ANALYSIS OF WASTE IN MANCHESWAR INDUSTRIAL AREA

A Report

Submitted in partial fulfilment of the requirements
For the degree of

Bachelor of Technology
In
Civil Engineering

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CERTIFICATE

This is to certify that the thesis entitled "**ANALYSIS OF WASTE IN MANCHESWAR INDUSTRIAL AREA**" submitted by (Name- **KULVINDER SINGH** (1901298373), **UJJWAL KUMAR** (1901298064),), **DEEPIKA XESS** (2021298013).**LAXMI TIRIA** (2021298036)) in partial fulfilment of the requirements for the award of **Bachelor of Technology Degree** in **Civil Engineering** at Gandhi Institute For Technology, Bhubaneswar is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in this Project Report has not been submitted to any other University/Institute for the award of any Degree or Diploma.

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DECLARATION

We declare that this project report titled **"Analysis Of Waste In Mancheswar Industrial Area"** submitted in partial fulfilment of the degree of B.Tech in civil engineering is a record of original work carried out by us under the supervision of Asst. prof Ananya parida and has not forward the basis for the award of any other degree or diploma , in this or any other institutions or university , in keeping with the ethical practice in reporting scientific information , due acknowledgement have been made wherever the findings of others have been cited.

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ABSTRACT

The twenty-first century is witnessing sustained population growth together with urbanization and industrialization. Since 2007, more than half the world's population has been living in cities, and that share is projected to rise to 60 percent by 2030 (UNSD) (1). The present study makes an empirical attempt in developing satellite city for Mancheswar dwellers of in Bhubaneswar. Rapid urbanization and increasing migration from rural areas has led to growth of Mancheswar in every city/town, not only in Odisha, but elsewhere in the country. Despite continuous efforts by the State government to restrain the number of Mancheswar dwellers, the Mancheswar have become an integral part of the phenomenon of urbanization and are, in a way, manifestation of overall socio-economic policies and planning in the States and the Country. Nearly world's 1/3rd urban population were lived in Mancheswar in 2001 (Jitender, 2014) (2). On the other hand, the focus of study in the developing countries is on urban housing, urban poverty and rural-urban migration (Bolay, 2006) (3)

Keywords: GIS, MAPPING.

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CHAPTER.1

INTRODUCTION

INTRODUCTION

1.1 GENERAL

Bhubaneswar is the largest and the capital city of Odisha with a population projection of about 1.2 million as of 2022. It is one of the first planned cities after independence. Since its establishment as the capital of Odisha after Cuttack in 1949, the city is the educational and economical hub of the state. Bhubaneswar is categorized as a Tier-2 city. Bhubaneswar is one of the smart city missions from Odisha. Bhubaneswar urban development area consists of the Bhubaneswar Municipal Corporation area, 173 revenue villages, and two other municipalities spread over 1,110 Km^2 (430 Sq. Mi). The area under the jurisdiction of the Bhubaneswar Municipal Corporation covers 186 Km^2 (72 Sq Mi). The Bhubaneswar Municipal Corporation (BMC) administers public infrastructure for the city's 67 wards. With all these achievements Bhubaneswar stands as a model city not only in India in the world too. To appreciate its achievements the city of Cupertino in California of the United States and the city Bloemfontein of South Africa became the sister cities of Bhubaneswar. Even having all these accomplishments the city is lacking in some of the key aspects of development like

the other side of a coin. The lack of industrial setup is one of the most important roadblocks in the development of our country. Mancheswar locality in Bhubaneswar is found to be one of the well-known industrial area after the inception of the capital city, which has shown tremendous growth during the last two decades. Even the city is having the largest area in the state spanning over 256 acres and containing a population of over 100,000. Failing rural conditions and an expectation of getting better jobs, income, and quality of life in the urban areas has produced a huge flow of poor migrants to the city. There has been an huge shortfall in many sectors, primarily housing. Unavailability of the required number of houses and the incapability of the poor migrants to afford a house inside the urban area has led to rise of in the city. In this research, our area of study is one of the Mancheswar named of locality in Bhubaneswar.

1.2 OBJECTIVES OF THE PRESENT STUDY

The specific objectives of the present study are as below.

1. To find out the data inside the city which are degrading the architectural beauty of the city in field of planning and management.

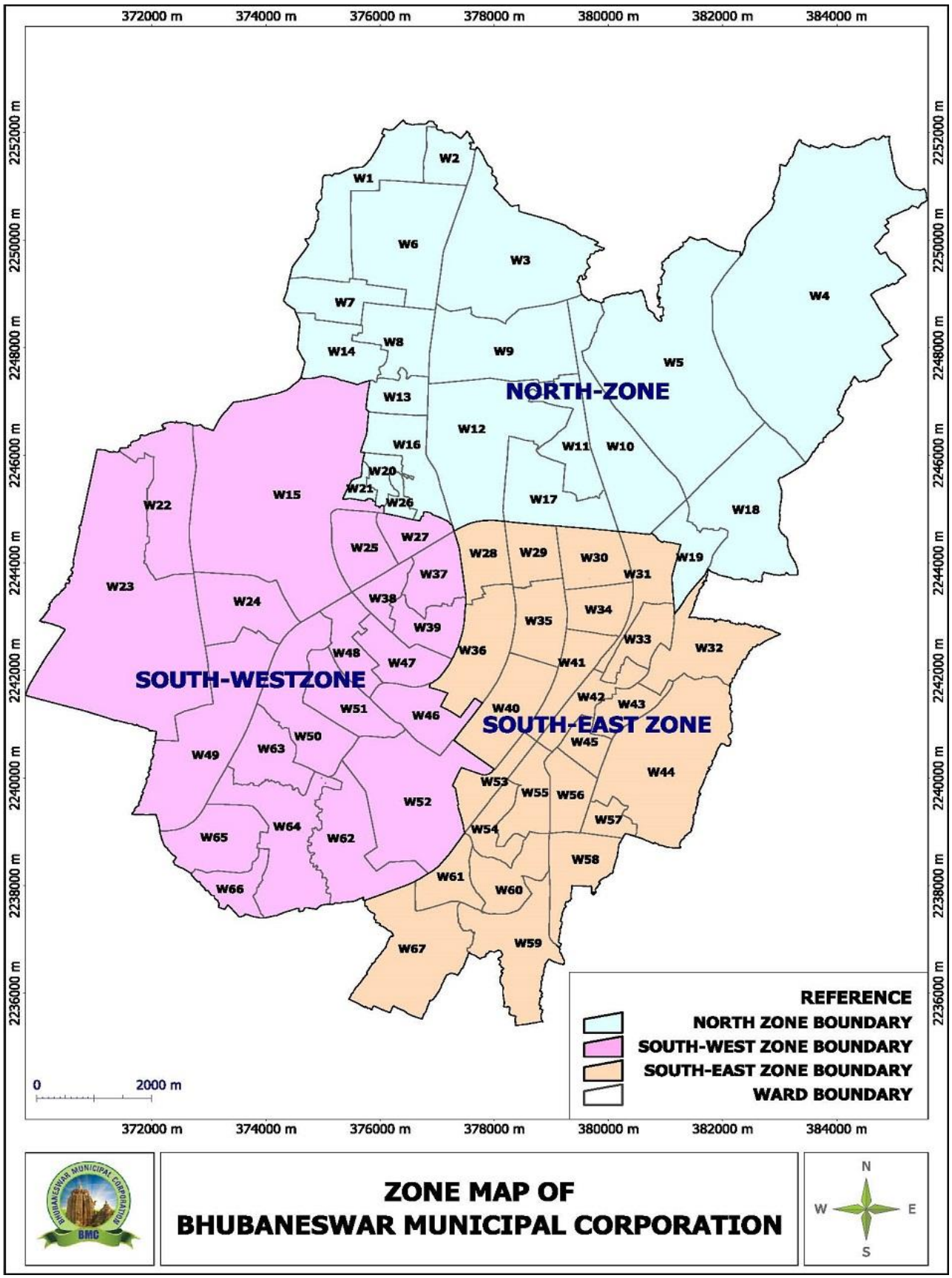
2. Macheswar belongs to a place where most of the part is developed.

3. The development is done by looking into the perspectives of sanitization, living conditions, space management, and blockage to the development of the ward.

4. The resettlement plan area is of exact area as of the mancheswar the designing and management of the space is done according to the bda approved statistics, where each of the elements like living/parking/ recreational centers/hospitality area/ transporation parameters are maintained according to the govt. Society plan.

The site is selected accordinhg to the availability of space in the ward by keeping the view point

FIG:1.1: MAP OF BHUANESWAR MUNCIPAL CORPORATION



CHAPTER II

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Sk. Nagaraju, B. Sivakonda Reddy, Prof. A. Ray Chaudhuri Presented that resource management in construction projects a case study, they focussed on the study has been carried out in two phases. In the first phase, with the aid of primavera software project schedule for various activities for the construction of a commercial building was prepared. Subsequently, requirements of resources were attributed to the activities based on standard schedule rates (CPWD). The requisite data has been collected from the detailed drawings and prevailing site conditions. In the second phase, a resource constrained analysis was carried out by resource levelling for various activities by decreasing resources with increased duration to study the time-cost implications.

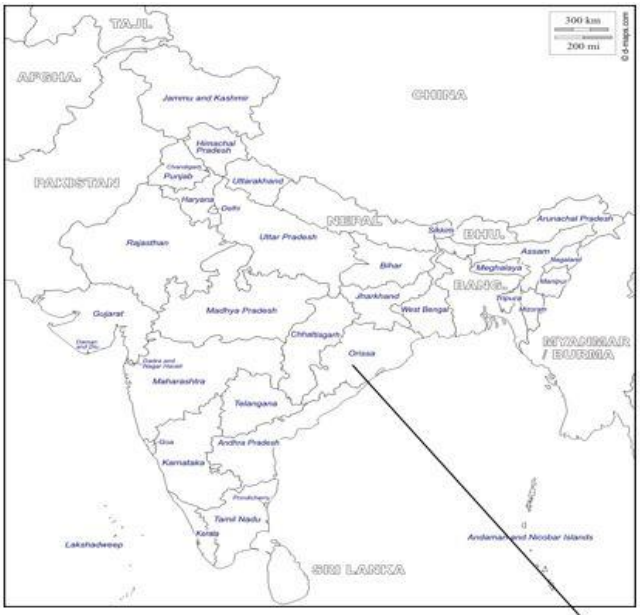
T.Subramani1, P.T.Lishitha2, M.Kavitha3 Time Overrun and Cost Effectiveness in the Construction Industry. The project management technique of planning and scheduling using tools and devices are helpful in comparing the project with stipulated cost, time and quality. Resource tracking, Minimize the uncertainty and Cost Effectiveness is focused in this project. The software tool used for planning and scheduling is Primavera project planner enterprise for construction. The study covers three case studies of the process of planning, scheduling the activities and monitoring. A general re sequencing model had been proposed to overcome the delay factor from the critical area, to minimize the delay of the construction and to reduce the time, cost and it also helpful to concentrate on the major areas in the project. Re sequencing model leads the management to cost savings and make entire project success. Resource planning is one aspect, which decides the systematic execution of the project at worksite. This study is to have hands- on experience in an ongoing project, and evaluation of schedule of equipment, staff, Labour and Materials. It helps to plan analuate

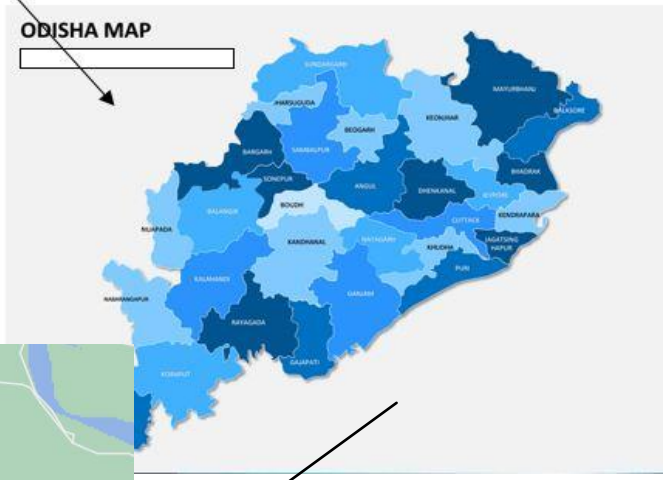
the resources for the Construction of the building project. This study also compares the cost variation due to the delay of the project and re scheduling the project by crashing process

Saty (1990) provided an analytic hierarchy process- a multi-criteria decision-making approach, in which factors are arranged in hierarchy structure. Principles and philosophy of the theory are summarized giving information of measurement utilized, its properties and application. Jun (2000) developed a framework for integrating the strengths of GIS, expert systems (ES) and the analytic hierarchy process to incorporate the decision maker's preferences on a range of factors used in finding optimally suitable sites. This study also illustrated how the integrated system may be applied to industrial site selection.

A scough et al. (2002) presented a general overview of multi-criteria spatial decision support systems (MC-SDSS) and reviewed its applications to a broad range of decision problems while providing direction for future trends and research in this area. According to Eldrandaly et al., (2003), industrial site selection is a complex process for owners and analysts. Therefore simultaneous use of several decision support tools, such as ES, GIS and multi-criteria decision making (MCDM) methods is required. This poses the challenge of integrating these decision support tools. To alleviate these limitations, this study used Component Object Model (COM) technology in designing a decision support system for industrial site selection. The presented system was illustrated using real regional data that is maintained by a state a

FIG.1.1: ODISHA MAP





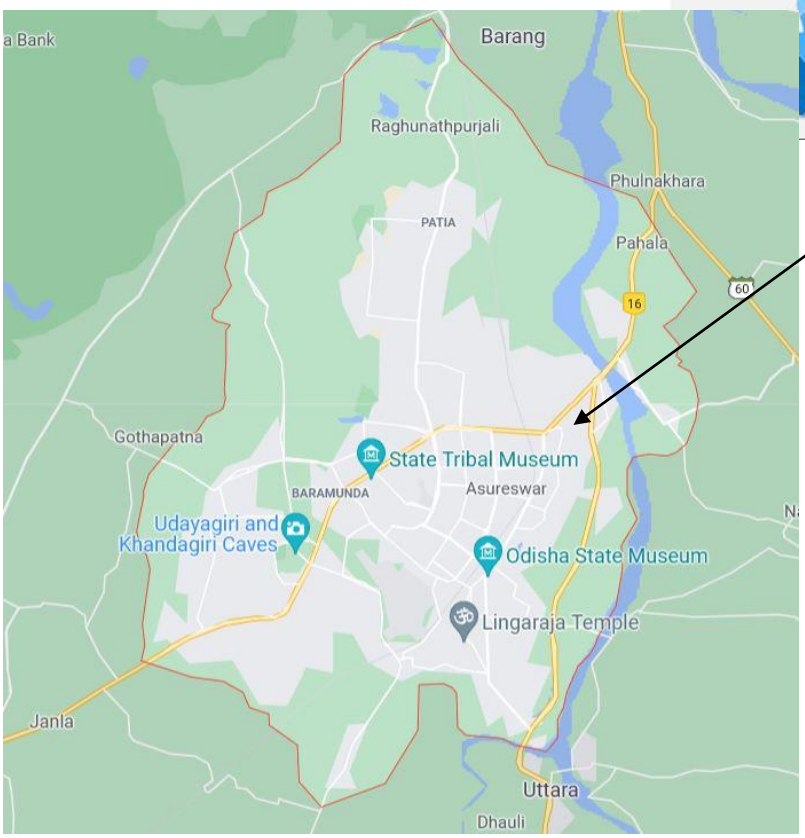


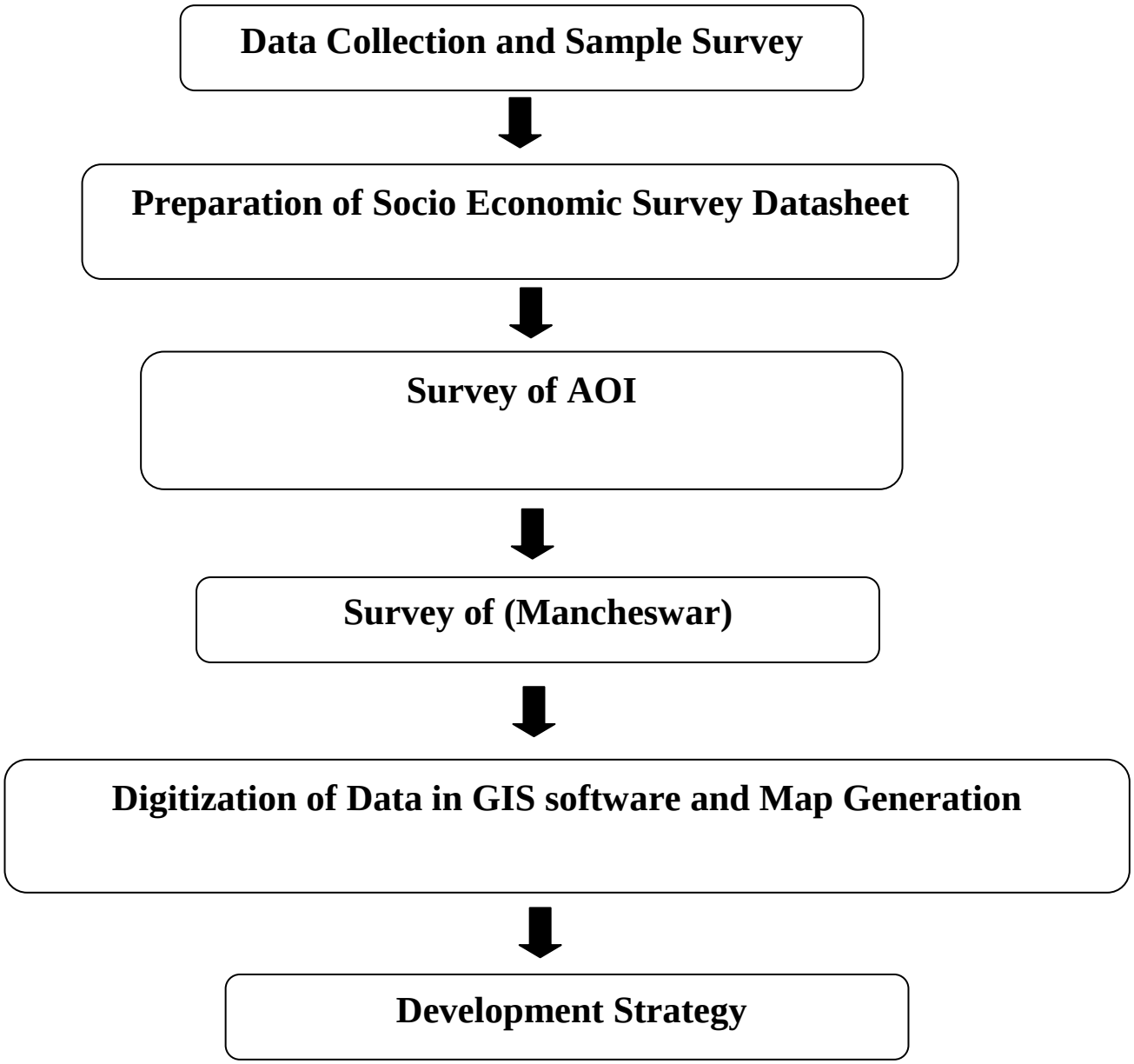
FIG:1.3:Area of Interest

MANCHESWAR
BMC

METHODOLOGY

The flow chart below is prepared to understand the thorough methodology.

Methodology:



Industries are very important in the modern economic activities of man. The economic development of any country is decided mainly by the industrial development of that country. Industries are the main features of modern civilization and they provide us the necessary materials and employment opportunities. The forests are considered as one of the natural resources which support the primary sector including agriculture and service sector. Even some industries which depend on agriculture for their raw materials are considered as agro-based industries. The industries comes under secondary manufacturing sector are the main feeder of employment opportunities to the large number of people. In the modernization period, the role of industries is an integral part of our life. We can say that without the industries we cannot assume our life. So much the industries are the inevitable part of our life.

ABOUT AREA OF STUDY:

Mancheswar is one of the most developed industrial hub in Odisha. It is situated at entry point of Bhubaneswar and well connected by both railway and road network. As NH16 pass through the city it enables the area to connect with other industrial areas in the state as well as in the country. Being in the capital city it fulfils demands from various sectors like agriculture, automobile and etc. The journey of development started back in 1990s to cater facilities for the people of Odisha. Mancheswar was developed under various central and state govt. schemes to promote industry as well as to generate job employment. In this study the focus is to find out how Mancheswar was evolved in the aspect of development by using GIS technology in last two decades.

CHAPTER III

PROCESS AND ANALYSIS

FIG:1.4: MANCHESWAR

FIG:1.5: GIS Mapping of AOI with Satellite Imagery year 2022

FIG:1.6: Mapping of Residential areas of year 2022

FIG:1.7: Mapping of Road of year 2022

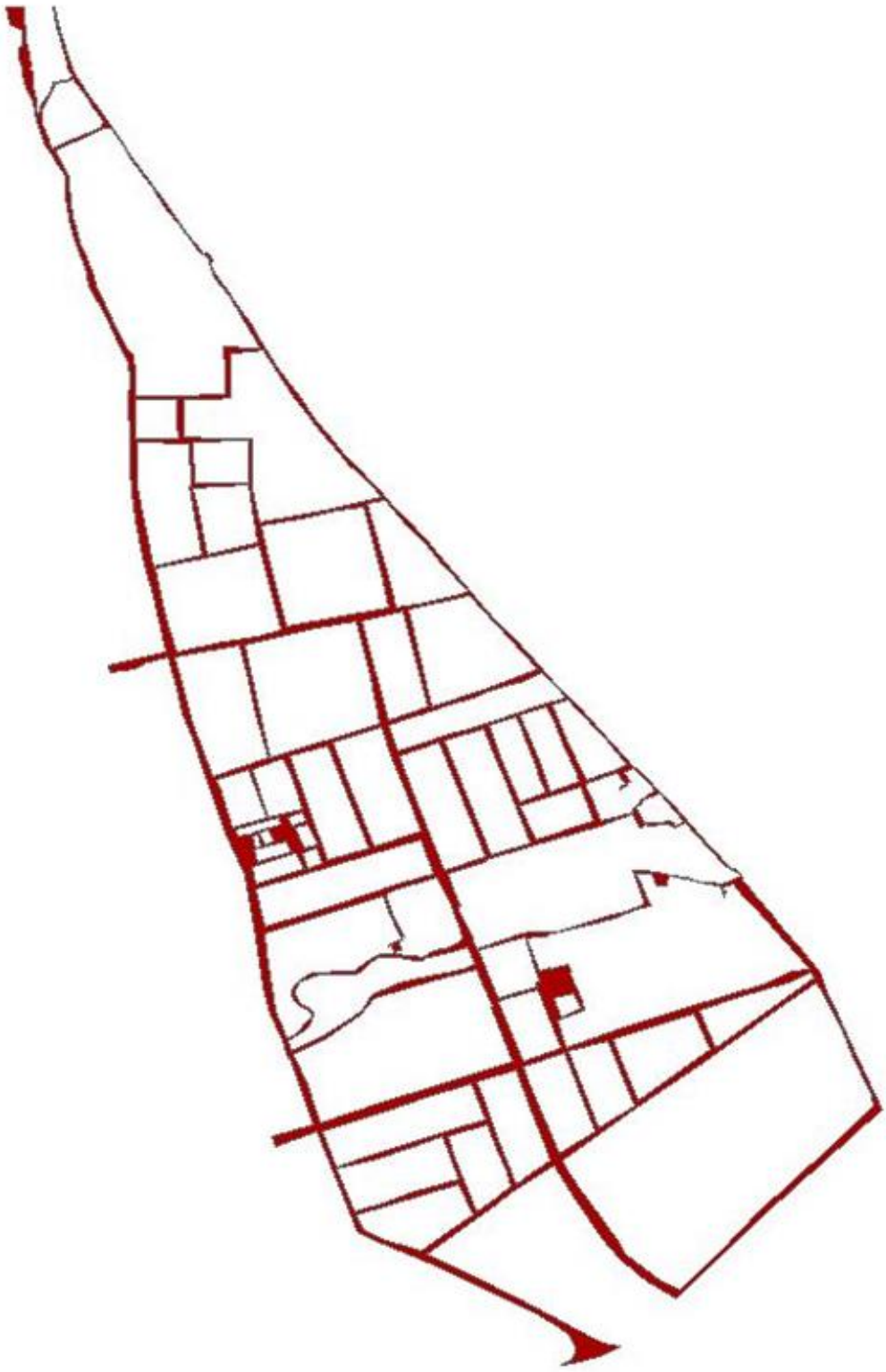


FIG:1.8: Mapping of Commercial building of year 2022

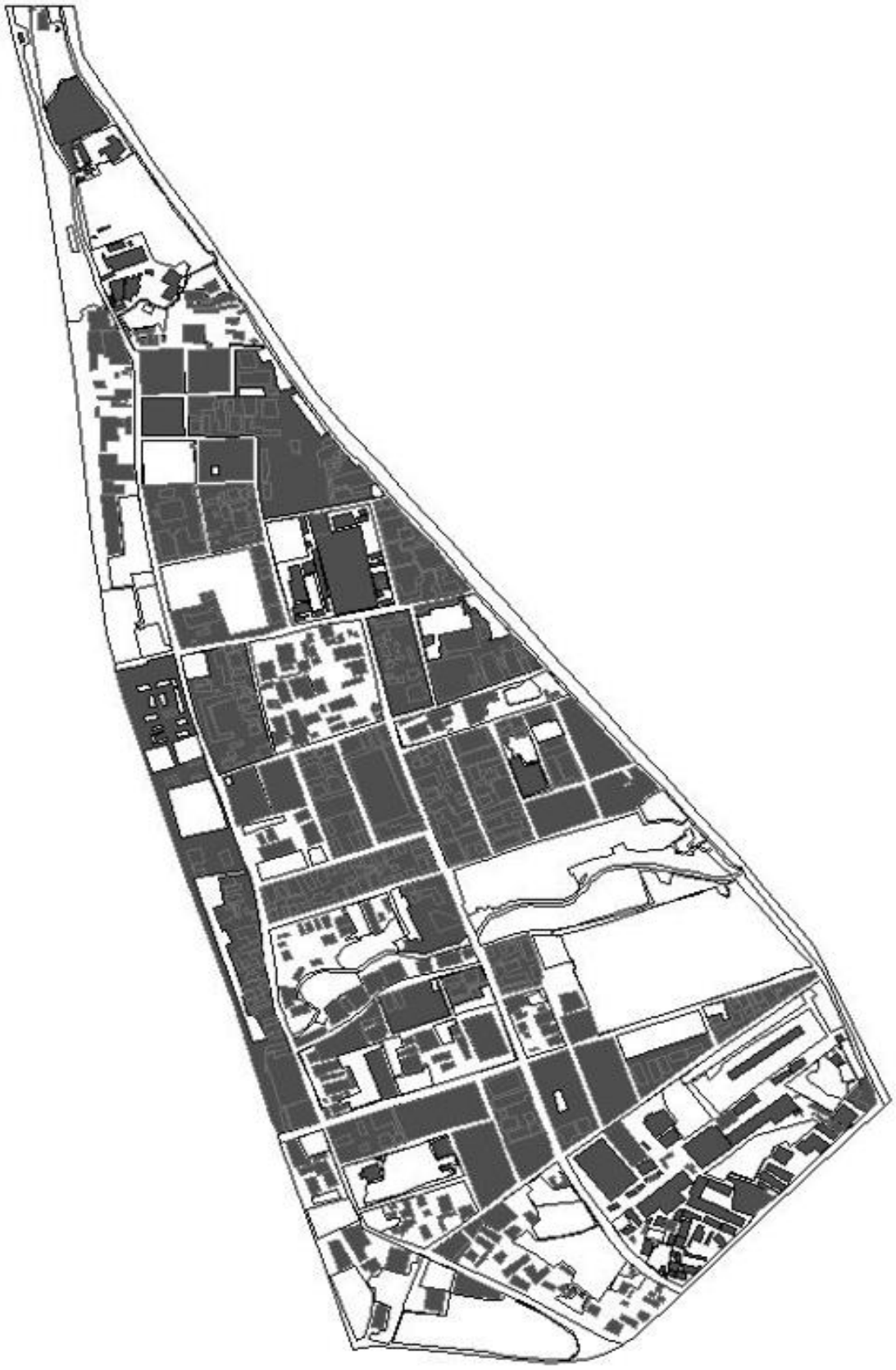


FIG:1.9: Mapping of water body of year 2022

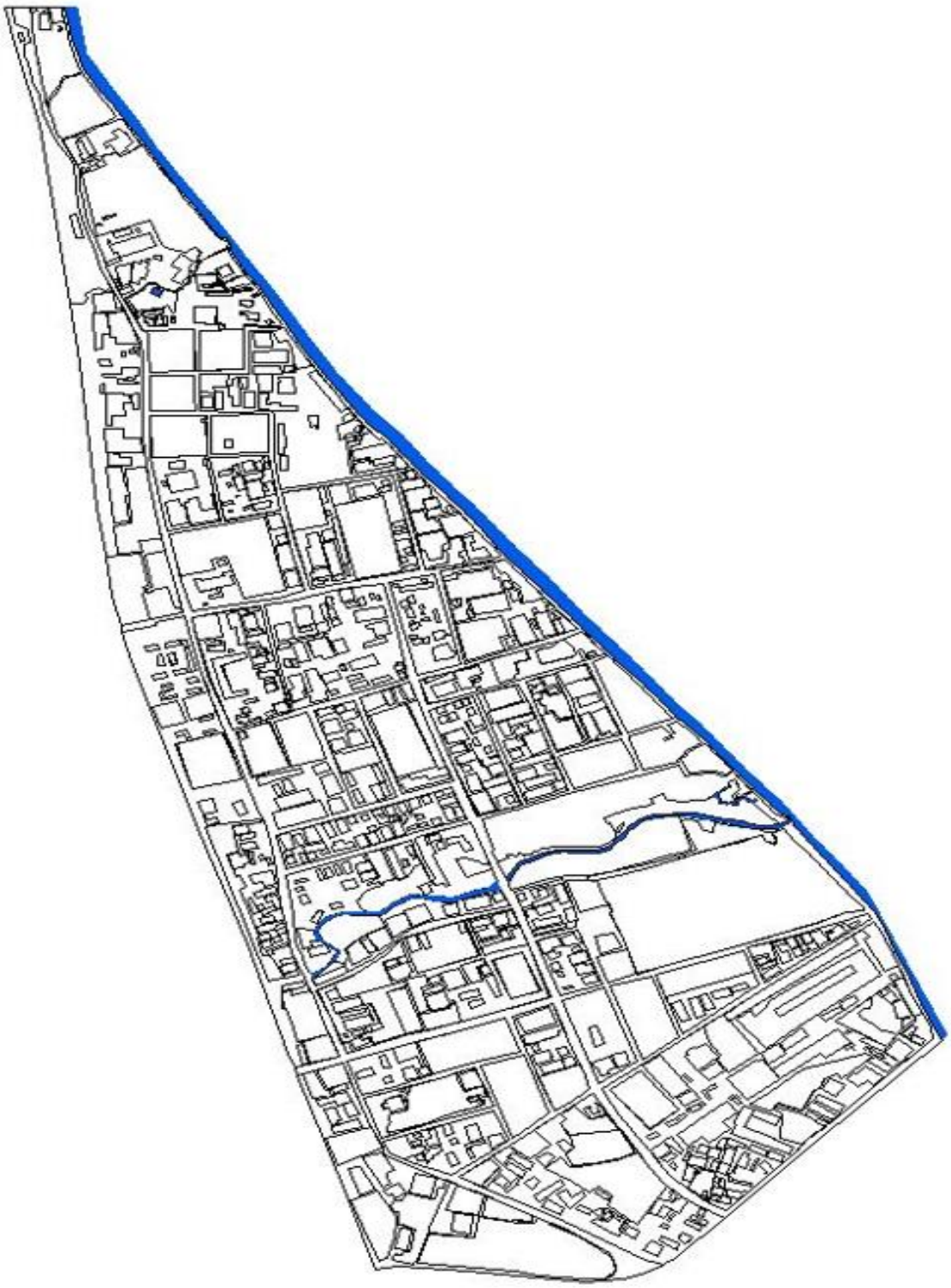


FIG:2.0: Mapping of vegetation of year 2022

FIG:2.1: Mapping of open spacen of year 2022

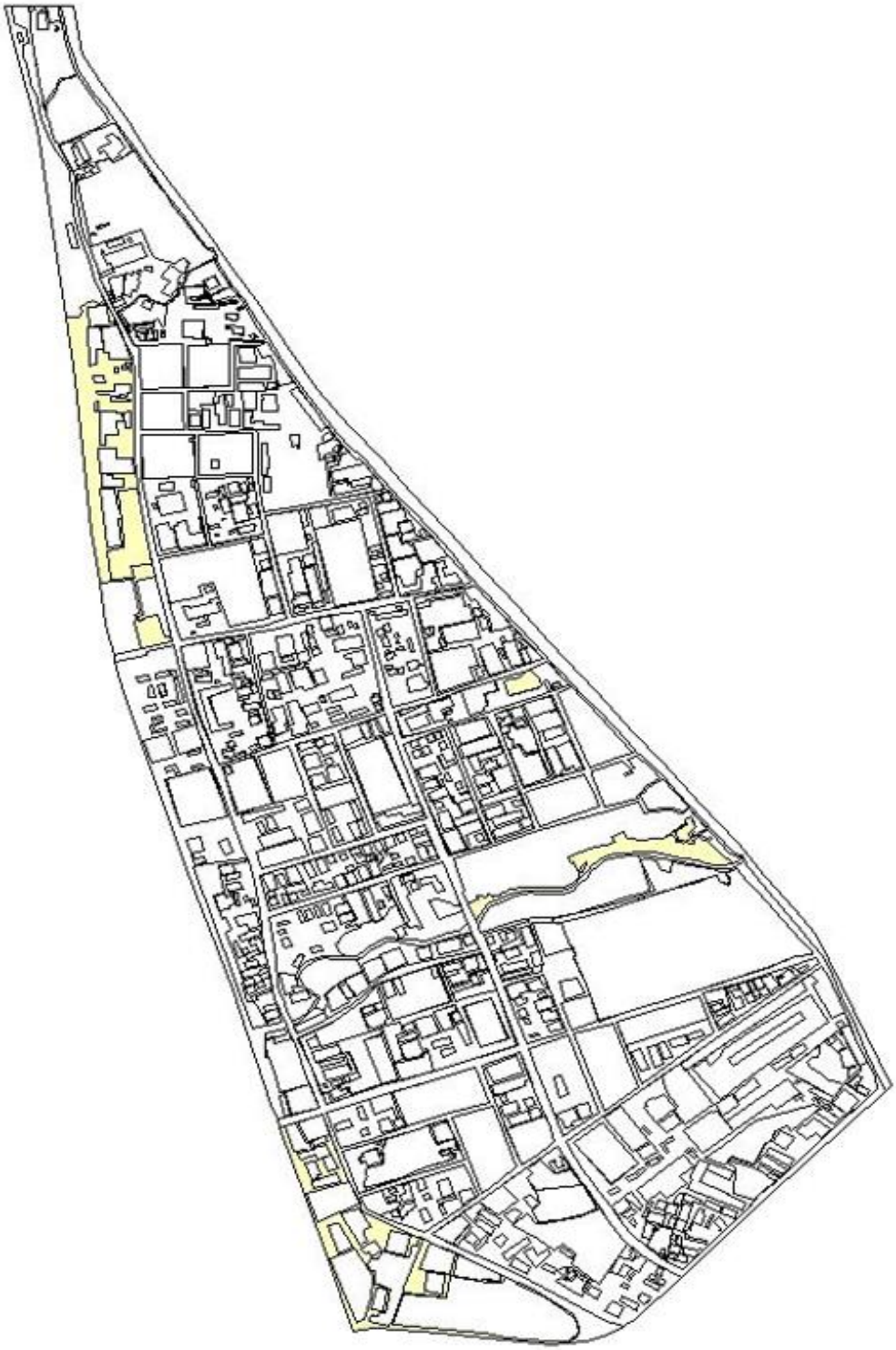


FIG:2.2: GEOMETRICAL CALCULATIONS

Table

road_2022_line

FID	Shape *	FID_road20	Id	TYPE	AREA_AC	AREA__HC
0	Polyline	0	0	ROAD	7.83	3.17
1	Polyline	0	0	ROAD	7.83	3.17
2	Polyline	0	0	ROAD	7.83	3.17
3	Polyline	0	0	ROAD	7.83	3.17
4	Polyline	0	0	ROAD	7.83	3.17
5	Polyline	0	0	ROAD	7.83	3.17
6	Polyline	0	0	ROAD	7.83	3.17
7	Polyline	0	0	ROAD	7.83	3.17
8	Polyline	0	0	ROAD	7.83	3.17
9	Polyline	0	0	ROAD	7.83	3.17
10	Polyline	0	0	ROAD	7.83	3.17
11	Polyline	0	0	ROAD	7.83	3.17
12	Polyline	0	0	ROAD	7.83	3.17
13	Polyline	0	0	ROAD	7.83	3.17
14	Polyline	0	0	ROAD	7.83	3.17
15	Polyline	0	0	ROAD	7.83	3.17
16	Polyline	0	0	ROAD	7.83	3.17
17	Polyline	0	0	ROAD	7.83	3.17
18	Polyline	0	0	ROAD	7.83	3.17
19	Polyline	0	0	ROAD	7.83	3.17
20	Polyline	0	0	ROAD	7.83	3.17
21	Polyline	0	0	ROAD	7.83	3.17
22	Polyline	0	0	ROAD	7.83	3.17
23	Polyline	0	0	ROAD	7.83	3.17
24	Polyline	0	0	ROAD	7.83	3.17
25	Polyline	0	0	ROAD	7.83	3.17
26	Polyline	0	0	ROAD	7.83	3.17
27	Polyline	0	0	ROAD	7.83	3.17
28	Polyline	0	0	ROAD	7.83	3.17
29	Polyline	0	0	ROAD	7.83	3.17
30	Polyline	0	0	ROAD	7.83	3.17
31	Polyline	0	0	ROAD	7.83	3.17
32	Polyline	0	0	ROAD	7.83	3.17
33	Polyline	0	0	ROAD	7.83	3.17
34	Polyline	0	0	ROAD	7.83	3.17
35	Polyline	0	0	ROAD	7.83	3.17
36	Polyline	0	0	ROAD	7.83	3.17

1 (0 out of 56 Selected)

road_2022_line

ELEMENTS PRESENT AS PER 2022 IN ACRES	
ROAD	2.83
VEGETATION	130.33
COMMERCIAL LAND	258.84
RESIDENTIAL LAND	40.9
OPEN SPACE	17.23
DRAIN / WATER BODY	5.17

FIG:2.3: GIS Mapping of AOI with Satellite Imagery year 2002

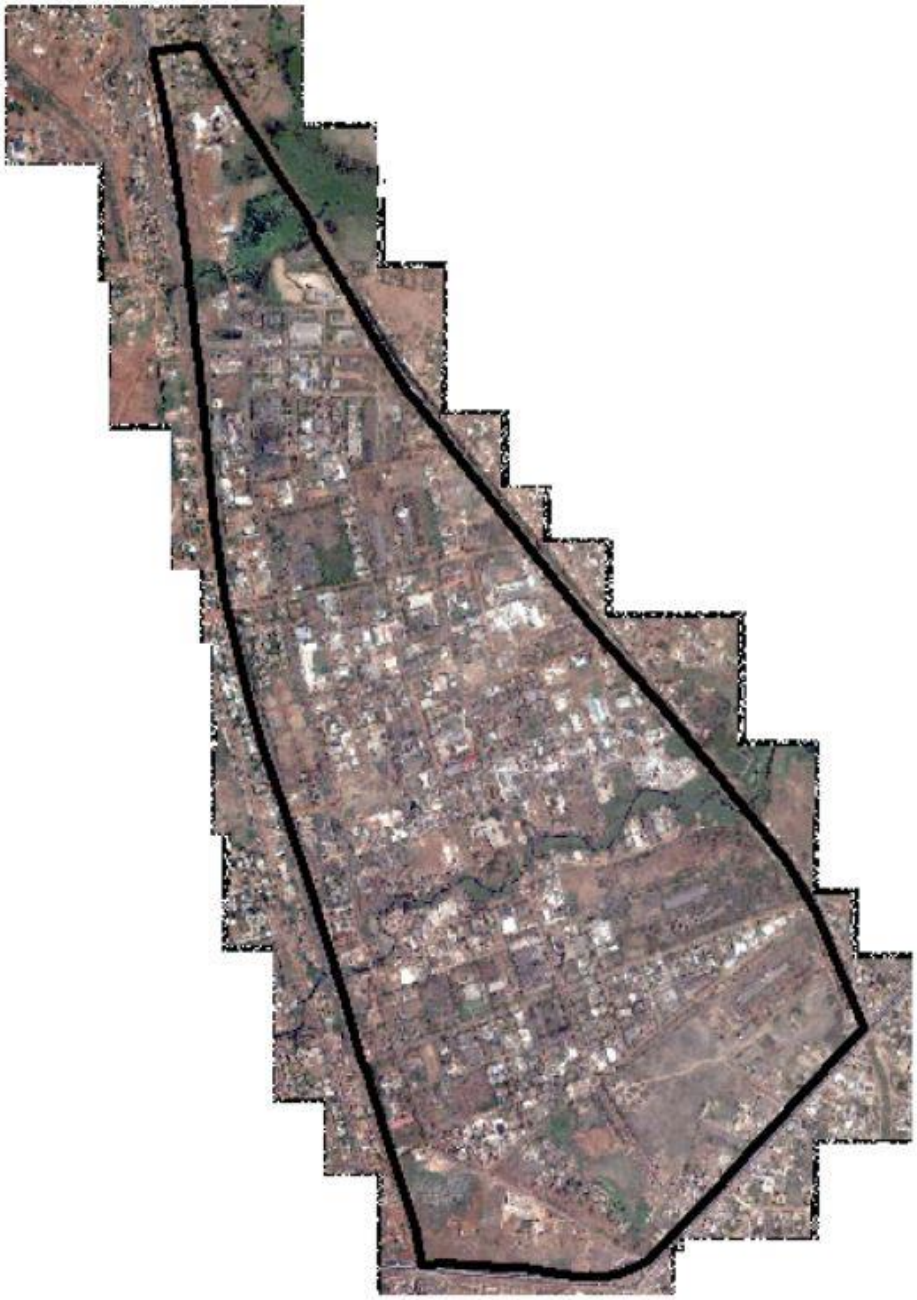


FIG:2.4: Mapping of Residential areas of year 2002

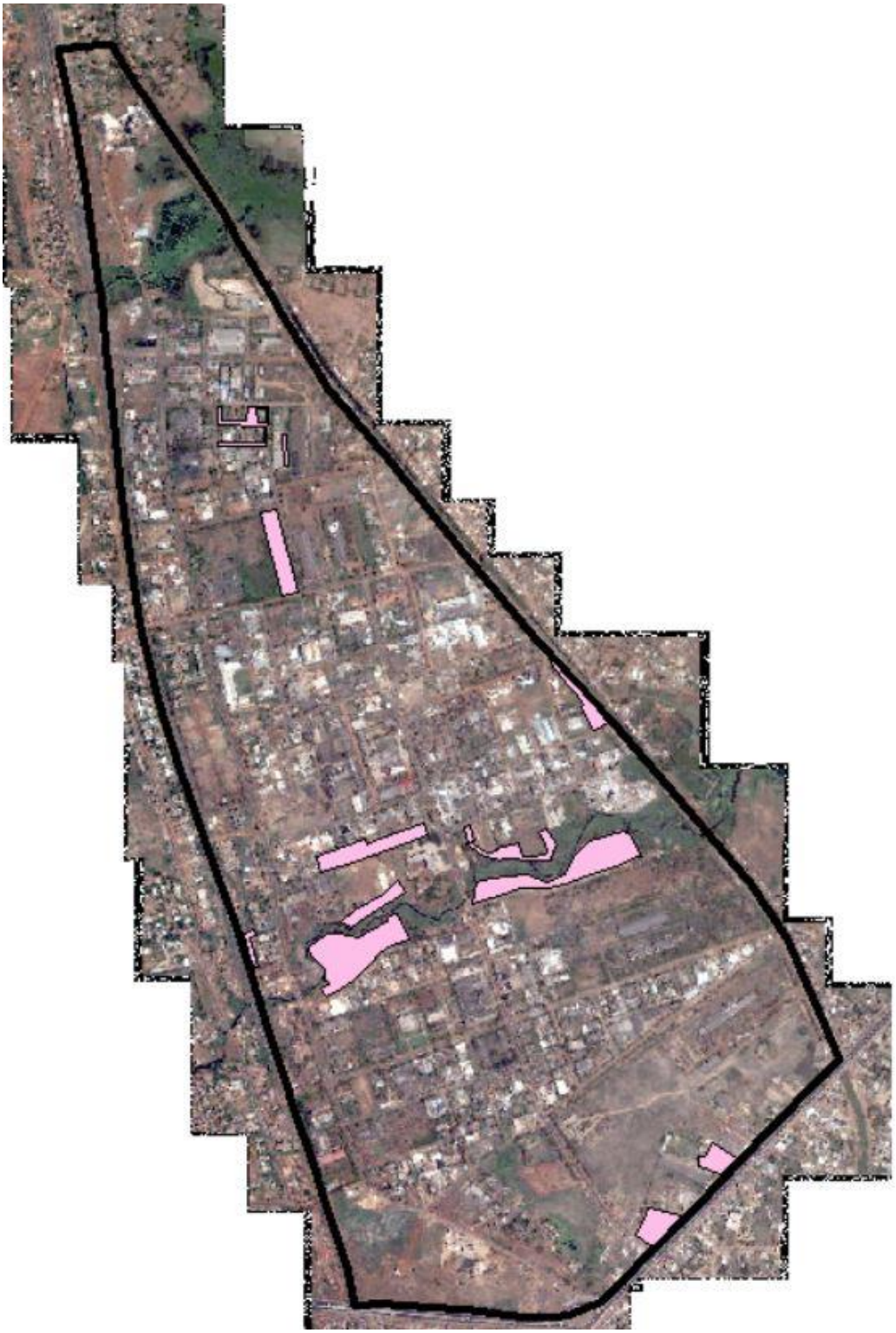


FIG: 2.5: Mapping of Road of year 2002

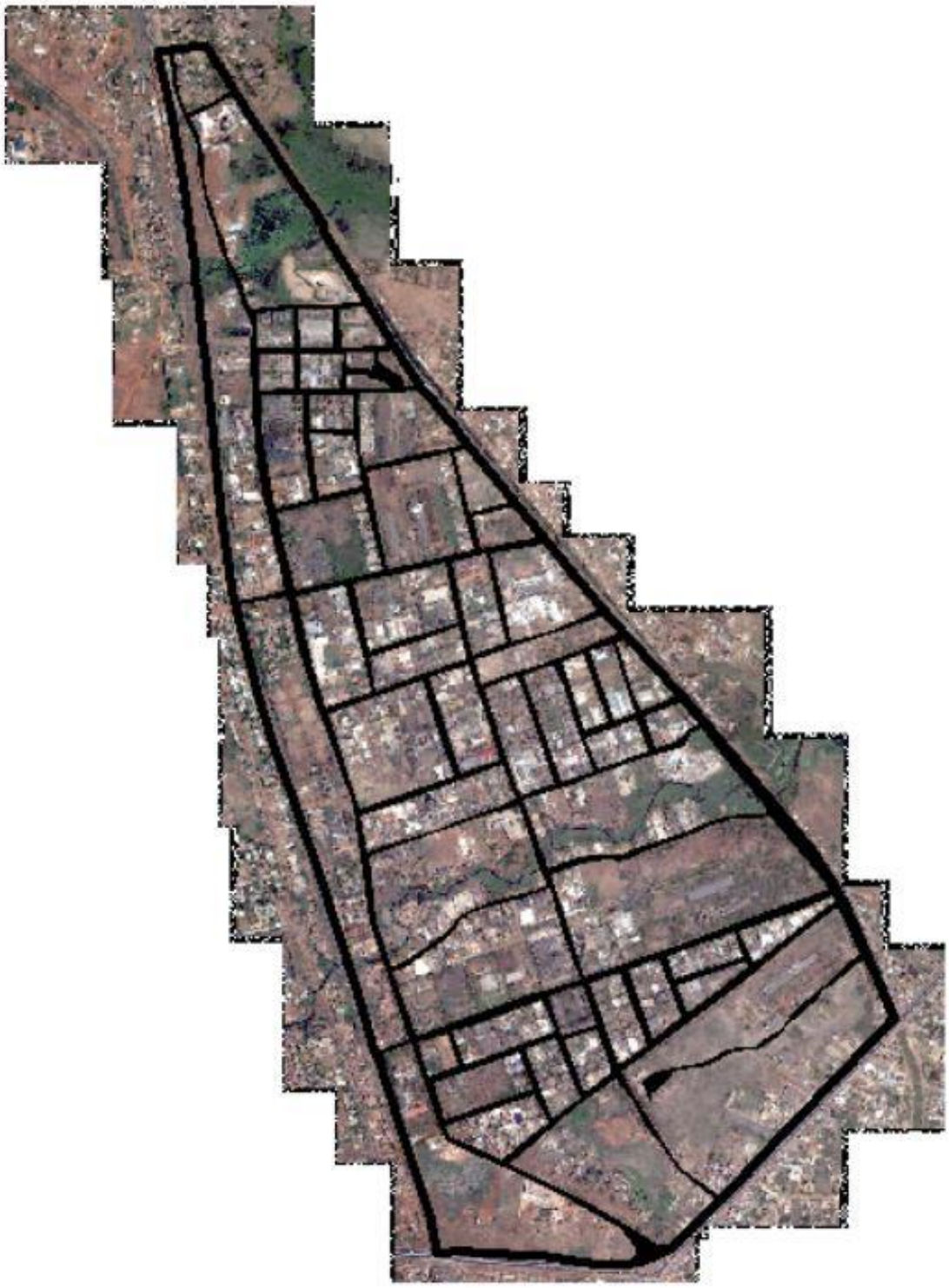


FIG:2.6: Mapping of Commercial building of year 2002

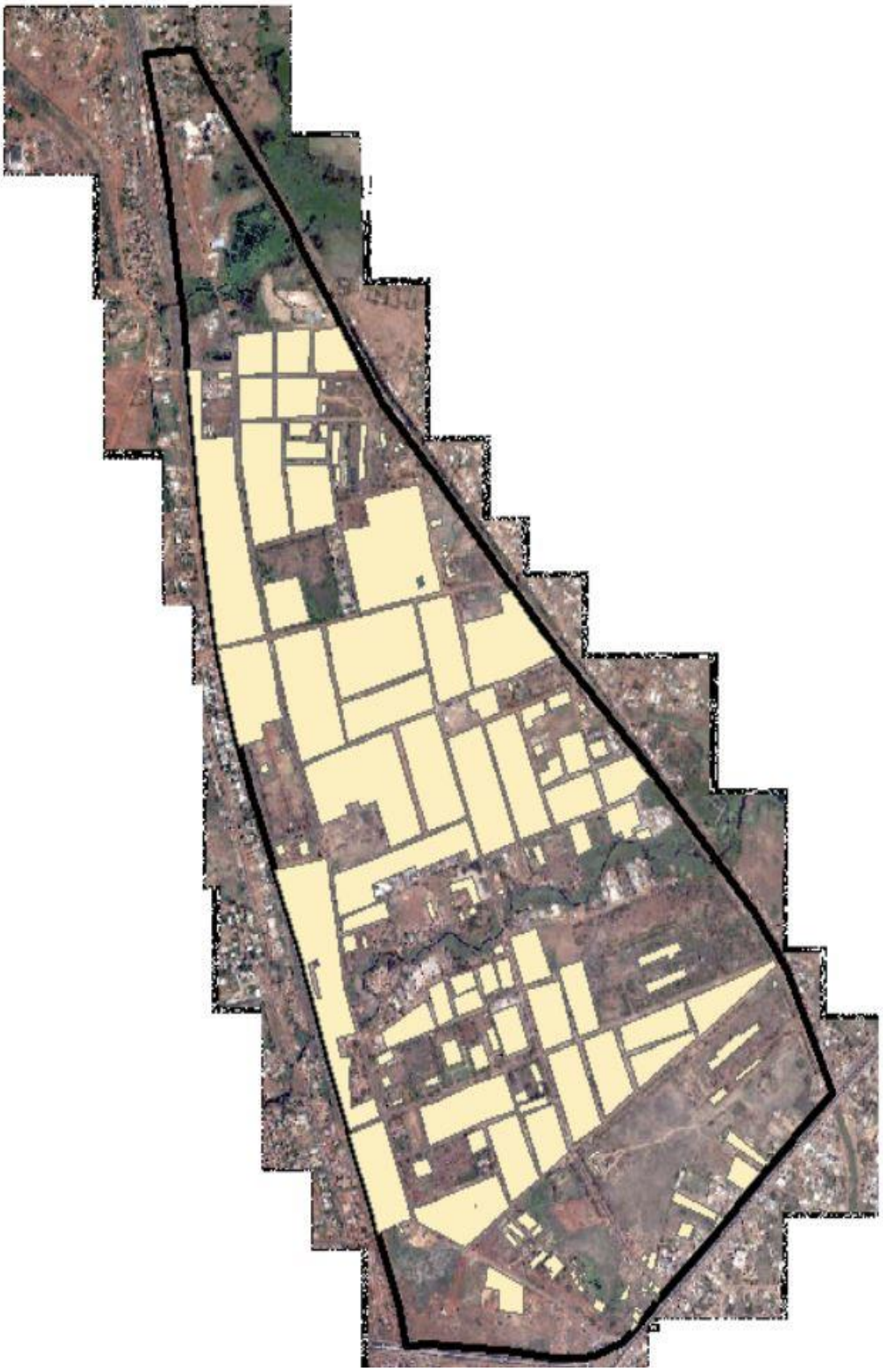


FIG:2.7: Mapping of water body of year 2002

FIG:2.8: Mapping of vegetation of year 2002

CHAPTER IV

RESULT AND FUTURE SCOPE

FIG:3.0: GEOMETRICAL CALCULATIONS

ELEMENTS PRESENT AS PER 2002 IN ACRES	
ROAD	1.82
VEGETATION	2.30
COMMERCIAL LAND	212
RESIDENTIAL LAND	15
OPEN SPACE	50
DRAIN / WATER BODY	4

FIG:3.1: STATISTICAL COMPARISION B/W 2002 YEAR AND 2022

2002 year

2022 year

AREA TYPE	YEAR	
	2002	2022
ROAD	1.82	2.83
VEGETATION	2.3	130.33
COMMERCIAL LAND	212	258.84
RESIDENTIAL LAND	15	40.9
OPEN SPACE	50	17.23
DRAIN / WATER BODY	4	5.17

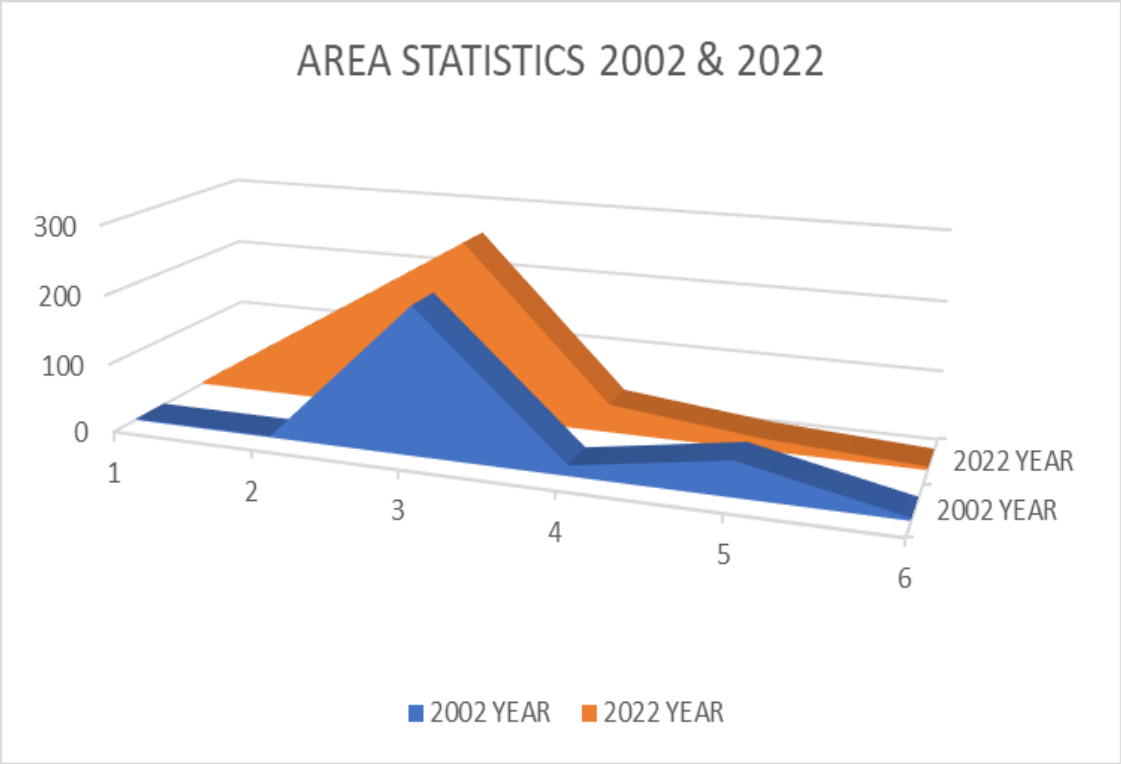


FIG:3.2:AREA STATISTICS 2002&2022

FIG:3.3:GROWTH COMPARISION

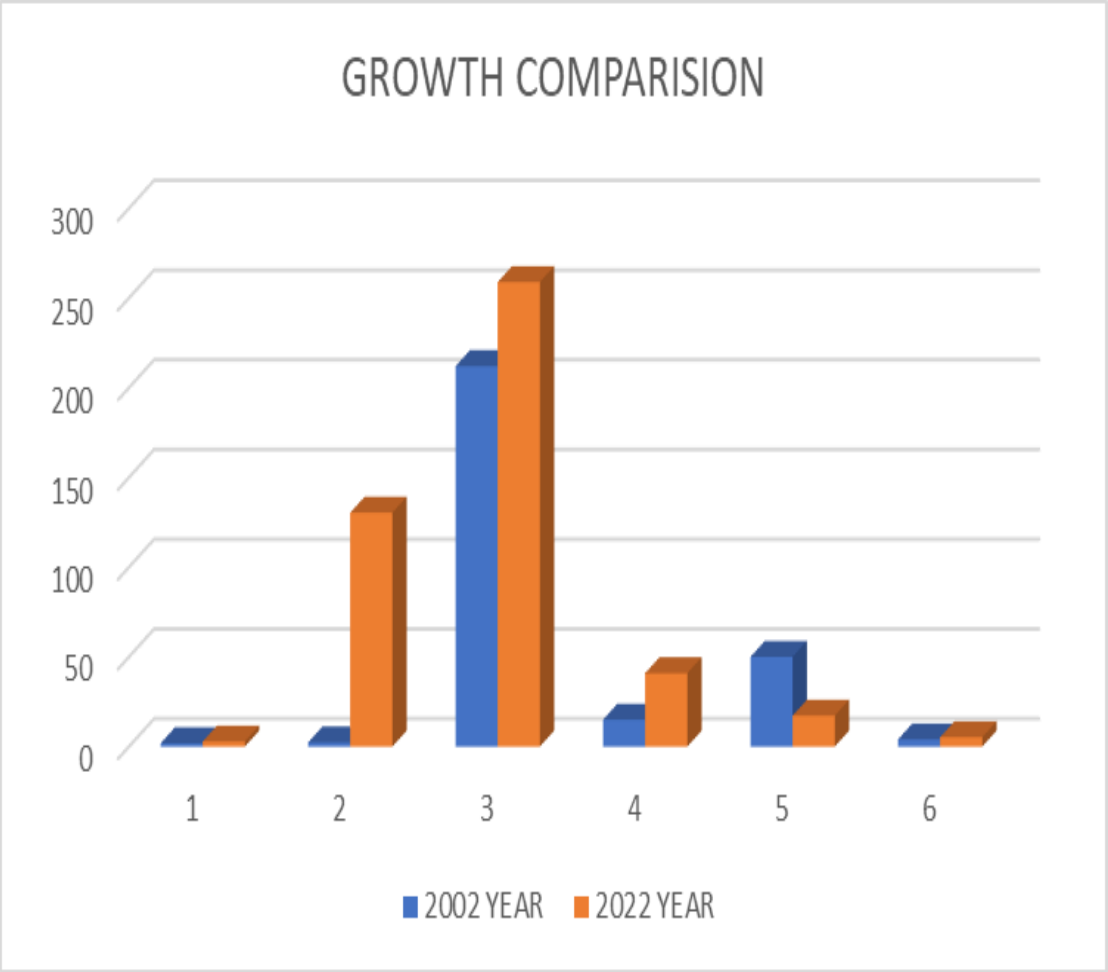
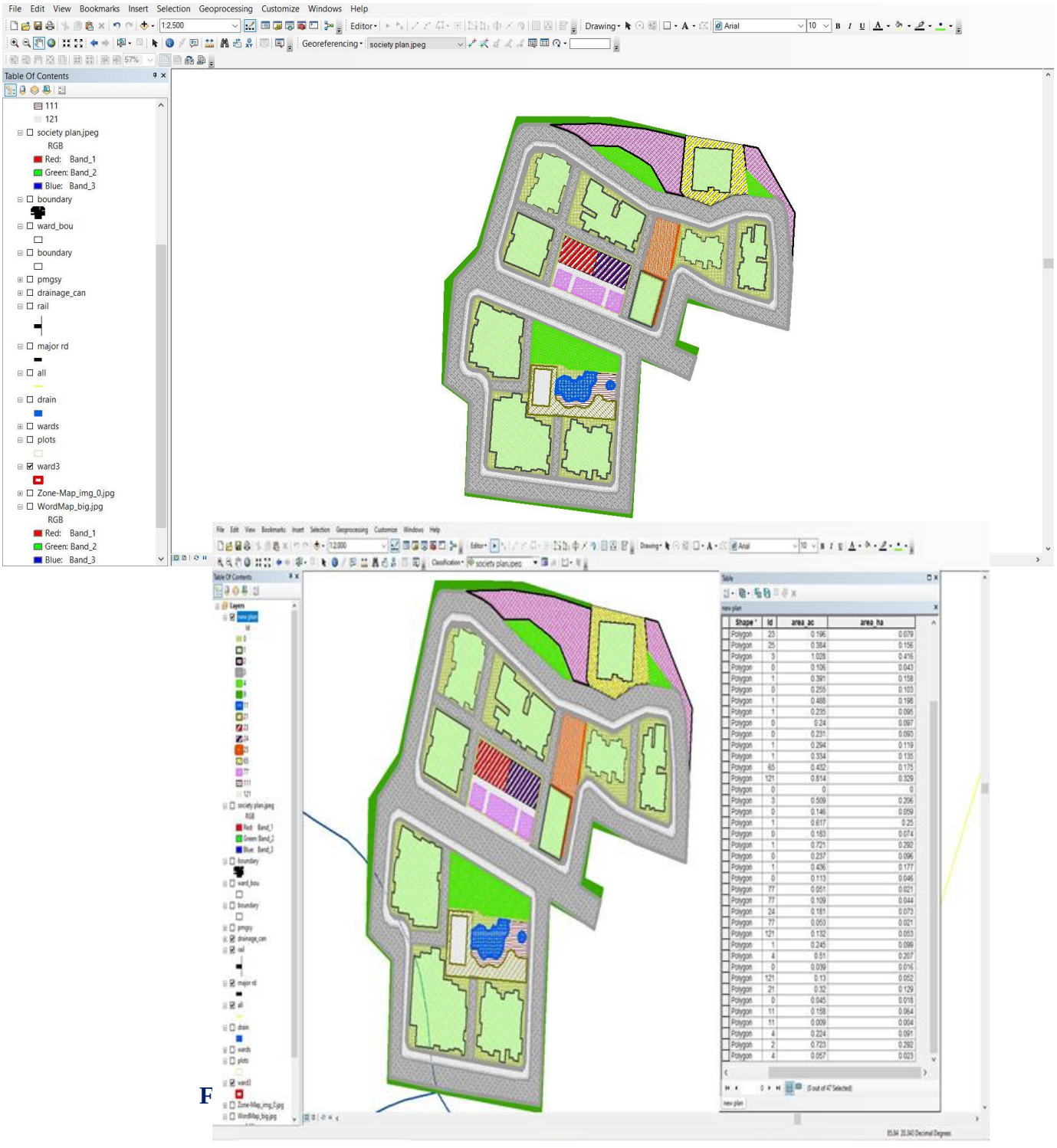


FIG:3.4: PLAN FOR OPEN SPACE DEVELOPMENT



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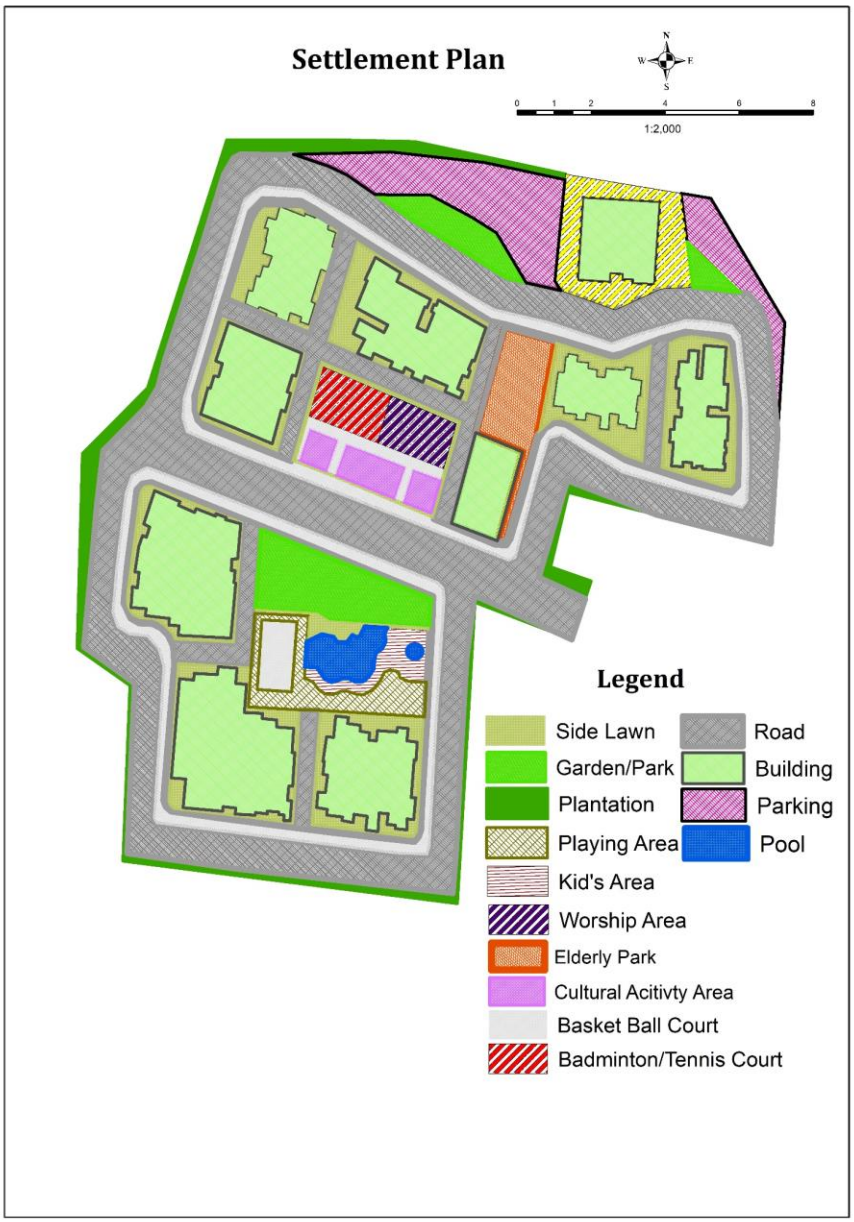
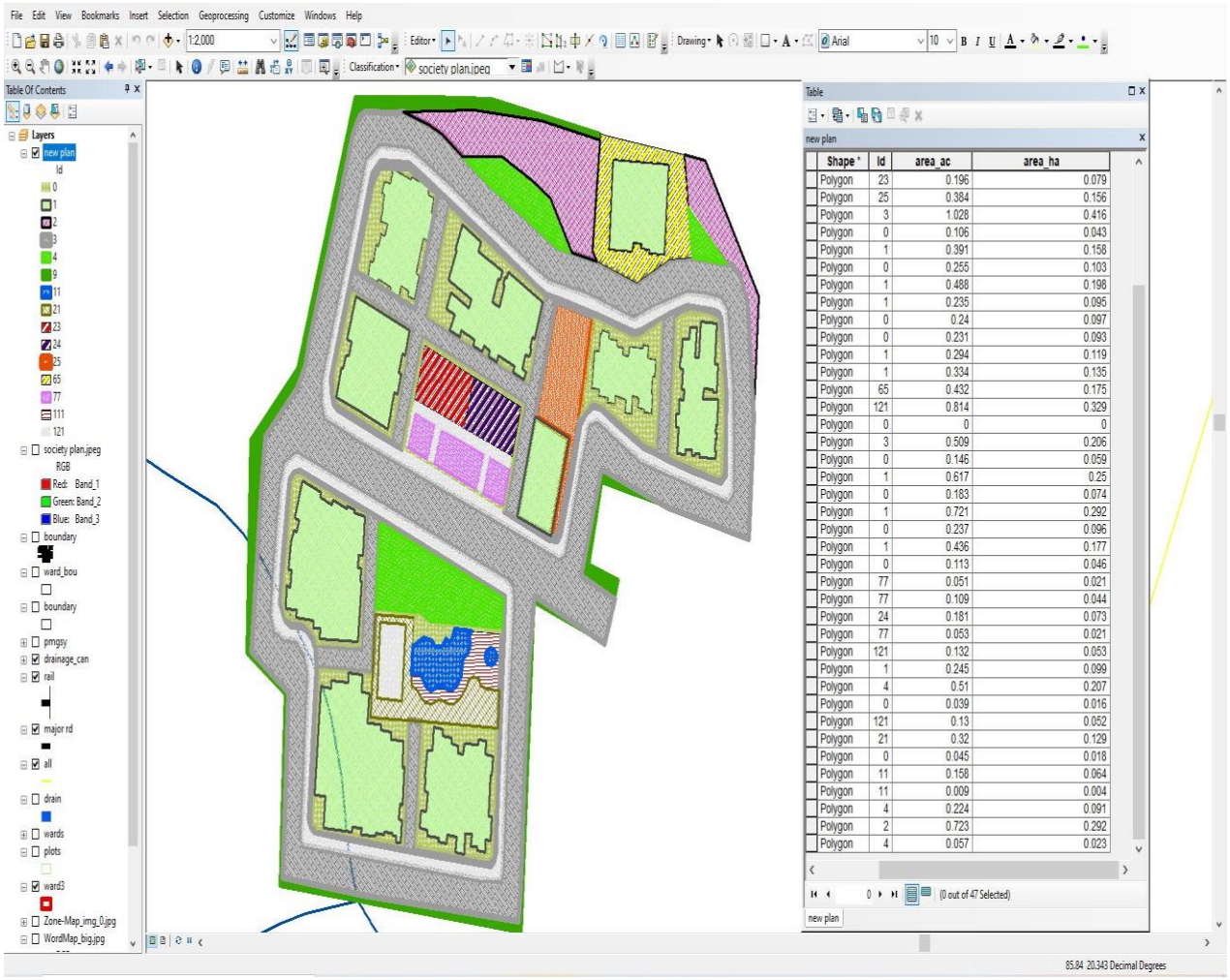


Settlement plan consist of various elements according to government authorized society plan to provide better living conditions for its residents. Elements present in this settlement plan are as follows: Building Blocks, Parking Area, Side Lawn, Side Walk, Road, Garden/Park, Plantation, Areas for social gathering, Kid's area and etc.

After land use land cover mapping geometrical calculations (area calculation) for those elements was performed using the geometrical calculation tool and (WGS1984 UTM Zone45N) coordinate system

FIG:3.6:



The objective of the area calculation is to recreate the actual land area. The area of AoI i.e. MANCHESWAR is about 19 acres. The resettlement plan area is also almost equal to AoI. As the site doesn't have a proper road network, housing facilities, kids area, and other basic necessities it is very important to include all those in the settlement area.

Building			
FID	Shape *	Id	Area_Ac_1
5	Polygon	1	0.355085
12	Polygon	1	0.391412
14	Polygon	1	0.488235
15	Polygon	1	0.235458
18	Polygon	1	0.294478
19	Polygon	1	0.334029
25	Polygon	1	0.617385
27	Polygon	1	0.720701
29	Polygon	1	0.436474
36	Polygon	1	0.245434
		Total	4.118691

Garden			
FID	Shape *	Id	Area_Ac_1
37	Polygon	4	0.510383
44	Polygon	4	0.224038
46	Polygon	4	0.057285
		Total	0.791706

Plantation			
FID	Shape *	Id	Area_Ac_1
1	Polygon	9	0.097815
3	Polygon	9	0.784329
		Total	0.882144

Road			
FID	Shape *	Id	Area_Ac_1
4	Polygon	3	4.846305
10	Polygon	3	1.027866
23	Polygon	3	0.509326
		Total	6.383497

Parking			
FID	Shape *	Id	Area_Ac_1
2	Polygon	2	0.27347
45	Polygon	2	0.722661
		Total	0.996131

Other Elements			
FID	Shape *	Id	Area_Ac_1
0	Polygon	111	0.180338
8	Polygon	23	0.195918
9	Polygon	25	0.384317
31	Polygon	77	0.051276
32	Polygon	77	0.108916
33	Polygon	24	0.180561
34	Polygon	77	0.052771
35	Polygon	121	0.13156
39	Polygon	121	0.129723
40	Polygon	21	0.319818
42	Polygon	11	0.158141
43	Polygon	11	0.009046
		Total	1.902385

Side Lawn			
FID	Shape *	Id	Area_Ac_1
7	Polygon	0	0.165647
11	Polygon	0	0.106237
13	Polygon	0	0.254529
16	Polygon	0	0.240267
17	Polygon	0	0.230813
20	Polygon	65	0.431677
24	Polygon	0	0.145833
26	Polygon	0	0.182854
28	Polygon	0	0.237395
41	Polygon	0	0.044978
30	Polygon	0	0.113276
38	Polygon	0	0.039259
		Total	2.192765

Side Walk			
FID	Shape *	Id	Area_Ac_1
6	Polygon	121	1.004519
21	Polygon	121	0.814103
		Total	1.818622

Elements Present Inside Resettlement Plan		
Type	Count	Area in acres
Building	10	4.118691
Side Lawn	12	2.192765
Side Walk	2	1.818622
Garden Area	3	0.791706
Road	3	6.383497
Plantation	2	0.882144
Parking Area	2	0.996131
Other Elements	12	1.902385

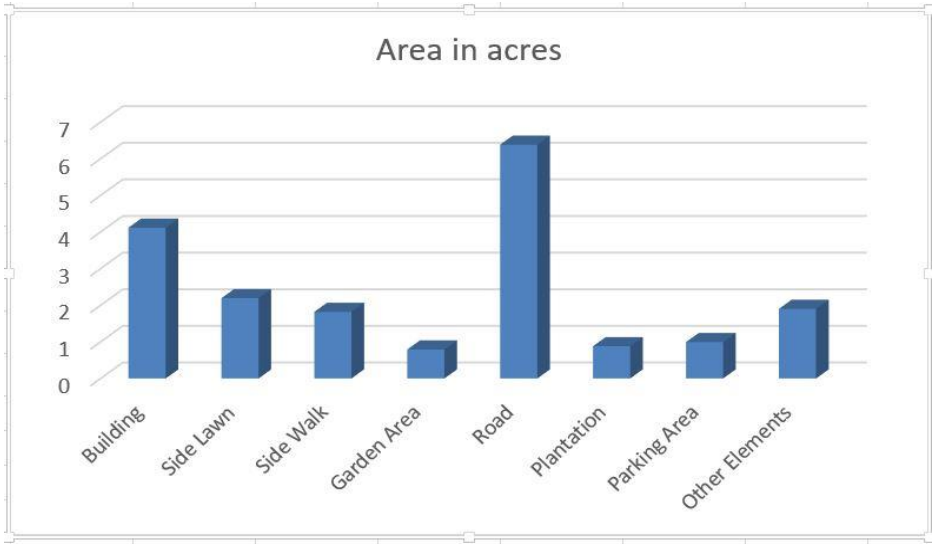


FIG:3.6: Graphical Representation of Elements in Settlement Plan

FUTURE SCOPE:

This settlement plan is not only for the Mancheswar dwellers but also can be implemented for other Mancheswar redevelopment plans. As Bhubaneswar city is still expanding and the population from rural Odisha is migrating into the capital city it's only a matter of fact that the Mancheswar problem in the city will be intensified in near future. There are numerous other small and medium-sized Mancheswar still present in the city which also don't fulfill the basic necessities of its inhabitants are required for uplifting the living conditions and improving the living environment of Mancheswar dwellers. These area can be recreated or resettled in this resettlement plan. Those area dwellers can become part of socio-economic development like the residents of mancheswar. So this settlement plan can be used as a benchmark for other Mancheswar development plans. The settlement plan can accommodate other area dwellers as the plan was designed keeping the Mancheswar area problem issue in mind. The Physical Infrastructure was designed to provide Mancheswar dwellers facilities like Water Supply, Sanitation, Solid Waste Management, Public health protection, and Electricity supply, with better transportation. This expansion in physical infrastructure will help to improve the habitat, quality of life, and living conditions.

CHAPTER V

CONCLUSION AND REFERENCES

CONCLUSION

Mancheswar redevelopment projects deals with major allocation of money and resource. Many studies have been done to maximize the efficiency of resource usage, but there exist gaps and limitations on ground, this study has brought up the issues, problems faced on site and try to give better solution to rectify the same . Following are the major identified challenges.

- Time overrun
- Seepage in newly constructed building due to bad construction and lack of water proofing treatment.
- Material quality used in construction becomes inferior due to improper storage, handling and poor mixing of concrete.
- According to plot size, preparation of plan with minimum requirement of sizes of rooms as per slandered could not followed.

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