3.6.2. Ground Water

231. Appropriate sampling locations were selected for the ground water bodies for the base line data. The specific sampling point locations have been shown in **Figure – 3.4**. The samples were examined for various physical, chemicals and demand parameters. The analysis results are given in **Table 3.8**.

3.6.3. Surface Water Quality

232. Water samples were collected twice in the study period (in November, 08 and January, 09) and were analyzed for various desirable characteristics (Table 3.7). sampling location is shown in Figure 3.4.The pH of the water samples were almost neutral ranging from 7.25 to 7.95. Further analysis indicates that pond water from Simaliya, Gadepan and Bamori do not meet the 'desirable limits' of drinking water and in but are within the 'permissible limit in the absence of alternate source' (as per IS 10500; Table 3.9). Magnesium levels are high in samples from Gadepan and Simaliya ponds. Other water samples mostly meet the desirable limits of drinking water. Alkalinity and hardness of water was within the prescribed limits. TDS varies between 184 and 1437 mg/l.

3.6.4. Ground Water Quality.

233. Water samples were collected twice in the study period (in November, 08 and January, 09) and were analyzed for various desirable characteristics (**Table 3.8). S**ampling location is shown in **Figure 3.4.**The pH of the water samples were almost neutral ranging from 7.1 to 7.9. Further analysis indicates that all the ground water samples have high magnesium content (even crossing permissible limits in the absence of alternate source). Other parameters though do not meet the 'desirable limits' of drinking water and in but are within the 'permissible limit in the absence of alternate source' (as per IS 10500; **Table 3.9**). Alkalinity and hardness of water was within the permissible limit limits. TDS varies between 213 and 636 mg/l.

Table 3.8 : Ground Water Analysis of CFCL Gadepan

Sampled in November 2008											
Location		1	2	3	4	5	6	7	8	9	10
Parameter		Simaliya	Palaitha	Bamori	Ballabpura	Khan Ki Jhopodiya	Dugari	Bamuliya mataji	Anta	Darbiji	Bhoja Khedi
PH		7.90	7.30	7.50	7.20	7.20	7.30	7.40	7.10	7.60	7.45
Turbidity	NTU	0.7	1.1	0.6	1.9	2.0	0.3	2.1	1.6	1.1	0.6
TDS		213	501	636	548	354	513	459	540	523	428
TH as	CaCO3	133	344	172	485	262	348	232	254	271	292
Ca	as CaCO3	73	99	73	383	133	120	120	128	142	168
Mg	as CaCO3	60	245	99	102	129	228	112	126	129	125
Talk	as CaCO3	143	350	239	166	212	294	316	261	301	256
Cl	as Cl	20	40	60	58	32	47	30	53	376	32
SO4	as SO4	13.0	18.0	30.1	60.0	31.6	43.0	43.8	58.0	145.0	26.1
NO3 as	NO3	1.8	18.8	4.8	6.2	8.5	22.5	14.0	3.2	7.6	5.8
PO4	as PO4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TAN		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

T.K.N.	**as N**	1.9	1.4	2.1	2.7	2.5	1.7	1.8	1.7	1.3	1.9
Iron	**as Fe**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Copper	**as Cu**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	**as Zn**	0.26	0.32	0.32	0.35	0.29	0.22	0.23	0.27	0.29	0.34

Sampled in January 2009											
Location		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Paramter		**Simaliya**	**Palaitha**	**Bamori**	**Ballabpura**	**Khan Ki Jhopodiya**	**Dugari**	**Bamuliya mataji**	**Anta**	**Darbiji**	**Bhoja Khedi**
PH		7.80	7.40	7.50	7.30	7.20	7.50	7.50	7.30	7.60	7.65
Turbidity	**NTU**	1.8	1.6	1.3	<1.0	1.7	1.0	<1.0	0.6	1.1	1.6
TDS		212	515	721	525	315	476	494	466	496	420
TH as	**CaCO3**	128	326	164	468	218	310	225	278	248	284
Ca	as CaCO3	66	94.0	66	314	116	112	103	148	122	160
Mg	as CaCO3	62	232	98	144	102	198	122	130	126	124
Talk	as CaCO3	131	332	276	173	187	290	345	252	284	232
Cl	as Cl	23	33	63	52	25	33	37	32	365	24

SO4	**as SO4**	17.1	17.8	39.0	58.0	27.3	38.0	54.0	49.0	140.0	22.6
NO3 as	**NO3**	1.7	17.2	3.9	6.4	7.8	21.6	15.2	2.8	7.4	4.9
PO4	**as PO4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TAN		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T.K.N.	**as N**	2.2	1.7	2.3	2.9	2.2	1.9	2.1	1.9	1.7	2.2
Iron	**as Fe**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Copper	**as Cu**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	**as Zn**	0.22	0.29	0.27	0.31	0.34	0.27	0.25	0.24	0.27	0.29

Note: *All values in mg/l, unless specified. NT denotes not traceable (below detectable limit)*

Table 3.9 : Water Quality Standards

Parameters	Desirable Limit	Permissible Limit in the Absence of Alternate Source
I.Essential Characterisitcs		
Colour, Hazen Units, Max	5	25
Odour	Unobjectionable	
Taste	Agreeable	
Turbidity, NTU, Max.	5	10
pH Value	6.5-8.5	No relaxation
Total Hardness (as CaCO3)	300	600
Iron (as Fe), mg/l, Max.	0.3	1
Chlorides (as Cl) mg/l, Max.	250	1000
Residual Free Chlorine, mg/l, Min.	0.2*	
II.Desirable Characteristics		
Dissoloved Solids, mg/l, Max.	500	2000
Alkalinity (as CaCO3), mg/l, Max.	200	600
Sulphates (as So4) mg/l, Max.	200	400**
Nitrate (as NO3)	45	100
Fluoride (As F)	1	1.5
Calcium (as Ca)	75	200
Magnesium (as Mg)	30	100
Copper (as Cu) mg/l, Max.	0.05	1.5
Mangense (as Mn)	0.01	0.3
Mercury (as Hg) mg/l, Max.	0.001	No relaxation
Cadmium (as Cd), mg/l, Max.	0.01	No relaxation
Selenium (as Se), mg/l, Max.	0.01	No relaxation
Arsenic (as As), mg/l, Max.	0.05	No relaxation
Lead (as Pb), mg/l, Max.	0.05	No relaxation
Zinc (as Zn), mg/l, Max.	5	15
Aluminum (as Al)	0.03	0.2
Boron (as B)	1	5
Chromium (as Cr), mg/l, Max.	0.05	No relaxation
Cyanide (as CN), mg/l, Max.	0.05	No relaxation
Phenolic Compounds (as C6H5OH), mg/l, Max.	0.001	0.002
Anionic Detergents (as MBAS), mg/l, Max.	0.2	1
Mineral Oil, mg/l, Max.	0.01	0.03
Pesticides	Absent	0.001
Polynuclear Aromatic Hydrocarbons (as PAH), g/l, Max.		
Radioactive Materials		
a. Alpha Emitters,Bq/l, Max		0.1
b. Beta Emitters, Bq/l,Max		1

3.7. Soil

3.7.1. Introduction

234. Impact of industrial activity on land environment is primarily attributed to:

- Perpetual fall out of the harmful gaseous emissions along with the natural atmospheric pollutants.
- Irrigation practices with the waste water with varying concentration of pollutants.
- Dumping of solid wastes generated during the process.

235. Soils may be defined as a thin layer of earth's crust that serves as a natural medium for the growth of plants. It is the unconsolidated mineral matter that has been subjected to and influenced by genetic and environmental factors. Soils serve as a reservoir of nutrients for plants and crops and also provide mechanical anchorage and favorable tilts.

236. The soils of Kota are complex, highly variable, reflecting a variety of parent materials, physiographic land features, range of distribution of rainfall, and its effects etc. As such different soils create different types of habitat for plant growth, therefore, the true choice and afforestation patterns on such kind of soils vary greatly. Soils are thus, variable in their soil-water-plant relationship, conservation needs and production potentials.

237. The mantle of alluvium in this area is confined to the North Eastern sector. It is then on Sandstone plateaus, where over large spread of bare rock is there.. Usually it is light loam, sandier over sandstone tracts, and more clayey upon the shale.

238. All over the forest area the soils are dry, impoverished, and deficient in humus. On the slopes the soil is sandy to sandy-loam, shallow and covered with stones and boulders and are reddish in colour. It is generally shallow with outcrops of parent rock. In depressions along nallah banks and in low-lying Babul-radis, the soil is clayey loam to clayey and is fairly deep.

239. The forest soils are locally classified as 'kaju' and 'naleiq' according to their fertility. The former constitute soils which can be brought under the plough while the latter constitute those which are unfit for cultivation. Except for certain grass birs and babul radis the kaju lands are not under forest cover.

3.7.2. Study Area Soil Characteristics

240. To understand the soil characteristics and best utility, the sampling of soils was done at few locations during the study periods. The samples were examined for various physical and chemical parameters. The analysis results are given in **Table 3.10.**

Table 3.10 : Soil Quality Analysis of CFCL Gadepan

Parameters	Simliya	Dugari	Anta	Khan ki Jhopodiaya	Bambolia Mataji	Palaitha	Bamori	Ballabpura	Darbiji	Bhoja Khedi
Bulk Density; g/cm^3	1.23	1.25	1.27	1.24	1.28	1.24	1.26	1.23	1.28	1.26
Color	Black	Brown	Black	Brown	Black	Brown	Brown	Black	Brown	Black
Organic matter; %	0.58	0.55	0.59	0.54	0.58	0.57	0.54	0.58	0.56	0.59
Water Holding Capacity; %	35	32	36	33	35	32	34	33	35	34
pH (20% slurry)	6.5	7.2	6.9	7.2	6.7	6.9	7.1	6.7	7.2	6.8
Texture	Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam
Carbonates, %	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Bicarbonates, %	0.0213	0.0192	0.0214	0.0196	0.022	0.021	0.0195	0.0205	0.0203	0.0217
Conductivity (20% slurry), umhos/cm	300	290	230	690	390	280	290	350	380	310
Potassium, mg/kg	0.71	0.61	0.65	0.63	0.68	0.64	0.65	0.62	0.60	0.66
Phosphorus, mg/kg	15.87	12.34	13.85	12.53	16.24	15.16	12.81	14.55	12.94	14.96
Nitrogen,%	1.33	1.24	1.3	1.25	1.35	1.34	1.29	1.32	1.28	1.31
CEC, meq/100g	28.2	26.4	28.8	25.3	28.7	27.3	26.8	27.9	26.5	28.3

3.7.3. Physico-Chemical Characteristics of Soil

241. Soils in the region are mostly sandy clay loam. The microbial quality of soil is normal and shows no contamination. The pH is neutral; EC, bulk density, and total C shows the status of normal agriculture soil. Water holding capacity (WHC) ranged between 32 to 36%.

242. Chemical properties of these soils indicate that the soils in the region are slightly alkaline, with low to medium electrical conductivity. The soils are calcareous in nature. These soils have exchangeable calcium in predominant proportion substantiating their calcareous nature. The higher content of calcium is perhaps because of chemical nature / mineralogy of the silt particles (smectite, Illite and kaolinite). Physical characteristics of soil greatly influence its use and behaviour towards plant growth. The plant supports, root penetration, drainage, aeration, retention of moisture and plant nutrients are linked with the physical conditions of soils. Physical properties also influence the chemical and biological behavior of soils.

243. The fertility of soils of the study area is medium and is known to be good for cultivation.

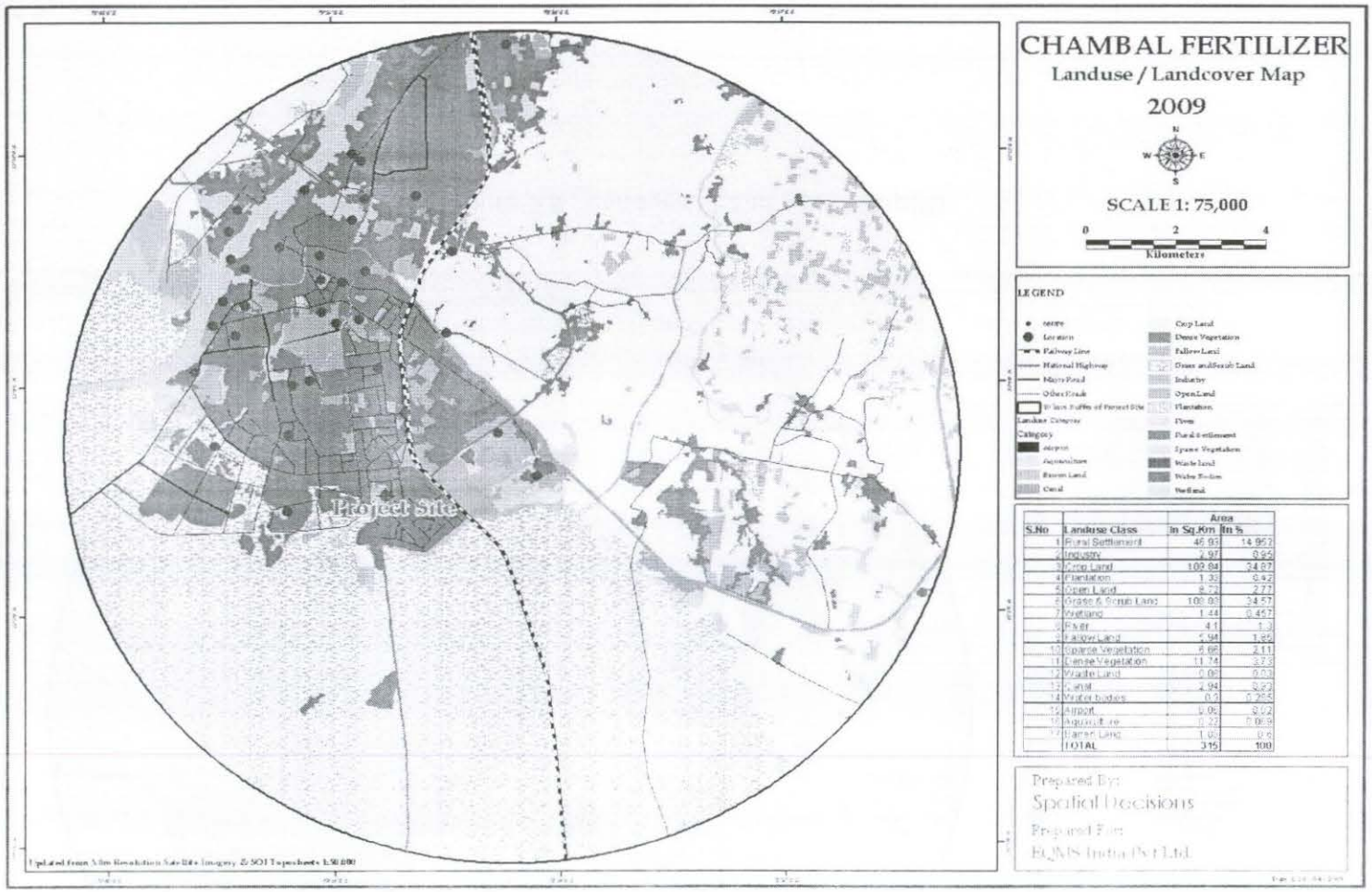
3.8. Land Use

244. The basic purpose of land use pattern and classification in an EIA study is identifying the manner in which different parts of land in an area are being utilized or not utilized. The land use pattern is determined by the action and interaction of various factors such as physical characteristics of land, the institutional frame work, the structure of other resources available and the location of the region in relation of other aspects of economic development. It is an important indicator of environmental health; human activity and a degree of inter play between these two. Even though the soil quality, water availability and climate have strong influence on agriculture and vegetation, the human activity may alter the natural environment to a large extent to suit human needs. Unnatural land use often triggers rapid environmental deterioration and disturbs ecological balance.

245. Base line information on land use / land cover for area around CFCL Kota site was determined by Remote Sensing data. The area contains different types of land cover and land use:

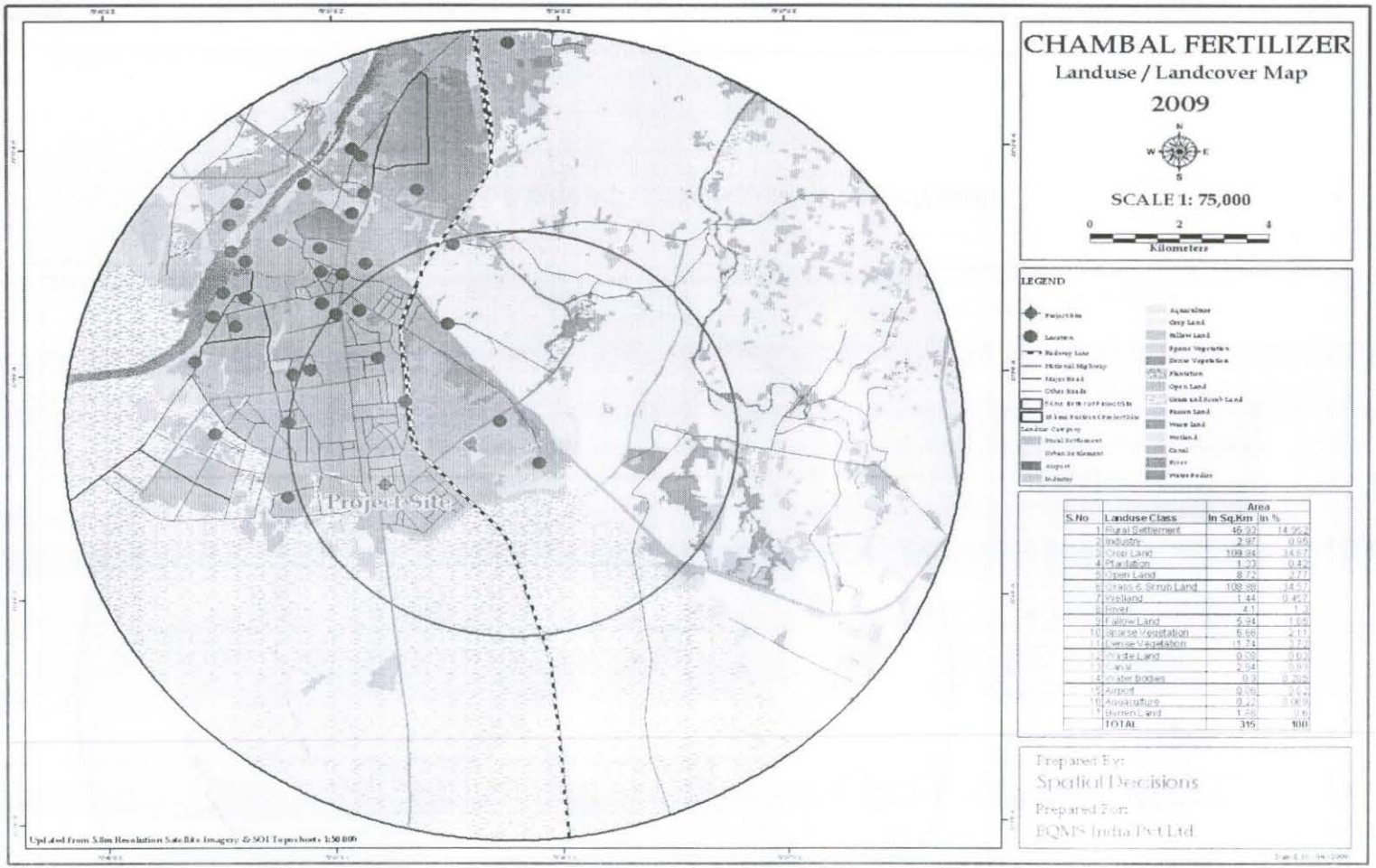
- Agriculture land with traditional irrigation system cultivated with annual crops, fruits and vegetables following two main agriculture calendars. The main soil type in this area is sandy alluvium conductive for agriculture.
- Constructed land.
- Water bodies and wet lands.
- Salt affected land that has not been included in any reclamations effort.

246. Land use Land cover map has been shown in Figure- 3.5, 3.6,and 3.7.The total cultivated area in **Figure – 3.5** represent around 34.87 / 41 .22 % from the whole land cover (**Table 3.11**).



S.No	Landuse Class	Area In Sq.Km	Area In %
1	Rural Settlement	46.93	14.867
2	Industry	2.97	0.95
3	Crop Land	109.84	34.87
4	Plantation	1.32	0.42
5	Open Land	8.71	2.77
6	Grass & Scrub Land	100.00	34.57
7	Wetland	1.44	0.457
8	River	4.1	1.3
9	Fallow Land	5.94	1.89
10	Sparse Vegetation	6.66	2.11
11	Dense Vegetation	11.74	3.73
12	Waste Land	0.09	0.03
13	Canal	2.94	0.93
14	Water bodies	0.2	0.064
15	Airport	0.06	0.02
16	Agriculture	0.22	0.069
17	Barren Land	1.06	0.3
	TOTAL	315	100

Figure 3.5 : Landuse / Land cover Map(A)



S.No	Landuse Class	Area In Sq.Km	In %
1	Rural Settlement	46.92	14.90
2	Industry	2.97	0.95
3	Crop Land	108.84	34.57
4	Plantation	1.33	0.42
5	Open Land	8.72	2.77
6	Grass & Scrub Land	108.88	34.57
7	Wetland	1.44	0.46
8	River	4.1	1.3
9	Fallow Land	5.24	1.66
10	Sparse Vegetation	6.66	2.11
11	Dense Vegetation	11.74	3.73
12	Waste Land	0.08	0.03
13	Mine	2.94	0.93
14	Water Bodies	0.3	0.10
15	Airport	0.56	0.18
16	Aquaculture	0.44	0.14
17	Barren Land	1.58	0.5
	TOTAL	315	100

Figure 3.6 : Landuse / Land cover Map(B)

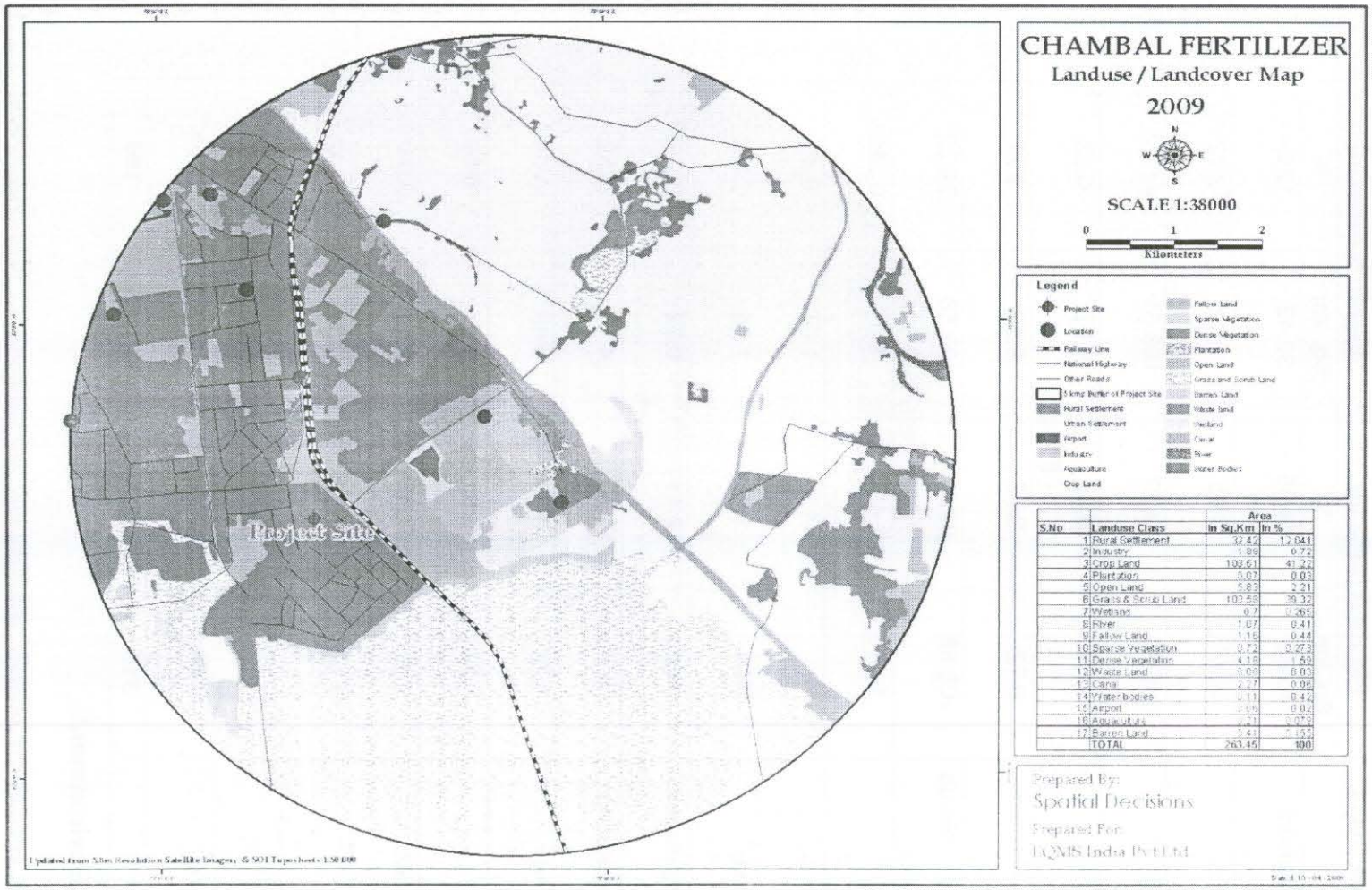


Figure 3.7 : Landuse / Land cover Map(C)

Table 3.11 : Landuse category in the Study Area

S. No.	Land Use Class	Figure A (Area in)		Figure B (Area in)	
		Sq. km	%	Sq. km	%
1.	Rural Settlement	46.83	14.95	32.42	12.04
2.	Industry	2.97	0.95	1.89	0.72
3.	Crop Land	109.84	34.87	108.61	41.22
4.	Plantation	1.33	0.42	0.07	0.03
5.	Open Land	8.72	2.77	5.83	2.21
6.	Grass & Scrub Land	108.88	34.57	103.58	39.32
7.	Wet Land	1.44	0.457	0.7	0.265
8.	River	4.1	1.3	1.07	0.41
9.	Fallow Land	5.94	1.85	1.16	0.44
10.	Sparse Vegetation	6.66	2.11	0.72	0.273
11.	Dense Vegetation	11.74	3.73	4.18	1.59
12.	Waste Land	0.08	0.03	0.08	0.03
13.	Canal	2.94	0.93	2.27	0.86
14.	Water Bodies	0.9	0.285	0.11	0.041
15.	Airport	0.06	0.02	0.06	0.02
16.	Aquaculture	0.22	0.069	0.21	0.079
17.	Barren Land	1.88	0.6	0.41	0.155
	Total	**315**	**100**	**263.45**	**100**

3.9. Biological Environment

247. The biotic species are broadly classified into two categories – flora (vegetation) and fauna (animals). All biotic species are organized in natural groups called 'communities' with mutual dependency among their members.

248. Projects usually produce adverse biological impacts of two types – direct & indirect, and of varying duration, short term and long term.

249. The climate of Kota varies from semi-arid to arid. The climate of Study area is characteristic of South Eastern Rajasthan with a long and intensely hot summer, low rainfall and a short mild winter. The land surface has a gentle slope from South to North. The main rivers in the district are Chambal and its tributaries, Kalisindh, Paravan, Ujhar, Parvati etc. All over the forest area the soils are dry, impoverished, and deficient in humus. On the slopes the soil is sandy to sandy-loam, shallow and covered with stones and boulders and are reddish in colour. Kota and Baran districts have 23.5% and 30.77% forest cover only. These forests are mainly concentrated in South Western and Central regions on the Mukumndra hills. The main sub types of forests observed are basically 5B – Northern Tropical dry decidurous forest of champion and seth;s classification: Anogeissus Pendula forest- Dhokra (Anogeissus latifolias wall) mixed with Gurjan(Lannea coromandical Houtt merr., Bel Aegle marrmelos) Tender (Diosoyros tomentosa Roxb) etc.

250. Miscellaneous Forest – Khejra (Acacia Leucophlaeo wiol) Khair, Bel, Kalam (Kasam), Amaltas (Terminalia arjuna), Bahera (Terminalia belerica Roxb. Gurjan (Lannea coromandelica) etc.

251. Babul (Aeacia Arabica wild) forest -Babul mixed with khejrarepresention flora are found in these forest. Cahnden(Santalum album linn.) in NAGRA Khri Radi Kanwar range.

252. Other Dhair (Anageissus latifolia wall) Bahara, Mahuwa, Karayaer Kara, Salar, Chhola Dhak, hisham, Sadaria, Gular, Jamun, Neem Pipal, Aam, Semul.

3.9.1. Land Use Classification

253. Land is normally classified under different category viz., forest, barren and uncultivated land put to nonagricultural use, and agricultural land. **Forest area:** There is no forest area, national park, wild life sanctuary and reserve forest in the study area however isolated trees group (babul etc.).

254. **Barren, Non-cultivable and Non-agricultural Land:** Village sites, roads, water, usar land, land being diverted for other purposes are categorized in this category.

255. **Crop or Agriculture Land:** This is also known as 'man made eco-system's the controlled varieties of biotic variety are developed in controlled system. Major livelihood of the inhabitants is agriculture. The crops grown are wheat, paddy, jowar, cereals, maize and sugar. Rain fed farming and bore well irrigation characterize the agriculture in the area.

3.10. Terrestrial Ecology

256. List of flora observed in the study area is given in **Table 3.12.**

Table 3.12 : Flora existing within the study area of CFCL

Common Name	*Botanical Name*	Family
Australian babool	*Acacia auriculiformis*	Mimosaceae
Baval	*Acacia nilotica*	Mimosaceae
Kalosaras	*Albizia lebbeck*	Mimosaceae
Dhavado	*Anogiessus latifolia*	Combretaceae
Narkanta / Satavari	*Asparagus dumosus*	Liliaceae
Limdo	*Azadirachta indica*	Meliaceae
	Azolla pinnata	Felicales
Kachanar gulabi	*Bauhinia purpurea*	Caesalpiniaceae
Asotri	*Bauhinia racemosa*	Caesalpiniaceae
Shalmali / Shimalo/ Semal	*Bombax ceiba*	Bombacaceae
Khakhra / Khakhro	*Butea monosperma*	Papilionaceae / Fabaceae
Shankasur, Peacock flower	*Caesalpinia pulcherima*	Caesalpiniaceae
Botle brush	*Callistemom lanciolatus*	Myrtaceae
Akado	*Calotropis gigantea*	Asclepiadaceae
Amaltas / Garmalo	*Cassia fistula*	Caesalpiniaceae
-	*Cassia siamea*	Caesalpiniaceae
	Ceiba hexandra	Bombacaceae
	Chara spp.	
Sissoo	*Dalbergia sisso*	Papilionaceae / Fabaceae
Dhatura	*Datura metel*	Solanaceae
Gulmohar	*Delonix regia*	Caesalpiniaceae
	Eichhornia crassipes	Ponteridaceae
Coral tree	*Erythrina indica*	Papilionaceae / Fabaceae
Nilgiri	*Eucalyptus globulus*	Myrtaceae
Vad	*Ficus benghalensis*	Moraceae
Gular	*Ficus glomerata*	Moraceae

Common Name	*Botanical Name*	Family
Piplo	*Ficus religiosa*	Moraceae
	Grestromia flosregin	
	Hydrilla verticillata	Hydrocharitaceae
	Hygrophila auriculsts	Acanthaceae
	Ipomea arborea	Convolvulaceae
Neel Gulmohor	*Jacaranda mimosefolia*	Bignoniaceae
Nani padar	*Kigalia pinnata*	Bignoniaceae
Savani / Queen's Flower	*Lagerstroemia speciosa*	Lythraceae
Keri	*Mangifera indica*	Anacardiaceae
	Marsiliea quadrifolia	Felicales
Bakan Limdo	*Melia azedarach*	Meliaceae
Bakul	*Mimusops elengi*	Sapotaceae
Setur	*Morus alba*	Moraceae
Tarbot / Parijat	*Nyctanthes arboristris*	Oleaceae
Kamal	*Nymphaea pubescens*	Nymphaeaceae
Pardesi baval	*Parkinsonia aculata*	Caesalpiniaceae
	Parthenium histoforum	Asteraceae (Compositae)
Copper pod	*Peltophorum ferruginium*	Caesalpiniaceae
Khajur	*Phoenix sylvestris*	Arecaceae (Palmae)
Goras Amli	*Pithecellobium dulce*	Mimosaceae
Temple tree	*Plumeria acutifolia*	Apocynaceae
Asopalav	*Polyalthia longifolia*	Annonaceae
Khijado	*Prosopis cineraria*	Mimosaceae
Gando bavad	*Prosopis juliflora*	Mimosaceae
Guava	*Psidium guajava*	Myrtaceae
Rain tree	*Samanea saman*	Mimosaceae
Bhoya ringani	*Solanum surattenese*	Solanaceae
	Spathodia conpanulata	Bignoniaceae

Common Name	*Botanical Name*	Family
Jamun	*Syzygium cumini*	Myrtaceae
Amli	*Tamarindus indica*	Caesalpiniaceae
Pili Kaner	*Thevetia perunana*	Apocynaceae
Bhangaro	*Tridax procumbens*	Asteraceae (Compositae)
	Typha angustata	Typhaceae
Bor	*Zizyphus mauritiana*	Rhamnaceae

3.11. Aquatic Environment

3.11.1. Sampling Procedure for Planktonic Characteristics

257. For quantitative and qualitative evaluation of aquatic environment, plankton surface water samples were collected by filtering the water through a plankton net of 20 mesh size.

3.11.1.1 Planktonic Communities

258. Phytoplankton (plant plankton) includes minute photosynthetic cells called prochlorophytes; blue green algae, which are akin to bacteria; and microscopic species of several phyla of true algae. They can live only in the photic zone, where there is enough light for photosynthesis.

259. Zooplankton (animal plankton) includes a great variety of animals from single – celled protozoa to large invertebrates that move about on ocean currents. Among the zooplankton, crustaceans of phylum Athropoda easily predominate, these include numerous species within several categories. Zooplankton include animals that are planktonic all their lives as well as larvae of animals that "grow up to be" nekton or benthos. Bacteria and viruses are ubiquitous at all depths, but little is known about their species composition.

3.11.1.2 Grass

260. Lapla, polaed, Rataeda, Surwal, Karar, Bhalki, Chlona found in Darrah Vlly and in Borabas Chandbaori, Radi, Dandi and Phula blocks, of ladpura range. Birrs in Moalk and Kaharas range.

3.11.2. Fauna

261. Panther, tiger, Chinkara, Chital, Nilgai, Sambhar, Sloth Bear, Wild Boar, Common Cat, Common Langur, Stripped hyanenas, Jackal, Indian Fox, jungali Cat, Indian Poraupine, Common Mongoose, Hedge dog, bat bush rat.

3.11.2.1 Birds

262. Baya, Koyal, Vulture, Parro, Jungali croe, Bulbul house & parroe,owlo, kitemm green Pigeon, sand grouse, Peofow, commonwuail, Jungali bush, Quad Grey partridges, Saras erane, sand piper

3.11.2.2 Reptiles

263. Poisonous snake, cobra, pussel, viper are most common, water snakes, seem near lakes, crocodiles in big lakes and pools of Chambal and Kalisindh River.

3.11.2.3 Fishes

264. Crabs- Catla(Catla latla), Rohu (Labeo rohates), Mrigul(Cirrhina Mrigul), Lobeo lalbasu, Mahaseer(Barbustor) Minor Crabs- Chal(Chela Buccala) Puthi (Pantius ticto) Bangde (C. Reba), Bula (L.Buta) and Dera (L.Dera)

3.11.3. CFCL Complex Green Belt and Plantations

265. CFCL has developed plantation (thick green belt and lawns / bushes on about 500 acres of land. This is about 50% of the total land area in the complex.The green cover was laid with objectives of:

- To maintain and improve ecological equilibrium.
- To create a shelter-belt and check effect of hot winds.
- To improve hydrological balance.
- To provide a safe habitats for birds.
- To prevent noise population.
- To create awareness among workers and people in the neighboring villages towards environment.

266. The watering of plants is done by hose pipe, overhead sprinklers & popup systems. However, now network of pipelines has been developed to utilize treated effluents in green belt & farm house. The trees /shrubs inside the plant comprises of groves of Neem, Kadamb, Kanchan, bottle bush etc. Bougainvillea sp., Nerium, Tabernaemontana which are all pollutant resistant plants and grow well in disturbed area. Other species include Siris, Rain tree, Queen's flower, Queen of the Night, Scarlet Cordia, Tulip tree, Gul Mohar, Flame of the Forest etc.

Table 3.13 : Tree Plantation at CFCL Complex

Sr. No.	Local Name	Botanical Name
1.	Arjun	Terminalia arjuna
2.	Kanji	Poingamia
3.	Eucalyptus	Eucalyptus
4.	Amaltas	Casia Fistula
5.	Alostonia	Alostonia Scholaris
6.	Ashok	Polyalthia Longifolia
7.	Gulmohar	Delonax Regia
8.	Casia	Casia Ciamia
9.	Bakyan	Melia Azederacta
10.	Neem	Melia Indica

Sr. No.	Local Name	Botanical Name
11.	Balam Kheera	Casalia Pinnata
12.	Kasurriana	Cassuriana Equisatifolia
13.	Siris	Albezia Lebeck
14.	Acasia	Acasia Auriculiformis
15.	Bottle Brush	Calostomone Lansolatus
16.	Silver Oak	Gravelia Robusta
17.	Semal	Bombax Melabericum
18.	Pipal	Ficus Religosa
19.	Pakar	Ficus Infectoria
20.	Shisham	Dulberggia Sisso
21.	Mahua	Modhuca Indica
22.	Mango	Magnifera Indica
23.	Pangara	Erythrina Indica
24.	Kachanar	Bahuinia Alba
25.	Nili Gulmohar	Jacaranda Mimosaefolia
26.	Pili Gulmohar	Peltoforum Ferogenium
27.	Jamun	Syzygium Jambolana
28.	Jatropha	
29.	Aonala	Anona Squamosa
30.	Amrood (Guava)	Pisdum Guava

267. The varieties of plants observed inside the CFCL complex are maximum and much more than outside.

3.11.4. Terrestrial Wild Life

268. Since there is no natural forest in the area, no wild animals are found in the area due to lack of suitable habitats. However with the thick green belt development in and around CFCL complex migratory birds and other fauna (peacocks, foxes, snakes etc) are occasionally observed in this manmade greenery. There is water pond (talab) in the factory area where large numbers of migratory birds are observed in January. Two groups of peacocks are frequently seen there in the green belt. Lower vertebrates are mostly seen in the rainy season.

269. The domestic animal comprises of cows, buffaloes, goats, horse (very few) and ox. The horse and ox are for load purposes. Buffaloes are preferred over cows due to more milk. There are no endangered or endemic species observed in

the project area. A brief enumeration of animal species as observed in the survey villages is given in **Table 3.14**.

Table 3.14 : Animals Observed in the study area villages

Sr. No.	Local Name	Name
1.	Nilgai	
2.	Lomri	Fox
3.	Mor	Peacock
4.	Frogs	Euphlyctis Cyanophlytis
5.	Common Indian Toad	Bufo Melonostictus
6.	Wall Lizard	Hemidoctylus falviviridis
7.	Rat Snake	Ptyas Mucous
8.	Cobra	Naja naja
9.	Birds	
10.	Dogs	
11.	Monkeys	
12.	Common Langur	
13.	House Crow	Corvus Splendens
14.	Common Myna	Acredotheres Tristis
15.	Indian Robin	Saxiciloids Fulicata
16.	House Sparrow	Passar Domesticus
17.	Common Kingfisher	Alcedo Athis
18.	Pigeon	Columbia Livia

3.12. Demographic and Socio – Economic Features

270. The study area within 10 km radius fall in three tehsils namely: Digod and Sangod in District Kota and Anta in District Baran. The total study area is 31416 ha. The total population of the study area is ~91810 (2001 census) with population density and sex ratio of 292 and 913. (**Tables 3.15**).

271. The schedule cast and schedule tribe constitute about 22.2% and 12.2% of the whole group. Total literate population in the study area is 52143 (56.8% of the total population). Literacy among males is about 68.5% and females is about 44%.

272. 36.7% of the total population constitutes as workers and 66.1% of these are main workers.29.2 % of the total workers are casual workers. 8.1% of the total

workers are employed in agriculture activities. Amenities in study area (limited villages) are given in **Table 3.15.**

Table 3.15 : Socio-Economic Details of the villages in the vicinity of the CFCL Gadepan

NAME	HH	Total Population			Age group 0-6			SC Population			ST Population			Literate Population			Worker Population			Marginal Workers			Nonworking Population		
		T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F
Amora	59	363	186	177	70	45	25	162	83	79	187	96	91	142	90	52	139	77	62	67	7	60	224	109	115
Bhauran	202	1209	615	594	209	114	95	415	221	194	383	184	199	620	401	219	309	277	32	112	93	19	900	338	562
Bamori	494	2832	1505	1327	509	283	226	809	434	375	110	60	50	1574	1003	571	828	695	133	191	98	93	2004	810	1194
Kachnawada	81	540	265	275	128	66	62	20	9	11	0	0	0	287	156	131	116	103	13	31	30	1	424	162	262
Cheensa	113	649	357	292	134	75	59	44	22	22	83	45	38	300	213	87	168	161	7	41	36	5	481	196	285
Gadepan	641	2788	1494	1294	530	266	264	214	105	109	398	206	192	1652	1013	639	930	859	71	77	60	17	1858	635	1223
Pachara Ki Jhonpariyan	85	569	293	276	120	62	58	2	1	1	0	0	0	310	177	133	111	93	18	97	79	18	458	200	258
Pachara	54	322	162	160	70	37	33	46	22	24	53	26	27	219	113	106	73	63	10	15	6	9	249	99	150
Ballabhpura	152	936	480	456	190	96	94	94	50	44	245	122	123	552	332	220	508	259	249	165	22	143	428	221	207
Dhaba	196	1238	661	577	197	102	95	376	205	171	442	217	225	801	484	317	334	287	47	61	28	33	904	374	530
Bhattipura	92	560	299	261	123	68	55	162	88	74	0	0	0	349	199	150	289	153	136	78	21	57	271	146	125
Dhori	82	558	269	289	100	44	56	236	108	128	77	33	44	366	189	177	308	150	158	150	9	141	250	119	131
Madanpura	211	1259	655	604	182	93	89	29	15	14	107	50	57	753	460	293	531	315	216	0	0	0	728	340	388
Madanpura	124	762	409	353	147	69	78	173	93	80	1	0	1	389	249	140	364	206	158	188	37	151	398	203	195
Hanotiya	52	308	154	154	57	24	33	101	51	50	72	38	34	158	108	50	159	81	78	109	31	78	149	73	76
Hanotiya	146	893	478	415	130	74	56	208	109	99	225	118	107	583	344	239	503	257	246	253	15	238	390	221	169
Haripura	129	821	429	392	120	62	58	153	82	71	0	0	0	606	350	256	399	215	184	203	27	176	422	214	208
Haripura	146	888	450	438	151	75	76	338	176	162	418	207	211	599	324	275	387	195	192	219	33	186	501	255	246
Haripura	38	216	112	104	50	22	28	0	0	0	130	67	63	52	37	15	111	62	49	5	4	1	105	50	55
Haripura	88	601	311	290	103	57	46	112	57	55	0	0	0	335	228	107	281	159	122	25	6	19	320	152	168
Haripura	89	604	306	298	102	54	48	26	14	12	0	0	0	364	239	125	360	192	168	198	43	155	244	114	130
Mehandi	131	756	406	350	140	68	72	170	87	83	267	146	121	328	224	104	471	253	218	252	44	208	285	153	132
Prempura	192	1130	593	537	178	92	86	350	171	179	641	336	305	585	398	187	308	283	25	30	7	23	822	310	512

Prempura	59	362	189	173	62	31	31	9	6	3	0	0	0	163	116	47	178	89	89	81	17	64	184	100	84
Surela	122	783	406	377	133	72	61	86	43	43	413	209	204	460	291	169	288	213	75	106	39	67	495	193	302
Kheri Ghata	103	670	345	325	103	57	46	105	56	49	92	46	46	446	247	199	296	163	133	152	33	119	374	182	192
Kakrawada	252	1439	746	693	203	99	104	248	124	124	491	254	237	677	472	205	579	406	173	187	64	123	860	340	520
Kakrawada	193	1049	544	505	161	73	88	26	11	15	0	0	0	660	423	237	536	305	231	224	33	191	513	239	274
Motikuan	122	692	360	332	120	64	56	80	38	42	0	0	0	427	261	166	360	188	172	198	32	166	332	172	160
Sarola	282	1571	842	729	252	142	110	270	145	125	426	222	204	983	606	377	380	364	16	61	55	6	1191	478	713
Sarola	41	269	144	125	63	37	26	31	19	12	28	11	17	100	68	32	152	80	72	80	8	72	117	64	53
Dabar	152	959	490	469	162	83	79	320	169	151	105	52	53	648	372	276	256	239	17	34	27	7	703	251	452
Chawandheri	52	337	182	155	53	36	17	191	103	88	108	59	49	231	132	99	102	83	19	46	29	17	235	99	136
Padasalya	181	1161	600	561	199	97	102	271	141	130	157	72	85	625	439	186	283	276	7	9	6	3	878	324	554
Ukalda	68	479	257	222	76	41	35	274	143	131	0	0	0	345	202	143	213	114	99	61	17	44	266	143	123
Darbiji	122	715	370	345	122	66	56	273	141	132	266	144	122	470	272	198	451	221	230	360	131	229	264	149	115
Karariya	139	841	442	399	132	73	59	217	111	106	395	208	187	470	312	158	211	200	11	18	9	9	630	242	388
Seemalya	486	2786	1488	1298	525	268	257	671	348	323	155	88	67	1633	1064	569	699	663	36	113	99	14	2087	825	1262
Seemalya	66	454	223	231	99	53	46	0	0	0	154	73	81	245	133	112	130	116	14	35	35	0	324	107	217
Kareerka Khera	73	425	218	207	77	41	36	58	28	30	241	123	118	276	161	115	208	108	100	103	13	90	217	110	107
Hanotiya	52	308	154	154	57	24	33	101	51	50	72	38	34	158	108	50	159	81	78	109	31	78	149	73	76
Hanotiya	146	893	478	415	130	74	56	208	109	99	225	118	107	583	344	239	503	257	246	253	15	238	390	221	169
Girdharpura	61	278	154	124	35	15	20	28	16	12	248	137	111	157	118	39	158	82	76	93	17	76	120	72	48
Girdharpura	43	329	161	168	47	22	25	57	29	28	272	132	140	194	116	78	79	79	0	7	7	0	250	82	168
Girdharpura	378	2352	1184	1168	367	171	196	64	28	36	18	10	8	1318	858	460	1199	642	557	581	44	537	1153	542	611
Girdharpura	167	789	420	369	197	108	89	269	137	132	307	173	134	472	266	206	507	268	239	295	66	229	282	152	130
Girdharpura	82	509	264	245	101	52	49	372	191	181	0	0	0	189	140	49	270	132	138	137	3	134	239	132	107
Dangawad	59	397	202	195	77	35	42	74	38	36	0	0	0	212	139	73	120	85	35	18	14	4	277	117	160
Ramri	77	494	248	246	109	50	59	38	20	18	8	3	5	239	159	80	194	100	94	106	14	92	300	148	152
Choma	143	887	460	427	145	79	66	125	65	60	289	143	146	516	339	177	212	202	10	10	8	2	675	258	417

Maliyan																									
Saderi	47	285	153	132	50	30	20	274	147	127	3	2	1	155	111	44	122	68	54	74	20	54	163	85	78
Rel	353	2113	1092	1021	363	193	170	379	196	183	407	200	207	1113	747	366	813	475	338	220	60	160	1300	617	683
Janakpur	64	413	217	196	72	37	35	45	20	25	4	3	1	296	168	128	178	97	81	104	23	81	235	120	115
Gurla	62	351	177	174	74	34	40	188	92	96	155	80	75	215	122	93	181	90	91	98	7	91	170	87	83
Khan Ki Jhopdi	80	480	257	223	95	60	35	181	103	78	124	59	65	290	167	123	239	128	111	120	14	106	241	129	112
Rajgarh	265	1600	831	769	272	144	128	517	267	250	89	48	41	891	573	318	795	436	359	372	42	330	805	395	410
Gurla	62	351	177	174	74	34	40	188	92	96	155	80	75	215	122	93	181	90	91	98	7	91	170	87	83
Ladwara	26	156	85	71	23	10	13	101	57	44	0	0	0	63	45	18	72	41	31	32	2	30	84	44	40
Nagda	205	1466	761	705	231	124	107	26	13	13	0	0	0	948	561	387	492	385	107	110	8	102	974	376	598
Nagda	49	305	160	145	60	31	29	9	5	4	0	0	0	164	105	59	148	79	69	8	0	8	157	81	76
Bhojya Kheri	106	668	341	327	165	81	84	347	180	167	279	142	137	254	174	80	258	159	99	49	0	49	410	182	228
Bhojya Kheri	313	2089	1084	1005	412	219	193	475	244	231	347	175	172	1104	732	372	879	499	380	435	95	340	1210	585	625
Dugari	167	1057	576	481	196	120	76	110	60	50	8	4	4	502	356	146	341	242	99	114	21	93	716	334	382
Theekariya	137	978	531	447	214	116	98	90	46	44	0	0	0	468	334	134	359	245	114	119	7	112	619	286	333
Palaytha	901	5827	3016	2811	1037	529	508	1418	717	701	212	111	101	2801	1866	935	1995	1426	569	822	343	479	3832	1590	2242
Gopalpura	121	776	406	370	137	71	66	226	117	109	19	6	13	370	266	104	362	186	176	214	75	139	414	220	194
Gulab Pura	139	895	466	429	165	82	83	108	58	50	75	45	30	373	267	106	457	249	208	242	37	205	438	217	221
Amalsara	102	691	360	331	127	59	68	184	104	80	10	6	4	406	265	141	288	158	130	156	29	127	403	202	201
Bamoolya Mataji	273	1495	784	711	244	132	112	394	210	184	45	25	20	745	516	229	659	373	286	296	21	275	836	411	425
Antah (M)	4759	26784	14059	12725	4807	2513	2294	6496	3441	3055	940	506	434	15949	9885	6064	8222	6610	1612	1692	802	890	18562	7449	11113
Total	15549	91810	47993	43817	16365	8530	7835	20462	10682	9780	11181	5758	5423	52143	32871	19272	33751	23187	10564	11419	3215	8204	58059	24806	33253

Table 3.16 : Amenities Available in the villages around 10km radius from the project site

Name	Educational facility	Medical facility	Drinking Water facility	Communication (Post or Telegraph)	Transportation facility(Bus etc.)	Approach to Village	Power Supply
Amora	PS	No facility	T,W,TK,TW,R	Phone	No Service	KR	EA
Bhauran	No facility	No facility	HP	Phone	No Service	KR	NEA
Bamori	PS,MS	PMP	T,W,TK,TW,R	Phone	Bus	KR	EA
Kachnawada	PS,MS	No facility	T,W,HP	Phone	No Service	PR	EA
Cheensa	PS(2), MS(2)	PMSuC, PMP	W,TW,HP	Phone	No Service	PR	EA
Gadepan	PS	PMSuC	T,W,HP,R	PO	Bus	PR	EA
Pachariyan ki Jhonpariyan	No facility	No facility	W,TW,HP	Phone	No Service	PR	EA
Pachara	No facility	No facility	HP	Phone	No Service	KR	EA
Ballabhpura	PS	No facility	W,TW,HP	PO	No Service	KR	EA
Dhaba	PS	No facility	T,W,TK,TW,R	Phone	No Service	KR	EA
Bhattipura	No facility	No facility	W,TW,HP	Phone	No Service	KR	EA
Dhori	PS	No facility	T,W,TK,TW,R	Phone	No Service	PR	EA
Madanpura	PS	No facility	W,TW,HP	Phone	No Service	PR	EA
Madanpura	PS,MS	PMSuC	T,W,TK,TW,R	PO, Phone(3)	No Service	PR	EA
Hanotiya	PS,MS	No facility	W,TW,HP	Phone	No Service	PR	EA
Hanotiya	PS,MS	CHC	W,TW,HP	Phone	Bus	PR	EA
Haripura	PS	No facility	T,W,TK,TW,R	Phone	No Service	KR	EA
Haripura	PS	No facility	T,W,TK,TW,R	Phone	Bus	KR	EA
Haripura	PS,MS	No facility	HP	Phone	No Service	KR	EA
Haripura	PS	No facility	T,W,TK,TW,R	Phone	No Service	PR	EA
Haripura	No facility	No facility	T,W,TK,TW,R	Phone	No Service	KR	EA
Mehandi	PS	No facility	T,W,TK,TW,R	Phone	Bus	PR	EA
Prempura	PS,MS	PHC	T,W,TK,TW	Phone	Bus	PR	EA

Name	Educational facility	Medical facility	Drinking Water facility	Communication (Post or	Transportation facility(Bus	Approach to Village	Power Supply
Prempura	PS	No facility	T,W,TK,TW	Phone	Bus	PR	EA
Surela	PS	No facility	T,W,TK,TW	Phone	No Service	KR	EA
Kheri Ghata	PS	No facility	W,TW,HP	Phone	No Service	KR	EA
Kakrawada	PS	No facility	T,W,TK,TW,R	Phone	No Service	KR	EA
Kakrawada	PS	No facility	W,TW,HP	Phone	No Service	PR	EA
Motikuan	PS,MS	No facility	T,W,TK,TW	Phone	No Service	KR	EA
Sarola	PS	No facility	T,W,TK,TW	Phone	No Service	KR	EA
Sarola	PS	No facility	HP	Phone	No Service	PR	EA
Dabar	PS	No facility	W,TW,HP	Phone	No Service	KR	EA
Chawandheri	PS	No facility	T,W,TK,TW,R	Phone	No Service	KR	EA
Padasalya	PS, MS	PMSuC	W,TW,HP	Phone	No Service	PR	EA
Ukalda	PS, MS	No facility	W,TW,HP	Phone	No Service	KR	EA
Darbiji	PS	No facility	T,W,TK,TW,R	Phone	Bus	KR	EA
Karariya	PS, MS	PMSuC	W,TW,HP	Phone	No Service	PR	EA
Seemalya	PS, MS	PMSuC	W,TW,HP	Phone	No Service	PR	EA
Seemalya	PS	No facility	W,TW,HP	PO	No Service	KR	EA
Kareerka	PS	No facility	T,W,TK,TW,R	Phone	No Service	KR	EA
Khera	No facility	No facility	W,TW,HP	Phone	No Service	KR	EA
Hanotiya	PS	No facility	T,W,TK,TW,R	Phone	No Service	PR	EA
Hanotiya	PS	No facility	W,TW,HP	Phone	No Service	PR	EA
Girdharpura	PS,MS	PMSuC	T,W,TK,TW,R	Phone	No Service	PR	EA
Girdharpura	PS,MS	No facility	W,TW,HP	Phone	No Service	PR	EA
Girdharpura	PS,MS	CHC	W,TW,HP	Phone	Bus	PR	EA
Girdharpura	PS	No facility	T,W,TK,TW,R	Phone	No Service	KR	EA
Girdharpura	PS	No facility	T,W,TK,TW,R	Phone	Bus	KR	EA
Dangawad	PS,MS	No facility	HP	Phone	No Service	KR	EA
Ramri	PS	No facility	T,W,TK,TW,R	Phone	No Service	PR	EA
Choma Maliyan	No facility	No facility	T,W,TK,TW,R	Phone	No Service	KR	EA
Saderi	PS	No facility	T,W,TK,TW,R	Phone	Bus	PR	EA