilization of settled silt materials, run-off from stockpiled materials, and chemical contamination from fuels and lubricants during construction works can contaminate downstream surface water quality.	(i) Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets; (ii) Prioritize re-use of excess soils and materials in the construction works. If soils will be disposed, consult with IPIU/DSC on designated disposal areas; (iii) Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies; and (iv) Place storage areas for fuels and lubricants away from any drainage leading to water bodies; (v) Dispose any wastes generated by construction activities in designated sites.	Construction Contractor	(i) Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) number of silt traps installed along drainages leading to water bodies; (iii) effectiveness of water management measures;
Noise Levels	Increase in noise level due to earth-moving and excavation equipment, and the transportation of equipment, materials, and people	(i) Plan activities in consultation with IPIU/DSC so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance; (ii) Require horns not be used unless it is necessary to warn other road users or animals of the vehicle's approach; (iii) Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and portable street barriers to minimise the sound impact to surrounding sensitive receptor; and (iv) Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s.	Construction Contractor	(i) Complaints from sensitive receptors; (ii) use of silencers in noise-producing equipment and sound barriers; (iii) equivalent day and night time levels
Existing Infrastructure and Facilities	Disruption of service and damage to existing infrastructure located alongside roads, in particular water supply pipes and sewer lines.	(i) Obtain from IPIU and/or DSC the list of affected utilities and operators; (ii) Prepare a contingency plan to include actions to be taken in case of unintentional interruption of services; and (iii) Develop and implement an Asbestos Cement Pipes Management Plan	Construction Contractor	(i) Existing Utilities Contingency Plan; (ii) Asbestos Cement Pipes Management Plan

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
Flora and Fauna	Land-clearing activities and presence of workers in the sites can damage or cause loss of existing flora	(i) Minimize removal of vegetation and disallow cutting of trees if not required for the construction activities; (ii) If tree-removal will be required, obtain tree-cutting permit from the Municipal Council or District Collector; (iii) Earth-ball trees and transplant to IPIU-approved areas; (iv) Require to plant three native trees for every one that is removed; and (v) Prohibit workers from cutting of trees for firewood.	Construction Contractor	(i) tree-cutting permit for affected trees; (ii) number of replanted trees
Landscape and Aesthetics	solid wastes as well as excess construction materials	(i) Prepare and implement Waste Management Plan; (ii) Recover used oil and lubricants and reuse or remove from the sites; (iii) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; (iv) Remove all wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and (v) Request IPIU/DSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.	Construction Contractor	(i) Waste Management Plan; (ii) complaints from sensitive receptors; (iii) IPIU/DSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.
Transportation – Accessibility	traffic problems and conflicts in right-of-way (ROW)	(i) Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites; (ii) Schedule transport and hauling activities during non-peak hours; (iii) Locate entry and exit points in areas where there is low potential for traffic congestion; (iv) Keep the site free from all unnecessary obstructions; (v) Drive vehicles in a considerate manner and speed limit; (vi) Coordinate with Municipal Traffic Office for temporary road diversions and with provision of traffic aids if transportation activities cannot be avoided during peak hours; and (vii) Notify affected sensitive receptors by providing sign boards informing nature and	Construction Contractor	(i) Traffic Management Plan; (ii) complaints from sensitive receptors; (iii) number of signages placed at subproject sites.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		duration of construction works and contact numbers of concerns/ complaints. Provide wooden bridges for pedestrians and metal sheets for vehicles to allow access across open trenches where required (ix) provide footbridges on open trenches for access to houses and shops (x) complete the work quickly and restore open trenches immediately after completion of work in such areas		
Socio-Economic	generation of contractual employment and increase in local revenue	(i) Employ at least 50% of the labour force, or to the maximum extent, local persons within the 2-km immediate area if manpower is available; and (ii) Procure construction materials from local market.	Construction Contractor	(i) employment records; (ii) records of sources of materials
Occupational Health and Safety	occupational hazards which can arise from working in infrastructures like roads and bridges	(i) Develop and implement site-specific Health and Safety (H&S) Plan which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use Personal Protective Equipment; (c) H&S Training for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents; (ii) Ensure that qualified first-aid can be provided at all times. Equipped first-aid stations shall be easily accessible throughout the site; (iii) Provide medical insurance coverage for workers; (iv) Secure all installations from unauthorized intrusion and accident risks; (v) Provide supplies of potable drinking water; (vi) Provide clean eating areas where workers are not exposed to hazardous or noxious substances; (vii) Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; (viii) Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;	Construction Contractor	(i) site-specific Health and Safety (H & S) Plan; (ii) Equipped first-aid stations; (iii) Medical insurance coverage for workers; (iv) Number of accidents; (v) Supplies of potable drinking water; (vi) Clean eating areas where workers are not exposed to hazardous or noxious substances; (vii) record of H & S orientation trainings (viii) personal protective equipments; (ix) % of moving equipment outfitted with audible back-up alarms; (xi) sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal.

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		(ix) Ensure the visibility of workers through their use of high visibility vests when working in night or walking through heavy equipment operating areas; (x) Ensure moving equipment is outfitted with audible back-up alarms; (xi) Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate; and (xii) Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.		
Community Health and Safety.	traffic accidents and vehicle collision with pedestrians	(i) Plan routes to avoid times of peak-pedestrian activities. (ii) Liaise with IPIU/DSC in identifying high-risk areas on route cards/maps. (iii) Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. (iv) Provide road signs and flag persons to warn of dangerous conditions.	Construction Contractor	(i) Traffic Management Plan; (ii) complaints from sensitive receptors
Work Camps	temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants	(i) Consult with IPIU/DSC before locating project offices, sheds, and construction plants; (ii) Minimize removal of vegetation and disallow cutting of trees; (iii) Provide water and sanitation facilities for employees; (iv) Prohibit employees from poaching wildlife and cutting of trees for firewood; (v) Train employees in the storage and handling of materials which can potentially cause soil contamination; (vi) Recover used oil and lubricants and reuse or remove from the site; (vii) Manage solid waste according to the	Construction Contractor	(i) complaints from sensitive receptors; (ii) water and sanitation facilities for employees; and (iii) IPIU/DSC report in writing that the camp has been vacated and restored to pre-project conditions

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
		following preference hierarchy: reuse, recycling and disposal to designated areas; (viii) Remove all wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and (ix) Request IPIU/DSC to report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.		
Social and Cultural Resources	risk of archaeological chance finds	(i) Strictly follow the protocol for chance finds in any excavation work; (ii) Request IPIU/DSC or any authorized person with archaeological field training to observe excavation; (iii) Stop work immediately to allow further investigation if any finds are suspected; and (iv) Inform IPIU/DSC if a find is suspected, and take any action they require ensuring its removal or protection in situ.	Construction Contractor	(i) records of chance finds

Table 7.3: Anticipated Impacts and Mitigation Measures – Operation and Maintenance Environmental Mitigation Plan

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Monitoring of Mitigation
Noise Level	noise levels tend to increase with vehicular traffic	Put signages and implement “no blowing of horns” zones where there are sensitive receptors	Municipal Highway Department (RMB)	complaints from sensitive receptors
Accessibility	Portions of the roads and bridges may be affected during routine repairs	Coordinate with the Municipal Traffic Police Department so that warning signs and traffic diversions can be set up when necessary	RMB	complaints from sensitive receptors
Ecological Resources	ecological gain from the planting of replacement trees	Coordinate with the Municipal Council for the continuous care of the planted trees.	RMB	% survival of planted trees

Table 7.4: Pre-construction Environmental Monitoring Program

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
Permits – Trees and Vegetation	not applicable	Design and Supervision Consultants (DSC) in close coordination with the town Investment	(i) Inventory of trees; (ii) Tree-cutting permit; (iii) Location and number of trees replaced for every one tree cut	checking of records	(i) Inventory of trees prepared; (ii) Tree-cutting permit obtained from Municipal Council or District Collector; (iii) Location identified	once	IPMU

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
		Project Implementation Unit (IPIU)			and number of trees estimated		
Utilities		DSC	(i) list of affected utilities and operators; (iii) bid document to include requirement for a contingency plan for service interruptions	checking of records	(i) list of affected utilities and operators prepared; (ii) requirement for a contingency plan for service interruptions included in bid documents	once	IPMU
Social and Cultural Resources	not applicable	IPIU and DSC	Chance Finds Protocol	checking of records	Chance Finds Protocol provided to construction contractors prior to commencement of activities	once	IPMU
Construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas.	not applicable	IPIU and DSC to determine locations prior to award of construction contracts.	List of selected sites for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas.	checking of records	List of selected sites for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas provided to construction contractors prior to commencement of works.	once	IPMU
Sources of Materials	not applicable	IPIU and DSC to prepare list of approved quarry sites and sources of materials	(i) list of approved quarry sites and sources of materials; (ii) bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary.	checking of records	(i) list of approved quarry sites and sources of materials provided to construction contractors (ii) bid document included requirement for verification of suitability of sources and permit for additional quarry sites if necessary.	once	IPMU

Field	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
Baseline Environmental Condition – Ambient Air Quality	Subproject sites	DSC	Establish baseline values of (i) respirable particulate matter (RPM) and (ii) particulate matter (PM 2.5)	Air sample collection and analyses by in-house laboratory or accredited 3rd party laboratory	GOI Ambient Air Quality Standards	Once prior to start of construction	IPMU

Table 7.5: Construction Environmental Monitoring Program

Mitigation Measures	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsibility
Sources of Materials	quarries and sources of materials	Construction Contractor	Construction Contractor documentation	(i) checking of records; (ii) visual inspection of sites	(i) sites are permitted; (ii) report submitted by construction contractor monthly (until such time there is excavation work)	Monthly submission for construction contractor as needed for DSC	DSC
Air Quality	construction sites and areas designated for stockpiling of materials	Construction Contractor	(i) Location of stockpiles; (ii) complaints from sensitive receptors; (iii) heavy equipment and machinery with air pollution control devices (iii) ambient air for respirable particulate matter (RPM) and particulate matter (PM 2.5); (iv) vehicular emissions such as sulphur dioxide (SO2), nitrous oxides (NOx), carbon monoxide (CO), and hydrocarbons (HC)	(i) checking of records; (ii) Monitoring of generated air quality data	(i) stockpiles on designated areas only; (ii) complaints from sensitive receptors satisfactorily addressed; (iii) air pollution control devices working properly; (iv) GOI Ambient Quality Standards for ambient air quality; (iv) GOI Vehicular Emission Standards for SO2, NOx, CO and HC.	monthly for checking records	DSC
Noise Levels	(i) construction sites; (ii) areas for stockpiles, storage of fuels and lubricants and waste materials;	Construction Contractor	(i) Complaints from sensitive receptors; (ii) use of silencers in noise-producing equipment and sound barriers; (iii) equivalent day and night time levels	(i) checking of records; (ii) visual inspection	(i) complaints from sensitive receptors satisfactorily addressed; and (ii) silencers in noise-producing equipment and (iii) sound barriers installed where	Monthly	DSC

Mitigation Measures	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsibility
	(iii) work camps				necessary		
Existing Infrastructure and Facilities	(i) construction sites; (ii) alignment of affected utilities	Construction Contractor	(i) Existing Utilities Contingency Plan; (ii) Asbestos Cement Pipes Management Plan	(i) checking of records; (ii) visual inspection	implementation according to Utilities Contingency Plan and Asbestos Cement Plan	as needed	DSC
Flora and Fauna	(i) construction sites; (ii) location where replacement trees will be planted	Construction Contractor	(i) tree-cutting permit for affected trees; (ii) number of replanted trees	(i) checking of records; (ii) visual inspection	number of trees cut, replanted and location according to the tree-cutting permit	as needed	DSC
Landscape and Aesthetics	(i) construction sites; (ii) areas for stockpiles, storage of fuels and lubricants and waste materials; (iii) work camps	Construction Contractor	(i) Waste Management Plan; (ii) complaints from sensitive receptors; (iii) IPIU/DSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.	(i) checking of records; (ii) visual inspection	(i) no accumulation of solid wastes on-site; (ii) implementation of Waste Management Plan; (iii) complaints from sensitive receptors satisfactorily addressed.	Monthly	DSC
Transportation – Accessibility	(i) construction sites; (ii) traffic routes	Construction Contractor	(i) Traffic Management Plan; (ii) complaints from sensitive receptors; (iii) number of signages placed at subproject sites. (iv) accessibility to houses and shops on open trenches	visual inspection	(i) implementation of Traffic Management Plan; (ii) complaints from sensitive receptors satisfactorily addressed; (iii) signages visible and located in designated areas	Monthly	DSC
Socio-Economic	construction sites	Construction Contractor	(i) employment records; (ii) records of sources of materials	checking of records	number of employees from town equal or greater than 50% of total workforce	Quarterly	DSC
Occupational Health and Safety	construction sites	Construction Contractor	(i) site-specific Health and Safety (H&S) Plan; (ii) Equipped first-aid stations;	(i) checking of records; (ii) visual	(i) implementation of H&S plan; (ii) number of work-	Quarterly	DSC

Mitigation Measures	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsibility
			(iii) Medical insurance coverage for workers; (iv) Number of accidents; (v) Supplies of potable drinking water; (vi) Clean eating areas where workers are not exposed to hazardous or noxious substances; (vii) record of H & S orientation trainings (viii) personal protective equipments; (ix) % of moving equipment outfitted with audible back-up alarms; (xi) sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal.	inspection	related accidents; (iii) % usage of personal protective equipment; (iv) number of first-aid stations, frequency of potable water delivery, provision of clean eating area, and number of sign boards are according to approved plan; (v) % of moving equipment outfitted with audible back-up alarms		
Community Health and Safety.	construction sites	Construction Contractor	(i) Traffic Management Plan; (ii) complaints from sensitive receptors	visual inspection	(i) implementation of Traffic Management Plan; (ii) complaints from sensitive receptors satisfactorily addressed	Quarterly	DSC
Work Camps	work camps	Construction Contractor	(i) complaints from sensitive receptors; (ii) water and sanitation facilities for employees; and (iii) IPIU/DSC report in writing that the camp has been vacated and restored to pre-project conditions	visual inspection	(i) designated areas only; (ii) complaints from sensitive receptors satisfactorily addressed	Quarterly	DSC
Social and Cultural Resources	construction sites	Construction Contractor	records of chance finds	checking of records	Implementation of Chance Finds Protocol	as needed	DSC

Table 7.6: Operation and Maintenance Environmental Monitoring Program

Mitigation Measures	Location	Responsible for Mitigation	Monitoring of Mitigation	Method of Monitoring	Indicators/ Standards	Frequency	Responsible for Monitoring
Noise Levels	subproject sites	Rajsamand Municipal Board (RMB)	complaints from sensitive receptors	checking of records	complaints from sensitive receptors satisfactorily addressed	as needed	PMU
Accessibility	subproject sites	RMB	complaints from sensitive receptors	checking of records	complaints from sensitive receptors satisfactorily addressed	as needed	PMU
Ecological Resources	subproject sites	RMB	% survival of planted trees	checking of records	at least 80% survival rate	quarterly	PMU

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 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 not shown in Table 7.7. The figures show that the total cost of environmental management and monitoring for this subproject as a whole (covering design and construction) is INR 0.94 million.

Table 7.7: 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[a]	390,000	
Survey Expenses	Lump Sum	250,000	250,000	640,000
2. Improvement of aesthetics (including plantation)along the road	Lump Sum	300,000	300,000	300,000
TOTAL				940,000

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

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:

(i) 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
(ii) Custodians and users of socially and culturally important buildings in affected areas;
(iii) State and local authorities responsible for the protection and conservation of archaeological relics, historical sites and artefacts;
(iv) State and local tourism authorities.

139. Secondary stakeholders are:

(i) LSGD as the Executing Agency;
(ii) 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);
(iii) NGOs and CBOs working in the affected communities;

(iv) Other community representatives (prominent citizens, religious leaders, elders, women's groups);
(v) The beneficiary community in general; and
(vi) 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

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

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 Annexure – II.

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. 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 neighborhood.

144. The public Consultation and group discussion meeting were conduct by RUIDP on Date 31 May 2009 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 Dholpur, the environmental and social impacts of the proposed subprojects 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 Dholpur; and discussed the Government and ADB's Environment policies acts and potential environment impacts of the sub-projects in Dholpur. 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 road 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 road widening 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:

148. Consultation during detailed design:

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

149. Consultation during construction:

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

150. Project disclosure:

(i) 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;

(ii) 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;

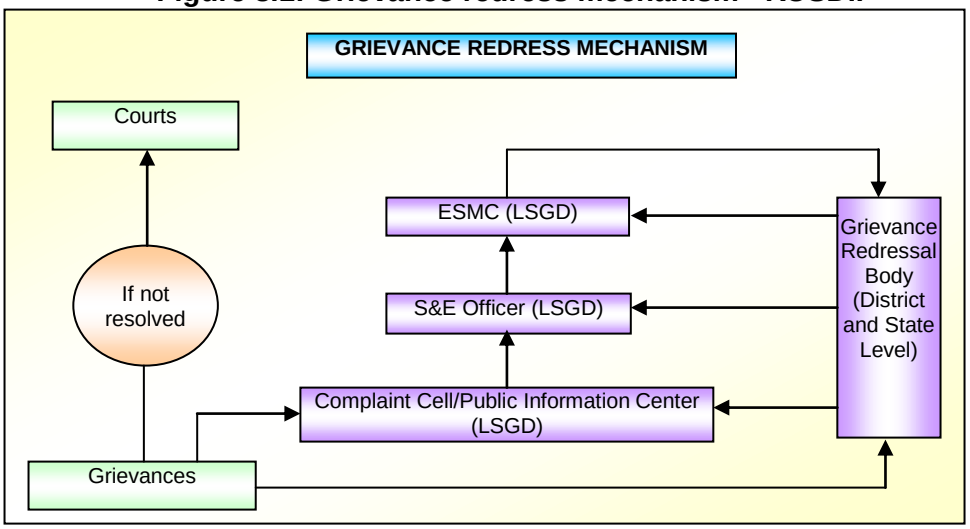
(iii) Formal disclosure of completed project reports by making copies available at convenient locations in the study towns, informing the public of their availability, and providing a mechanism through which comments can be made.

D. Grievance Redress Mechanism

151. The project authority will establish a mechanism to receive and facilitate resolution of affected persons' concerns, complaints and grievances about the project's environmental performance. The grievances mechanism should be scaled to the risks and adverse impacts of the project. It will be addressed affected peoples' concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all the affected people at no cost and without retribution. The affected people will be informed by appropriate mechanism. The figure given below indicates the grievance redress mechanism for this purpose.

152. During implementation process performance monitoring fact sheet will be prepared against each possible environmental impacts.

Figure 8.1: Grievance redress mechanism - RUSDIP



Environment and Social Management Committee (ESMC)

IX. FINDINGS AND RECOMMENDATIONS

A. Findings

153. 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 allowing better access to urban markets and social services provided in the Project towns. The town's 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.

154. 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.

155. The process described in this document has assessed the environmental impacts of the road proposed under the Dholpur Urban Transport and Roads Subproject. Potential negative impacts were identified in relation to both construction and operation of the improved infrastructure, but no significant 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.

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

157. 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 road is constructed and when it is in operation.

158. The proposed work will inevitably cause some disruption to road traffic. These are common impacts of construction in urban areas, and there are well developed methods for their mitigation. These include:

(i) Covering soil during transportation and when stored on site;
(ii) Watering exposed soil during dry and windy weather;
(iii) Planning work with the appropriate authorities to minimise disruption of road traffic.

159. 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:

(i) Ensuring that no more than 10% of the land of a single owner or occupant is acquired;
(ii) Providing additional compensation for loss of business and income-generating assets.

160. 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:

(i) Assessing the archaeological potential of the site, and selecting an alternative subproject if the site is considered to be of medium or high risk;
(ii) Including archaeological, cultural and historical authorities and interest groups as project stakeholders to benefit from their expertise;
(iii) Developing a protocol for use in conducting all excavation to ensure that any chance finds are recognized, protected and conserved.

161. 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:

(i) Avoid all known sites of AC pipes when the locations of new infrastructure are planned in the detailed design stage;
(ii) Train all construction personnel to raise awareness of the dangers of AC and enable early recognition of such pipes if encountered;
(iii) 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).

162. There were limited opportunities to provide environmental enhancements, but certain measures were included. For example, it is proposed that the project will:

(i) Employ in the workforce people who live in the vicinity of the construction site to provide them with a short-term economic gain;
(ii) Plant large-growing trees at the periphery and give it a more natural and pleasing appearance.

163. These and the other mitigation and enhancement measures are summarised in Table 7.1 to 7.3, which also shows the location of the impact, the body responsible for the mitigation, and the programme for its implementation.

164. Once the road widening 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.

165. The main impacts of the operating road 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.

166. EMP 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).

167. 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

168. 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:

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

(ii) 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

169. The environmental status of the proposed improvements in urban transport and road sector in Dholpur 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.

170. 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.

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

ANNEXURE- I: RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

Instructions:

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

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

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

Country/Project Title: India/Rajasthan Urban Sector Development Investment Programme

Sector Division: Widening of roads at Dholpur

Screening Questions	Yes	No	Remarks
A. PROJECT SITING **IS THE PROJECT AREA ADJACENT TO OR WITHIN ANY OF THE FOLLOWING ENVIRONMENTALLY SENSITIVE AREAS?**			
▪ **CULTURAL HERITAGE SITE**		√	The work includes the widening and strengthening of road network in the town of Dholpur. There is no cultural heritage site in the line of proposed roads
▪ **PROTECTED AREA**		√	No protected area nearby the roads
▪ **WETLAND**		√	Not Applicable
▪ **MANGROVE**		√	Not Applicable
▪ **ESTUARINE**		√	Not Applicable
▪ **BUFFER ZONE OF PROTECTED AREA**		√	
▪ **SPECIAL AREA FOR PROTECTING BIODIVERSITY**		√	
B. POTENTIAL ENVIRONMENTAL IMPACTS **WILL THE PROJECT CAUSE**			
▪ encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?			No loss of cultural property and heritage will be there as the project includes only widening and strengthening of the existing roads. No encroachment on historical/cultural areas is there.
▪ encroachment on precious ecology (e.g. sensitive or protected areas)?		√	No such area has been identified nearby proposed roads.
▪ alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?		√	Alteration of surface water hydrology of waterways will not be required as there is no surface water resources exist in the influence zone of the project area.
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?		√	No worker camp is proposed and no surface water resources exist in the influence zone of the project area

Screening Questions	Yes	No	Remarks
▪ increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?	√		During construction phase there will be increased air pollution due to asphalt processing and rock cutting. The location of asphalt processing and rock cutting machinery will be established far from human settlements and any environmental sensitive location to avoid impacts from increased air pollution.
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?		√	
▪ noise and vibration due to blasting and other civil works?		√	No blasting work will be involved in the project.
▪ dislocation or involuntary resettlement of people?		√	Involuntary resettlement or dislocation of people will not be there as the project calls only for strengthening and minimum widening of the existing road network of Dholpur town
▪ dislocation and compulsory resettlement of people living in right-of-way?		√	Temporary shifting of some small kiosk/ hawkers may be required in few cases.
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		√	
▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?		√	As the project is only strengthening and minimum widening of the existing roads of town which will improve the living conditions in the area
▪ hazardous driving conditions where construction interferes with pre-existing roads?	√		Contractor will provide alternate road during construction phase and will maintain traffic management to avoid any hazardous driving condition. Barricades, posters etc will be used during the construction activities to avoid any mishap.
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?		√	Local labour will be employed for this work if required then contractor will provide all necessary facilities in workers camp to avoid any sanitation and solid waste disposal problem.
▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?		√	There is no water logging area in close vicinity of project road.
▪ accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?	√		Pre-existing traffic may result accidents due to construction vehicle therefore proper management plan to be followed
▪ increased noise and air pollution resulting from traffic volume?	√		Pre-existing traffic and future construction activities may increase noise and air pollution.
▪ increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?		√	There are no significant surface water resources in vicinity of project road. Probability of such pollution is very low.
▪ social conflicts if workers from other regions or countries are hired?		√	Local labour will be employed for this work
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		√	Improvement in the existing road will not result in large population influx

Screening Questions	Yes	No	Remarks
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?		√	
▪ community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.		√	

Climate Change and Disaster Risk Questions The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.	Yes	No	REMARKS
• Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes (see Appendix I)		√	Dholpur town lies in low damage risk zone with of Zone II
▪ Could changes in temperature, precipitation, or extreme events patterns over the Project lifespan affect technical or financial sustainability (eg., increased erosion or landslides could increase maintenance costs, permafrost melting or increased soil moisture content could affect sub0-grade).		√	
▪ Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (eg., high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?		√	
▪ Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., by encouraging settlement in areas that will be more affected by floods in the future, or encouraging settlement in earthquake zones)?		√	

Note: Hazards are potentially damaging physical events.

ANNEXURE- II: PUBLIC CONSULTATION- ENVIRONMENT

Sub Project-: Strengthening of Roads (Dholpur)

Issues discussed

(i) General observations
(ii) Awareness and extent of the project and development components
(iii) Benefits of Project for the economic and social Upliftment of Community
(iv) Labour availability in the Project area or requirement of outside labour involvement
(v) Local disturbances due to Project Construction Work
(vi) Necessity of tree felling etc. at project site
(vii) Water logging and drainage problem if any
(viii) Major environmental problems expected,
(ix) Contamination of drinking water due to the upcoming project
(x) Forest and sensitive area nearby the project site
(xi) Other problems, encountered, if any
(xii) Availability of civic amenity and transfer/collection facilities.

Date & time of Consultation:- 22.07.11
Location:- Nagar Palika Road, Fuwara Road, Hardev Nagar Tiraha, Gaurav marg, Pitamber Floor Mill
Date & time of Consultation:- 28.02.2012 & 29.02.2012
Location:- Kalimai Road, Muchkund Road
Date & time of Consultation:- 02.04.2012
Location:- Ondela Road, Nursary Road, Shiv Nagar

Table A2: Issues of the Public Consultation- Design Phase

Sr. No.	Key issues/Demands	Perception of community	Action to be Taken
1.	Awareness of the project – including Project Coverage area	The people of the town are well versed with the proposed road strengthening project. As per the local people, the DSC consultants have informed them about the proposed projects and its benefits. Most of the people were in favor of the project.	The nearby residents should be associated at the most by proper discussions with them.
2.	In what way they may associate with the project	The local people are of the view that they should be hired depending upon their efficiency and expertise The local people wanted that they should be involved from the initial decision making phase onwards so that they can participate at every stage.	Preference will be given to the local labour during the implementation of the project as per the requirement. People will be informed well before execution being starts.
3.	Presence of any forest, wild life or any sensitive/ unique environmental components nearby the project	During the consultation, it was found that there will be no impact as the area is not surrounded by any reserve forest. Van Vihar, a forest area is about 18 km from the main city.	Scientific application of mitigation measures will be required to avoid any impact on the forest area.
4	Presence of historical/cultural/ religious sites nearby	Sites of cultural/ historic/ religious importance were not found in the close proximity of the proposed project site except Muchkund. The outer boundary wall of Muchkund is close to the end point of one project road	The subproject is widening of existing road.
5	Un favorable climatic condition	As per the local people's view, the summer season is not appropriate to commence the work	Suitable climatic conditions will be considered during the

Sr. No.	Key issues/Demands	Perception of community	Action to be Taken
		as the temperature reaches about 47°C. During the heavy rains, there might arise some problems in the execution of the project as the drainage facilities in the area are extremely poor due to which overflowing of drains is a common problem encountered by the people.	planning and execution stage. The points raised by the local people should be taken into consideration.
6	Occurrence of flood	Due to poor drainage conditions people suffer from water stagnancy in the area. Occurrence of flood was not mentioned by any of the residents.	Proper actions should be taken during the execution of the project so that the condition does not worsen due to our project.
7	Drainage and sewerage problem facing	Due to poor drainage condition people suffer from water stagnancy in their areas either at the time of rainy season or when some pipeline etc breaks away. Proper sewerage system is not available in the project area.	The work on the improvement of sewerage and drainage system will be initiated soon, which will certainly improve the problem related to stagnancy of water.
8	Present drinking water problem- quantity and quality	Some of the areas are supplied water by PHED. A large number of houses have their own tube-wells and hand-pumps.	-
9	Present solid waste collection and disposal problem	The Municipal Board takes care of the solid waste management of Dholpur town. Sweeping and waste collection facilities are irregular and inappropriate. Infact it can be said that there is no waste collection facility in the whole town.	Proper solid waste management system should be implemented.
10	Availability of Labour during construction time	Sufficient labour is available in this area.	Availability of labor is not a problem here, if required labor from nearby areas will be hired.
11	Access road to project site	The site is accessible via road. The roads are only 4 m wide at present. Also the conditions of the roads are extremely bad, the roads possess big holes which creates problems for the local people particularly in the rainy season, it paves a way for the numerous road accidents that taken place in this area.	The upcoming project will certainly reduce the problems of the local people.
12	Perception of on tree felling and a forestation	The local people were of the view that trees should not be cut; if urgent it should be minimum in number and number of trees cut should be replaced by planting trees in the nearby areas.	It has been explained that tree will only be cut in unavoidable case, which will be compensated by replacement of 3 trees for every one tree cut during construction.
13	Dust and noise pollution and disturbances during construction work	People are aware of the fact that during construction work some amount of dust and noise will arise. But they wanted that It should be minimized as much as possible. It has been explained that as per Safeguard policy of the project for abatement of pollution, control system will be considered Vehicles movement will be controlled & appropriate measure will be taken to combat the same.	PUC certified vehicles should be used during material handling and transportation activities. Sprinkling of water should be done in order to minimize the fugitive dust emissions.
14	Setting up worker camp site within the village/ project locality	As per the people, local laborers should be hired which will minimize the requirement of setting of a temporary work shelter.	Preference will be given to the local labour during the implementation of the project as per the requirement.

Sr. No.	Key issues/Demands	Perception of community	Action to be Taken
15	Safety of residents during construction phase and applying of vehicle for construction activities	People were of the view that safety measures like cautionary boards, signals, barricades should be used at the project site in order to minimize any mishap.	Safeguard policy should be Implemented in order to minimize the accidents.
16	Requirement of enhancement of other facilities	The people were of the thought that this town should be raised to the levels that of other developed cities like better road connectivity, proper solid waste management, rainwater harvesting etc should be implemented in order to raise the standard of living.	Actions should be taken in order to improve the standard of living.

Name and Positions of the Persons Consulted:

1. Virendra Singh, Shopkeeper, Nagar Palika Road, Dhaulpur
2. Subhash Sharma, Local resident, Nagar Palika Road, Dhaulpur
3. Bharat Tyagi, student, Fuwara Road, Dhaulpur
4. Antram, Mechanic, Pitambar Floor Mill, Dhaulpur.
5. Guddie ji, Owner, Pitambar Floor Mill, Dhaulpur
6. Nathi lal Sharma, Local resident, Near Mangal Bharti, Maharaj Mandir, Dhaulpur
7. Jitendra Singh, Businessman, Near Mangal Bharti, Maharaj Mandir, Dhaulpur
8. Surendra Kumar, government servant, Near Mangal Bharti, Maharaj Mandir, Dhaulpur
9. Mahant Ranchore Das, Mahant, Dashkunt Dev, Dhaulpur
10. Balak das, Dashkunt Dev, Dhaulpur
11. Ram Prasad, Dashkunt Dev, Dhaulpur
12. Parsha Ram, Dholpur
13. Pavan Kumar, Shiv Nagar, Dholpur
14. Ramji Lal, Shiv Nagar, Dholpur
15. Ramavtar, Ondela road, Dholpur
16. Rajendra Singh, resident of Narsury road, Dholpur
17. Vishamber Singh, resident of Narsury road, Dholpur
18. Dev Kishor, resident of Narsury road, Dholpur
19. Rakesh, resident of Narsury road, Dholpur
20. Prithiv Singh, resident of Narsury road, Dholpur
21. Pujari of Muchkund temple

Summary of Outcome:

The various issues related to the proposed project of widening, strengthening and improvement of the existing roads of Dhaulpur town have been discussed at various locations like Nagar Palika road, Fuwara road, Hardev Nagar Tiraha, Dashkunt Dev, Gaurav Marg, Narsury road, Kalimai road, Saipau road etc with the local people. The local people were of the view that they are aware about the work of RUIDP and other agencies. A majority of the people are in favor of the upcoming project. Infact, they are very eager towards the implementation phase of the project. As per the local people, the roads are only 4 m wide at present. Also the conditions of the roads are extremely bad, the roads possess big holes which create problems for the local people as in the rainy season, it paves a way for the numerous road accidents that take place in this area. The other problems faced by them are bad odor from the waste heap during the summer and the monsoon season which also acts as a source of disease spreading bacteria. They also complained that there are no proper waste management facilities in the area. The

caretaker and Pujari of Muchkund temple requested that the Kund of Muchkund should also be developed through RUIDP in addition of the development of approach take They also wished that local people should be given opportunities during the project construction tenure. People are ready to extend all types of support during execution of the project. They also want that sewerage, drainage and solid waste management projects should be taken up as early as possible.

ANNEXURE- III - PHOTOGRAPHS OF CONSULTATION

Consultation at Kalimai Road

Consultation at Kalimai Road

Consultation at Kalimai Road

Discussion with Chairman Dholpur Nagar Palika

Consultation at Nursary Road

Consultation at Nursary Road

Consultation at Saipau Road

Consultation at Nursary Road

ANNEXURE-IV - LOCATION MAP OF SILT DISPOSAL SITE