3.8 DEMOGRAPHIC AND SOCIO-ECONOMIC SCENARIO

The study area is mostly semi-urban and rural in nature with a substantial SC, ST and OBC population. The principal language spoken by the people is Assamese. The literacy rate is moderate. The main occupation of the people in the study area is agriculture. The principal crop, grown for the popular staple food of the state, is paddy. The primary source of drinking water is dug-wells & tube-wells. Relevant data has been obtained from the census records and these has been supplemented and corroborated by conducting a socio-economic survey in the study area during January 2009 and March 2009.

To assess the anticipated impacts of the proposed activities on the socio-economic aspects of people, it is necessary to study the existing socio-economic status of the local population, which will be helpful for making efforts to further improve the quality of life in the area. The sociological aspects of this study include human settlements, demography and social strata and literacy levels besides infrastructure facilities available in the area. The economic aspect includes occupational structure of people. The baseline demographic and socio-economic characteristics with regards to demography, literacy and occupational status have been described based on the data obtained from Census of India, 2001.

3.8.1 CORE ZONE

The Core Zone of Lekhapani OCP does not have any human habitation. Hence Socio-economic survey of Lekhapani OCP Core Zone is not applicable.

3.8.2 BUFFER ZONE

Socio-economic survey of the study area was carried out in the Buffer Zone only. The villages covered in the study are as follows-

Sl. No.	Location Name	Approximate distance from project boundary	Households Sampled
01	Ledogaon	6 km	35
02	Lalpahargaon	2.5 km	80
03	Lekhapani Nepaligaon	3 km	65
04	Kambagaon	4.5 km	30
05	Udoypur	5.5 km	40

3.8.3 **Demographic Profile/ Households of the study area**

The study area is covered under two gaon panchayats, namely Lekhapani Gaon Panchayat & Ledo Gaon Panchayat. The two gaonpanchayats have 10 wards each under their jurisdiction. Total no. of households under the Lekhapani gaonpanchayat are 3661 and that under Ledo gaonpanchayat are 2144. total population in this region was around 31,000 in the year 2001.

Demographic feature of Tinsukia District is as below-

District	Population	
Tinsukia	Total	1120062
	Rural	926105
	Urban	223957
	Males	601099
	Females	548963

Tinsukia district has 2.72 % of SC and 5.85 % of ST population. The sex ratio is 913 females per 1000 males. The population density is 303 persons per sq. Km.

There is no village lying within mining leasehold area/ core zone. There are 95 villages having a population of 71,906 in the buffer zone of the proposed project.

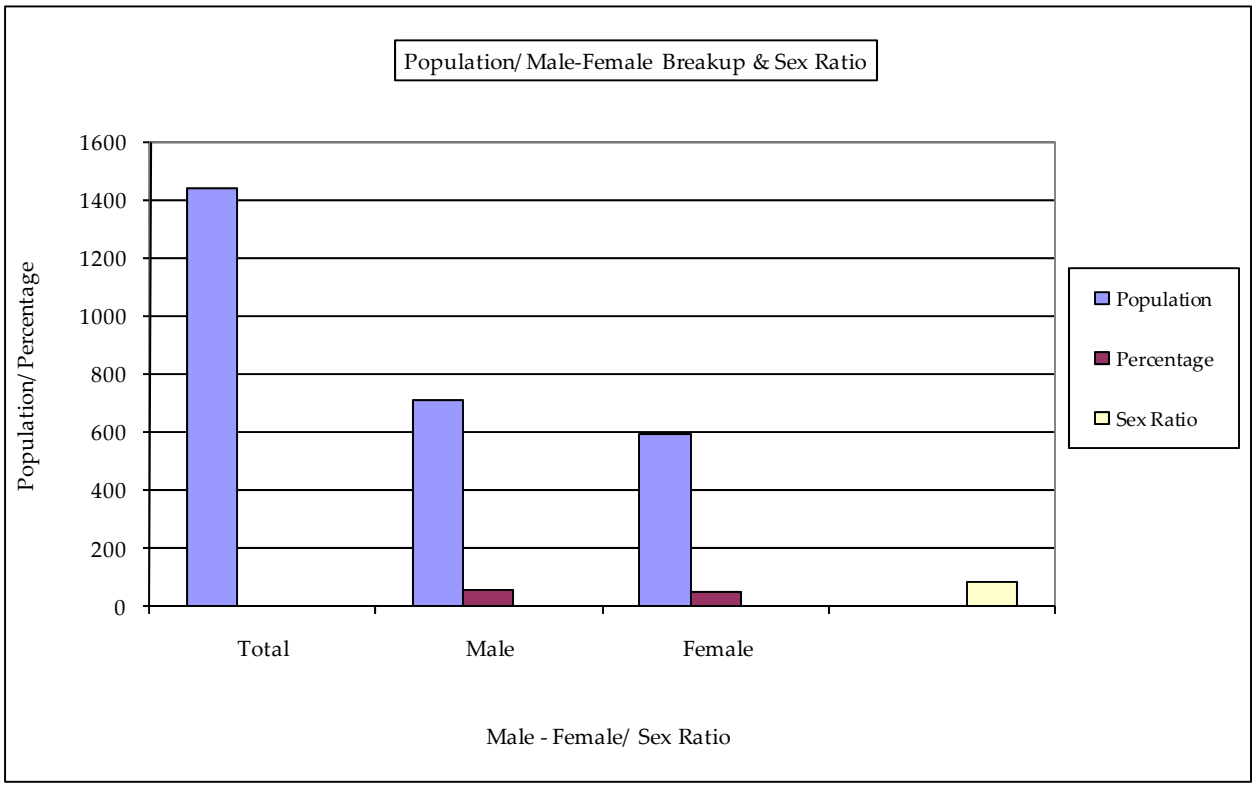
3.8.4 **Age-wise Distribution**

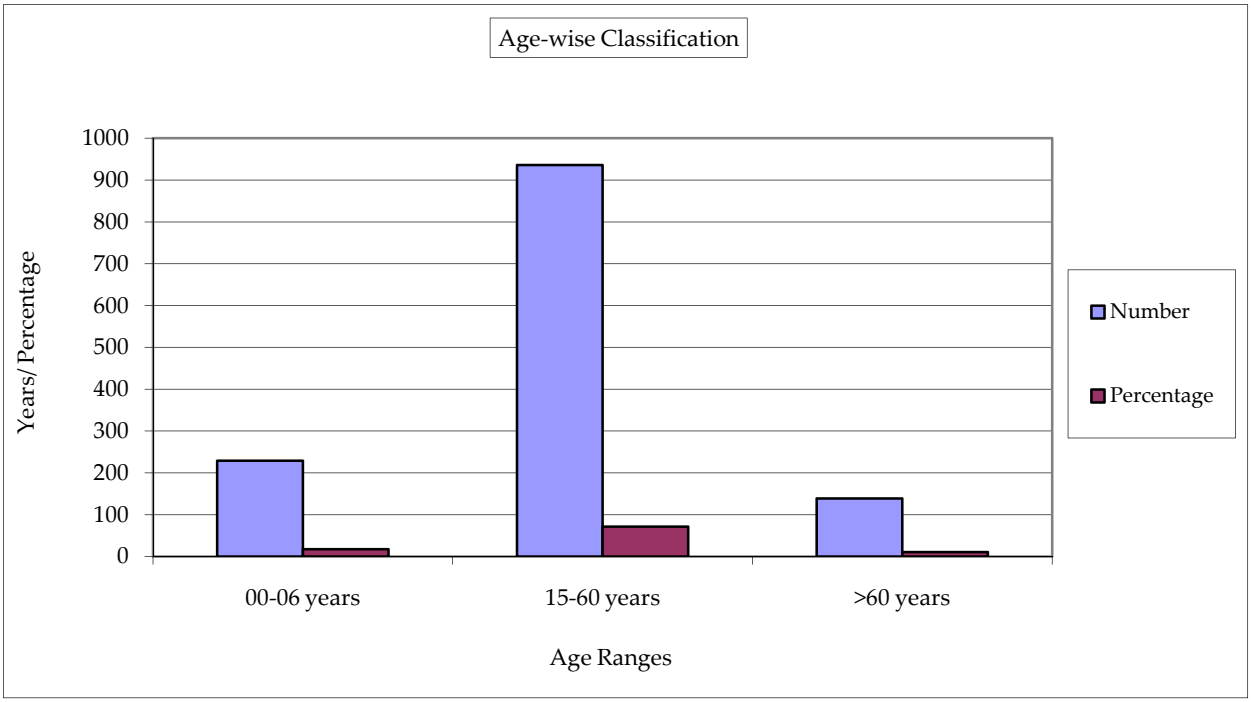
Total 250 households within the study area were surveyed in this work covering a population of 1304 with 713 male members and 591 female members. The sex ratio is 83 (per 100 males). The age-wise classifications of the family members of the sampled households are as follows-

a) 00 – 06 years = 229 (17.56% of the total)

b) 15 – 60 years = 936 (71.78% of the total)

c) Above 60 years = 139 (10.66% 0f the total)





3.8.5 **Family Structure**

The average family size in the area is 5.3 with a range of 3 to 7 persons per family. The survey also revealed high percentage of nuclear families. In this area around 33% of the families are attached to joint families and the rest are individual families.

3.8.6 **S.C. and S.T. Population**

Caste-wise break up of population under Lekhapni gaonpanchayat is-

General – 80%
SC – 5%
ST – 10%
OBC & Others – 5%

Similar breakup under Ledo gaonpanchayat is-

General – 20%

SC – 60%

ST – 3%

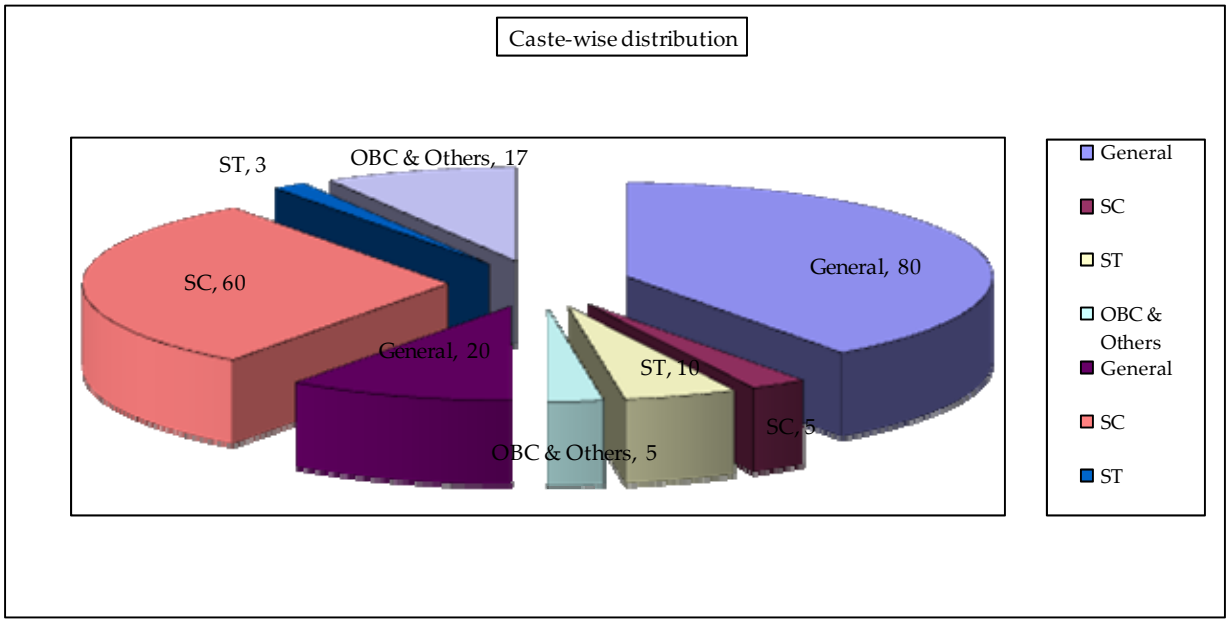
OBC & Others– 17%

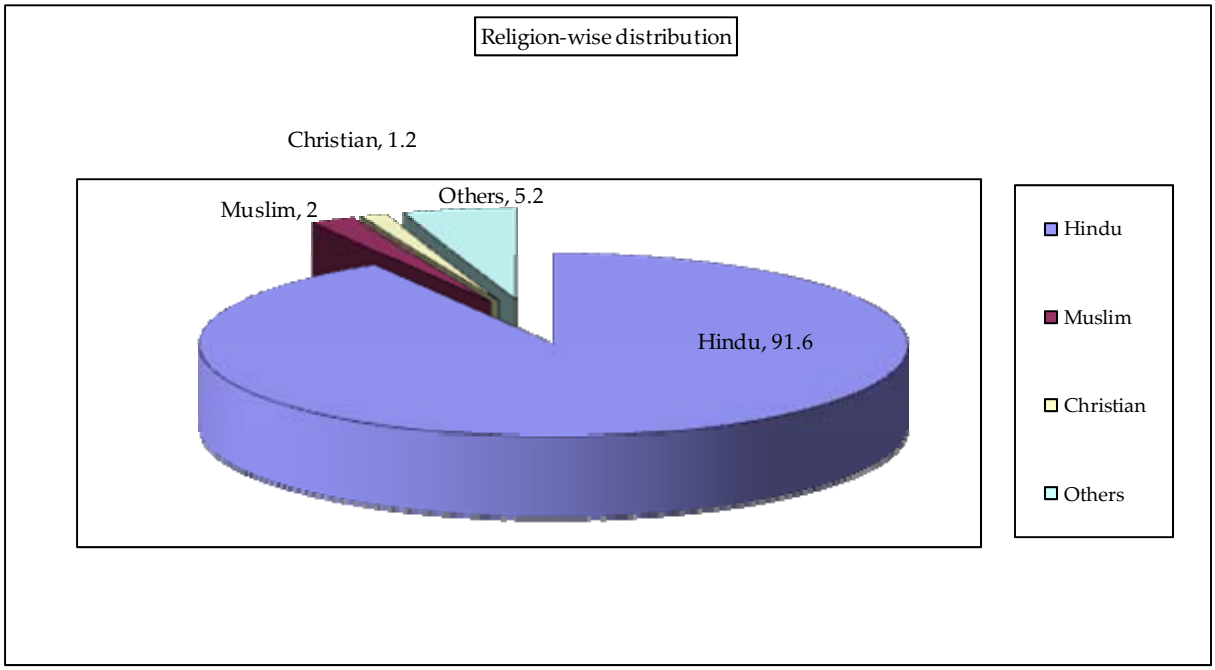
3.8.7 **Religious Structure**

Survey of the 250 households show that, Hinduism is the dominant religion in this area. Out of the 250 households, 229 households (91.6%) belong to the Hindus, 5 (2.%) belong to the Muslims, 3 (1.2%) belong to the Christians and the rest of the families practiced Buddhism & other religions.

Religion-wise distribution of the sampled households is as follows-

Sl. No.	Religion	No. of Households (Families)	Percentage of the total
01	Hindu	229	91.6
02	Muslim	5	2.0
03	Christian	3	1.2
04	Others	13	5.2
05	Total	250	100

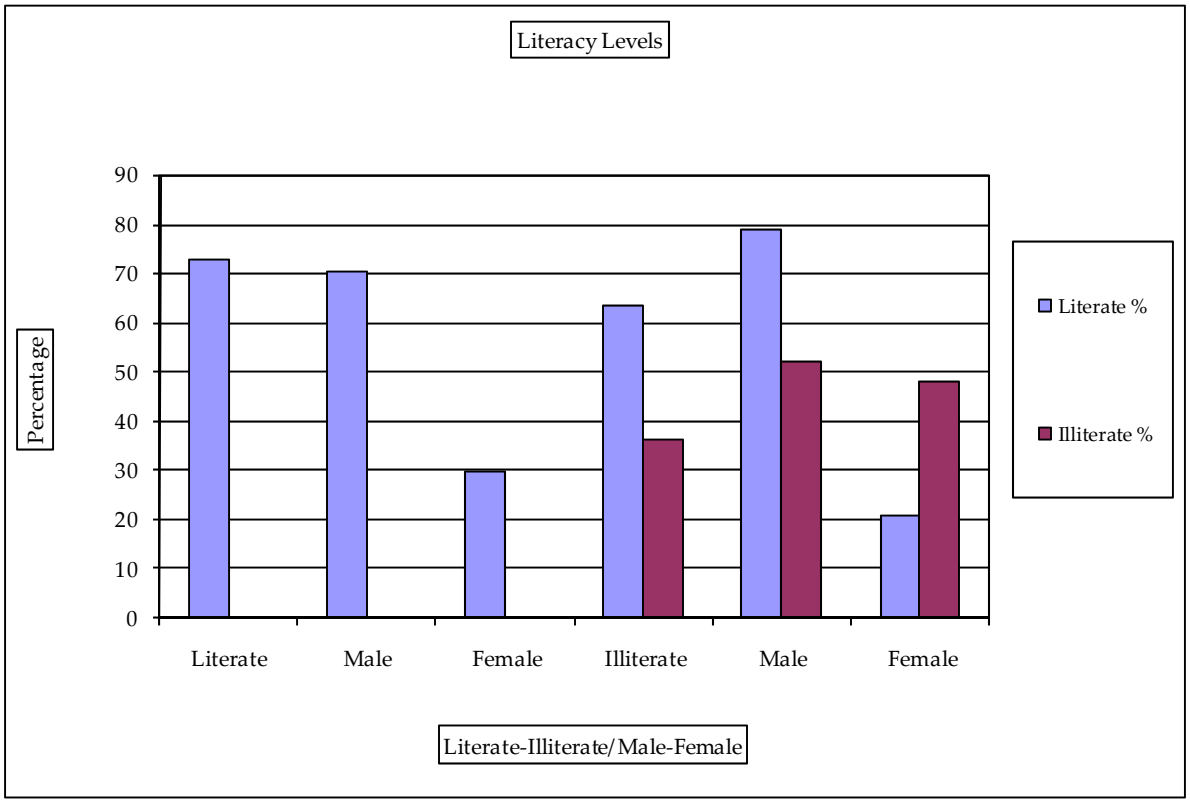

Caste-wise distribution
ST, 3
OBC & Others, 17
SC, 60
General, 20
General, 80
ST, 10
SC, 5
OBC & Others, 5
General
SC
ST
OBC & Others
General
SC
ST


Religion-wise distribution
Christian, 1.2
Muslim, 2
Others, 5.2
Hindu, 91.6
Hindu
Muslim
Christian
Others

3.8.8 **Literacy Level**

Literacy level in the study area as per the survey is 73.09% of which 70.31 % are male and the rest 29.69% are female. This shows that literacy level among women is low compared to men.

Sl. No.	Parameter	Number	Percentage
01	Population	1304	100
02	Literates	831	63.73
	Male	657	79.06
	Female	174	20.94
03	Illiterate	473	36.27
	Male	246	52.01
	Female	227	47.99



3.8.9 Economic Status

The sample survey shows that 41.27% of the populations are main workers and the rest 58.73% are non-workers. Out of the 41.27% of main workers, there are 33.61% are male and 7.66% are female. This indicates low female involvement among main workers.

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3.8.10 Workforce Pattern

Workforce pattern data of the sampled households is as follows-

Sl. No.	Parameters	Numbers	Percentage
01	Cultivators/ Farmers	118	21.93
02	Agricultural Labourers	29	5.39
03	Business	237	44.05
04	Other Workers	154	28.62
05	Total Main workers	538	100.00

3.8.11 Distribution of Annual Income

The 250 households surveyed have the following distribution of annual incomes-

Sl. No.	Annual Income Range	Number of Households	Percentage
01	< Rs. 15,000.00	187	74.8
02	Rs. 15,000.00 – Rs. 30,000.00	47	18.8
03	Rs. 30,000.00 – Rs. 60,000.00	12	4.8
04	Rs. 60,000.00 – Rs. 80,000.00	4	1.6
05	> Rs. 80,000.00	0	00
06	Total	250	100

3.8.12 **Health status**

The major ailments from which the people suffered during the last year in the study area are-

1. Gastro-enteritis : 30% (approx.)
2. Enteric fever : 40% (do)
3. Malaria fever : 25%
4. T.B. : 15 new cases
5. Leprosy : 6 new cases
6. Skin Disease : 25%

Report of medical camp organized by Central Hospital, Margherita for periodical Health Checkup.

Periodical Medical Camp Health Check up within 5 k. m. radius of coal mining activities are being conducted by central Hospital Margherita as well as in collaboration with Coal India Mahila Samaj and Rotary Club Margherita. One Medical Camp was organised on 4th February, 2006 at Hajang Basti, 3 kms from Ledo. It is to inform you that in the said Camp more than 500 patients were examined and given free medicines. In the said Camp we have not come across any patient having any coal mine related diseases.The main complaints for which people came were diarrhea, worms, B. P. etc. Though we had planned another medical camp at Makum Killa Village in June/ July but the Camp could not be conducted due to serve heat wave conditions and occurance of Malarial epidemic which prevented doctors and paramedics to organize the camp. CIL is proposing to hold Medical Camp in the same Location during November/ December.

It is also to inform that in those Camps only patients Serial No, Name, Age, Sex and Address (Vill.) were entered in a register and we did not record the details as per the Proforma sent by Pollution Control Board of Assam. We assure that in futre Medical Camps the format given by State Pollution Control Board shall be duly filled in and sent as desired.

Central Hospital Margherita is conducting periodical medical examination of employees to diagnose any work related and other diseases as per statutory

requirement of mines Act. In course of such periodical check- up of our workmen we have not found any evidence of work related disease.

We would also like to inform you that NEC has adopted villages namely Mulang Basti and Malugaon Located near Tilak and Tirap Mines where the residents are provided free medical check- up, investigationsand medicines free of cost and have not come across any local related diseases in these two villages.

3.8.13 **Sanitation Status**

The sanitation status of the sample households is generally unsatisfactory due to unhygienic house structure, unsafe drinking water sources and improper way of disposal of waste. This has resulted in a lower health status for the people of the surveyed households. Drainage system is practically non-existant and people normally depend on the natural drainage channels for getting rid of the stormwater accumulation as well as of the domestic wastewater. No regular system of collection of solid wastes and their disposal is in operation.

3.8.14 **Drinking Water Sources**

Most of the families in the surveyed households do not have access to piped water supply and have to depend on traditional sources of water for their drinking and other water needs. The different sources of water used by the sampled households are as follows-

1. Tube wells : 66 families (26.4%)
2. Dug wells : 139 families (55.60%)
3. Ponds : 09 families (3.60%)
4. Supplied water : 36 families (14.40%)

3.9 Land Use Pattern

Classification of Land:

The mining and dumping strategies have been formulated to keep the land requirement to the minimum to control land degradation in environmentally sensitive region. Head-wise requirement of land for Lekhapani OCP is presented in Table below. Total land falls in the reserved forest land category. The mining area including the area required for mine infrastructures are under the existing leasehold of NEC (Lekhapani-Tipongpani leasehold). NEC will be required to acquire the fresh leasehold for the area of external dump, approach road & mine infrastructure etc.

REQUIREMENT OF LAND

Head-wise requirement of land for option-I for both departmental and hiring variants are presented below :

Head-wise Requirement of Land

Sl. No.	Particulars	Land Requirement (in Ha)
1.	Mining	80.00
2.	Mine Periphery including haul roads, power supply arrangements	15.00
3.	External dumps	120.00
4.	Office, workshop, Stores & Repair facilities, coal stock yard etc.	10.00
5.	Approach road etc.	10.00
	Total	**235.00**

The Present Land use Plan of Core Zone is shown as **Plate No. II.**

Land Use/Cover Mapping Based on Remote Sensing Data

Introduction

Land is the most important natural resource endowment on which all human activities are based. Therefore, knowledge on different type of land use as well as its spatial distribution in the form of map and statistical data is vital for spatial planning and management of land and its optimal use. In mining industry, the need for information on land use /cover pattern has gained importance due to the all-round concern on environmental impact of mining. The information on land use inventory that includes type, spatial distribution, aerial extent, location, rate and pattern of change of each category of land is of paramount importance for formulating Environmental Management Plan (EMP) of a mining project. The existing information available on land use is mainly in the form of statistical data based on the compilation of village record that are inadequate and do not provide an up-to-date information on changing land use pattern and process.

Realising the need of creating an environmental data base with respect to land, water, forest, communication network, built-up land, land use/cover map using *remote sensing data* for buffer zone of Lekhapani OCP covering 10 km. from periphery of the core zone has been prepared. This map will form the database for present land use pattern as well as used in assessing the water balance of the area. Impact of Lekhapani OCP on land use pattern in future may be analysed by comparing the land use pattern of different cut off dates satellite data for formulating the remedial measures, if any.

Data Source

The following data are used in the present study:

- **Primary Data**

Satellite data [IRS-P6/LISS-III; Satellite Data of 2008] was used as primary data source for the study. The raw satellite data was obtained from NRSA, Hyderabad, on CD-ROM media.

- **Secondary Data**

Secondary (ancillary) and ground data constitute an important baseline information in remote sensing, as they improve the interpretation accuracy and reliability of remotely sensed data by enabling verification of the interpreted details and by supplementing it with the information that cannot be obtained directly from the remotely sensed data. The following secondary data were used in the study:

(i) Survey of India topographical map –83 M/15

Data Processing

Data processing involves the following major steps:

(a) Geometric correction, rectification and geo-referencing;
(b) Image enhancement;
(c) Training set selection;
(d) Signature generation and classification;
(e) Creation/overlay of vector database;
(f) Validation of classified image;
(g) Final thematic map preparation.

Land Use Classification

The array of information available on land use/cover requires to be arranged or grouped under a suitable framework in order to facilitate the creation of a land use inventory and mapping. Further, to accommodate the changing land use/cover pattern, it becomes essential to develop a standardised classification system that is not only flexible in nomenclature and definition, but also capable of incorporating information obtained from the satellite data and other different sources.

The present framework of land use/cover classification has been primarily based on the '***Manual of Nationwide Land Use/ Land Cover Mapping Using Satellite Imagery***' developed by National Remote Sensing Agency, Hyderabad. Land use map was prepared on the basis of image interpretation carried out based on the satellite data. Following land use/cover classes are identified in buffer zone of Lekhapani OCP

Data Analysis

Satellite data was processed using ERDAS Imagine v.9 image processing system in order to interpret the various land use/cover classes present in the study area. The area of buffer zone considered for the detail analysis is marked on the map. The area of each land use/cover class was calculated using Geomatica and tabulated in Table below and shown in **Plate XIV.**

Area Statistics of Buffer Zone

Area		**Class**	
Km2	% of total	Level-I	Level-II
160.63	42.75	Vegetation Cover	Dense Forest
64.39	17.14		Open Forest
50.15	13.35		Scrubs
36.35	9.67		Tea Plantation
11.19	2.98	Agriculture Land	
43.78	11.65	Waste Land	
2.83	0.75	Mining Area	Coal Quarry
0.04	0.01		Barren OB Dump
4.75	1.26	Water Body	
1.66	0.44	Sand Body	
375.77	**100.00**		

Area Statistics of Core Zone

Area		**Class**	
Km2	% of total	Level-I	Level-II
2.05	87.23	Vegetation Cover	Dense Forest
0.23	9.79		Open Forest
0.07	2.98		Scrubs
2.35	**100.00**		