

Jitpur-Simara Sub-metropolitan City (JSSMC)

Final Report

First Stage – Sub-Metropolitan City Profile

Type your

Submitted to:

Jitpur-Simara Sub-metropolitan City

Simara, Bara

Province No. 2

Prepared by:

FEED (P) Ltd.

Jhamsikhel, Lalitpur

Nepal

July 2020

Table of Contents

Section 1: Introduction	iii
1.1 Background.....	1
1.2 Objective and Scope.....	1
1.3 Limitations	2
Section 2: Approach and Methods.....	3
2.1 Approach.....	3
2.1 Methods.....	3
2.1.1 Initial Stage.....	3
Section 3: Jitpur-Simara SMC	4
3.1 Name, Location and Climate.....	4
3.2 Area, Settlements and Population	6
3.3 Education and Educational Institutions	9
3.4 Landuse and Land Cover.....	10
3.4 Agricultural Land and Distribution	12
3.5 National Park and Forest	12
3.6 Transportation Network	13
3.7 Residential Area	14
3.8 Industrial Area.....	15
3.9 Ward Level Mapping.....	16
Section 4: Concluding Remarks.....	17

Annexes

List of Figure

Figure 1. Location view of Provence No. 2 and JSSMC in Yellow Polygon.	4
Figure 2. River and Drainage system in JSSMC.....	5
Figure 3. Average monthly rainfall in Simara area of Parsa District.....	5
Figure 4. Average monthly maximum, minimum and mean temperature in Simara area and JSSMC.	6
Figure 5. JSSMC ward distribution, settlements and built-up area.	7
Figure 6. River System and major settlement in JSSMC.....	9
Figure 7. Landuse classification of JSSMC.....	11
Figure 8. Agricultural land in JSSMC.....	12
Figure 9. Forest and vegetative land and transportation Network in JSSMC.....	13
Figure 10. Transportation network in JSSMC.	14
Figure 11. Residential area in JSSMC and national highways passing through the JSSMC. ..	15
Figure 12. Locations of Industrial areas alongside of the national highways in JSSMC.....	16

List of Table

Table 1. Ward-wise area, population, population density and avg. HH size in JSSMC.....6

Table 2. Summary of settlements, population and households in JSSMC (2074).8

Table 3. Summary of literate population in JSSMC (2074).9

Table 4. List of Secondary schools in JSSMC (2074).10

Table 5. Landuse classification in JSSMC.11

Section 1: Introduction

1.1 Background

Jitpur-Simara is a Sub-metropolitan City (JSSMC) in Bara District of Province No. 2 situated in southern Nepal, usually known as Terai. JSSMC is a new political entity established in 2017 by amalgamation a municipality (Gadhimai) and several then Village Development Committees such as Bhavanipur, Jeetpur, Pipara-Simara, Amlekhjung, Chatapipara Inarwasira and part of Manharwa, Haraiya and Rampur Tokani that established the new sub-metropolitan city. According to the recent past survey in 2074 conducted by the JSSMC, the population is said to be about 117,950 living in 21,211 households and families.

JSSMC is centrally located in the heart of the Terai and connected by national level highways to the major cities and towns in other part of the country. The sub-metropolitan city is known to be one of the highly potential in terms of agricultural production, natural resources such as forest and industrial production to some extent. The sub-metropolitan city comprises with all basic facilities and services. However the socio-economy of the sub-metropolitan city is still in primitive stage, livelihood and economic activities at local level is yet to be up held.

The establishment of new sub-metropolitan city in the region was due to the results of massive restructuring of the country into federal state. The Government of Nepal has given opportunities to the smallest unit of local government for any kinds of developmental works such as municipalities. In order to perform the developmental works and to better understand the socio-economy of the population in the JSMMC, infrastructures, available natural and others resources, and to established appropriate development plan, proper database is important. For this reason, JSSMC has proposed to initiate the preparation of profile of the sub-metropolitan city. Preparation of profile is a continuous process which is resources and time driven. Because of limited resources and time the sub-metropolitan has decided to start the preparation of the profile in this fiscal year and will be continued in next year.

This municipal profile is the initiation towards the complete profile to be conducted in second phase. In this phase, the database mainly the digital data and secondary data about the population, households and other infrastructures and facilities have been prepared in Geographic Information System (GIS) to be used in the second phase of the municipal profile preparation process. The data and information presented in this profile shall be field verified in second phase of the profile preparation processes.

1.2 Objective and Scope

The basic objective of this consulting work was to start with the preparation of JSSMC profile based on the available digital data and remote sensing data base that guides the preparation of complete profile of the sub-metropolitan city. The specific objectives were to:

1. Review of the available documents (maps, figures, data, publications, censuses data and other relevant and useful data/information about JSSMC;

2. Collection, and review of previous database (database in the form publications or map) of road-network, drainage, natural resources, settlements, infrastructures, landuse, river and water sources, etc.;
3. Establish and prepare GIS based maps of the road networks, settlements, landuse, infrastructures, drainage, rivers and water sources, schools;
4. Prepare historical, religious and cultural important locations maps;
5. Prepare maps of the road-network, landuse, infrastructures, rivers and water sources, schools, etc. in GIS;
6. Summarize the population database based on the previous work;
7. Identify and prioritized the activities for the development of detail municipal profile in second stage, to be conducted in next year.

The consultant has collected the require maps, figures and digital data and prepared the maps of the infrastructures, landuse, builtup areas for each of the 24 wards of the sub-metropolitan city. Additional, the consultant has used digital and Remote Sensing data in order to perform this initial stage of municipal profile. The data, maps and figures and information collected and documented at this stage of shall be used later in second stage to have complete set of municipal profile.

1.3 Limitations

Preparation of municipal profile is resources and time driven. Because of limited time and resources, the JSSMC has decided to prepare the municipal profile into two stages. The first stage is mainly the collection preliminary information that describes the sub-metropolitan city and prepares digital maps of each ward such as landuse, infrastructures, transportation network, rivers and water body, etc. The maps and figures prepared from RS data in GIS shall be field verified, which is planned to be conducted in second stage of profile preparation process.

This document is not the complete profile of JSSMC, rather a part of the profile to be added into the second phase work.

Section 2: Approach and Methods

2.1 Approach

Use of Geographical Information System (GIS) and Remote Sensing (RS): GIS and RS were the tools used in the preparation of digital maps of the sub-metropolitan city. Information's obtained in RS data were extracted and processed in GIS in order to prepare the ward level database and maps. RS data such as Open Street Maps, Landsat Images, and Topographical maps were used where applicable.

Use of Political and Administrative Maps: The Political and Administrative maps of the municipality were collected from the Ministry of Federal Affairs and General Administration (FoFAGA). These maps were used as base maps and processed in GIS in order to obtain the intended maps of each ward.

Senses Data: Senses data were collected from the Bureau of Statistics (BoS) of the Government of Nepal. The useful data related to the settlements and populations were adopted from the BoS.

2.1 Methods

The preparation of sub-metropolitan city profile has been divided into the following two phase/stages:

- 1) Initial Stage: In this stage GIS and RS data were used in order to extract the ward level information and data of the sub-metropolitan city, and processed in GIS accordingly prepare the maps. The product of this stage will be part of sub-metropolitan city profile to be included into the second stage work.
- 2) Final Stage: In this stage, field verification of the product of first stage will be made and household survey shall be conducted to complete the profile.

2.1.1 Initial Stage

This stage of profile preparation includes the following methods:

- i. Review of literatures and published reports related to the municipal profile;
- ii. Collection and review of RS data sets and prepare the data for GIS;
- iii. Collection and review of basic senses data and established attributes relation at ward level maps;
- iv. Prepare maps of the sub-metropolitan city and further expanded to ward level;

Section 3: Jitpur-Simara SMC

3.1 Name, Location and Climate

The name of the sub-metropolitan city was derived from the two important locations Jitpur and Simara in Bara District of Province No. 2, located in southern lowland, known as Terai region of Nepal (Figure 1). The sub-metropolitan city is surrounded by Nijagad and Koholwa municipality in east, Parsa in west, Makawanpur District in north (Bagmati Province) and Parawanipur Rural Municipality and Kalaiya Sub-metropolitan City in south. The sub-metropolitan city comprises 24 wards of different areas and population to be describes in the following section.

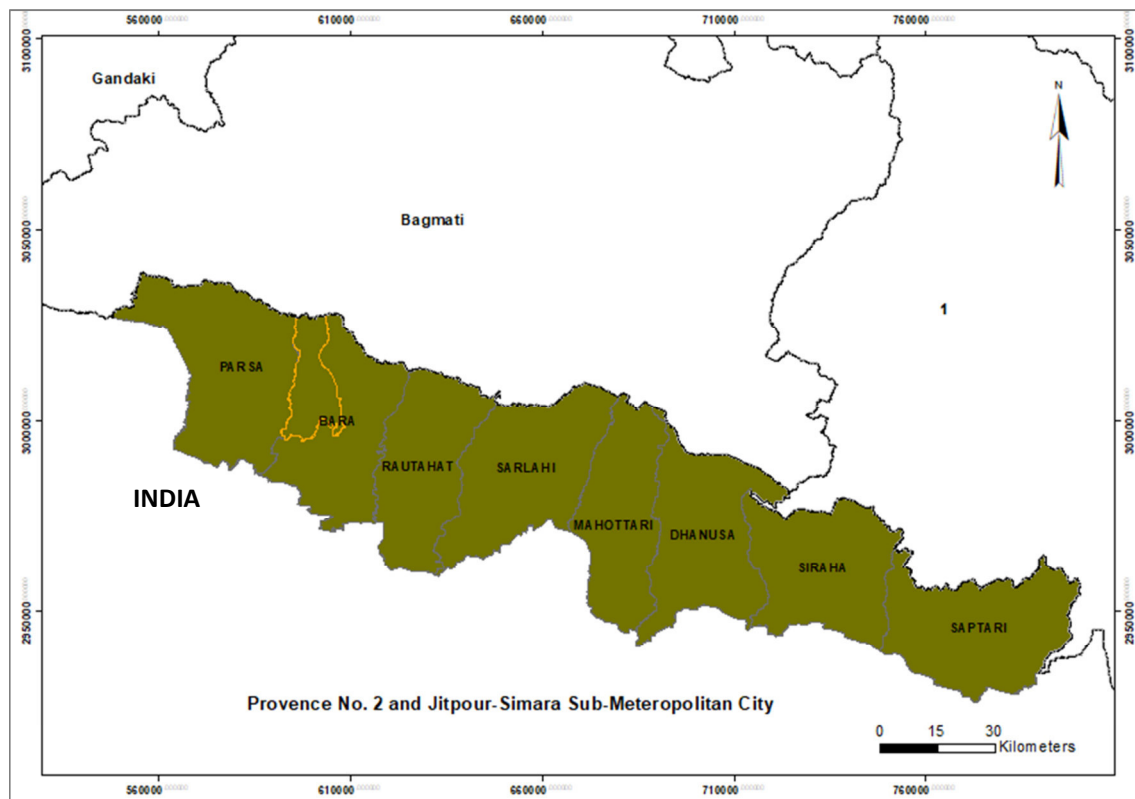


Figure 1. Location view of Province No. 2 and JSSMC in Yellow Polygon.

Geographically JSSMC is expands within the latitude and longitude given below with the total area of 311.67km²:

- Latitude: 26°51' to 27°51'
- Longitude: 48°51' to 85°16'

Elevation varies from 152 masl to 915 masl. The north-south sloping area comprises the Siwalik hill in the north, tropical forest and rich in biodiversity and natural resources. Rivers draining from Siwalik hill range such as Dudhaura, Bangeri, Chure, Bijaure, Bhedi, Bhedaha, Pasaha, Chakari, Sirsiya, Kant, Sarisawa, Bauni, Balaganga, are main (Figure 2).

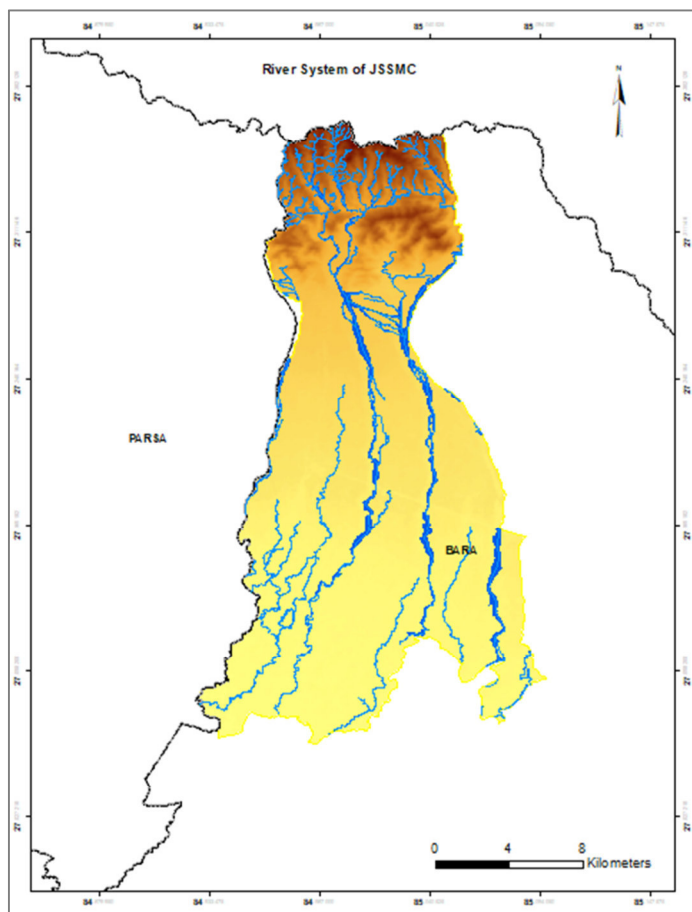


Figure 2. River and Drainage system in JSSMC.

Terai region of Nepal is mostly experienced with the tropical to sub-tropical climate with dry winter and humid summer. The annual average rainfall in the region is above 1500 mm while the maximum average summer temperature is about 34 degree Celsius however the recorded maximum temperature is 42 degree Celsius. July is the highest rainfall months and dry months is recorded to be November (Figure 3).

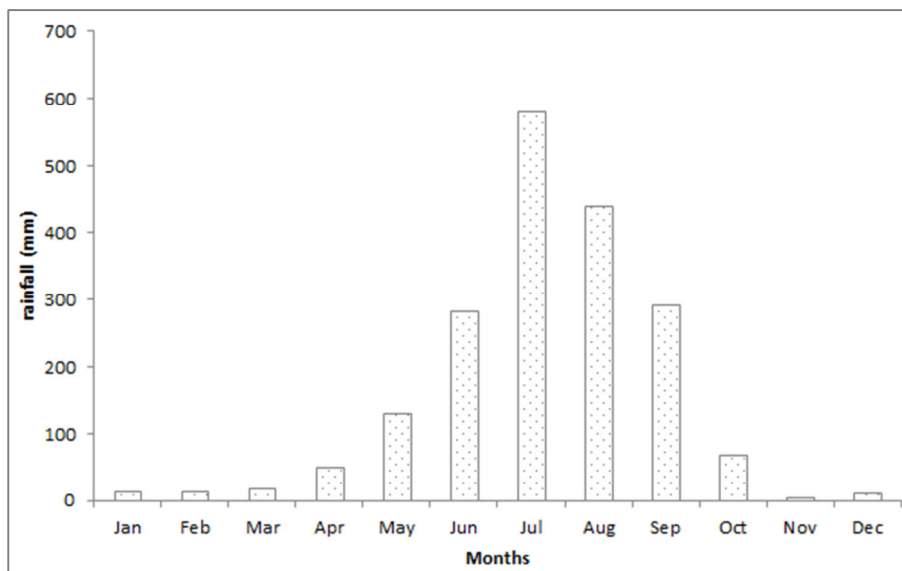


Figure 3. Average monthly rainfall in Simara area of Parsa District.

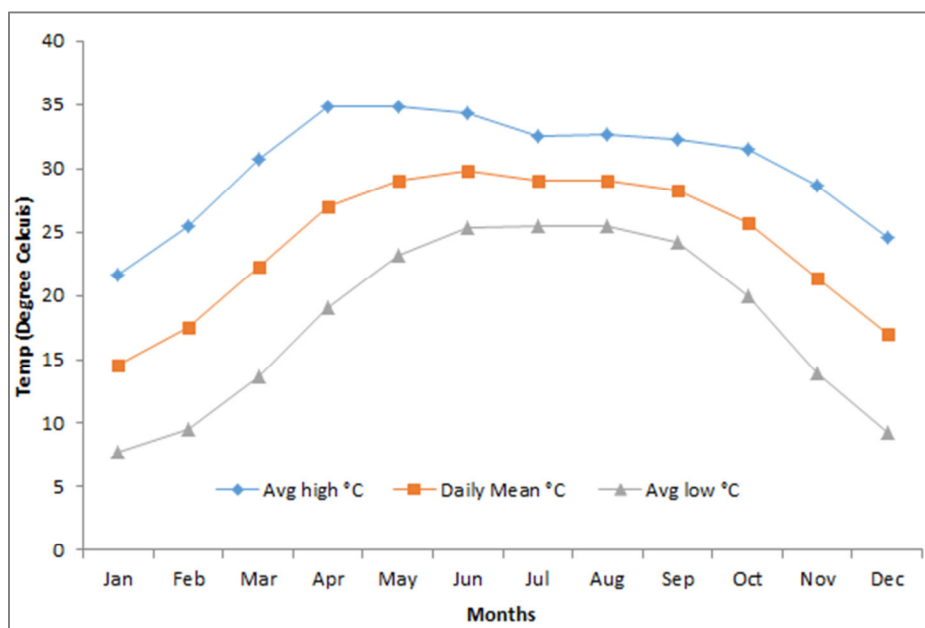


Figure 4. Average monthly maximum, minimum and mean temperature in Simara area and JSSMC.

Winter temperature is as low as 9 degree Celsius where rainfall is about 34 mm (Figure 4). Summer (June, July, August and September) is the main rainfall season due to monsoon. During the four summer months, about 80% of rainfall (~1250 mm) occurs, often triggers flash flood and inundate the low elevation land.

3.2 Area, Settlements and Population

The estimated area of the sub-metropolitan city is about 311.69 km² distributed in to 24 wards. The smallest ward is Ward No. 7 (~2km²) while the largest ward is Ward No. 22 with total area of 63.5 km². Tables 1, below presents ward wise area, population, population density and households situated within the JSSMC according 2074 survey.

Table 1. Ward-wise area, population, population density and avg. HH size in JSSMC.

WARD No	AREA (km ²)	Area (Hector)	Ward No.	Population	Population Density	Avg. HH Population
1	42.75	4274.68	W -1	6332	148.13	1.69
2	15.48	1548.13	W -2	8922	576.31	5.62
3	8.58	857.68	W -3	3955	461.13	3.87
4	11.86	1185.63	W -4	4907	413.87	3.87
5	4.89	488.79	W -5	5010	1,024.98	10.49
6	0.97	96.96	W -6	4377	4,514.42	23.04
7	1.98	198.26	W -7	9708	4,896.55	61.37
8	7.80	780.09	W -8	2884	369.70	4.57
9	3.37	336.62	W -9	1658	492.55	7.81
10	3.23	323.31	W -10	3452	1,067.72	10.67
11	8.81	881.46	W -11	5170	586.53	5.01
12	7.10	710.45	W -12	5232	736.43	6.30
13	2.38	237.92	W -13	1483	623.33	7.40

WARD No	AREA (km ²)	Area (Hector)	Ward No.	Population	Population Density	Avg. HH Population
14	8.66	866.50	W -14	4768	550.26	5.49
15	11.24	1123.52	W -15	5764	513.03	4.77
16	14.84	1483.51	W -16	10638	717.08	6.46
17	17.68	1768.18	W -17	3520	199.07	2.72
18	7.89	788.88	W -18	6246	791.76	6.83
19	7.80	780.26	W -19	5824	746.42	7.13
20	7.73	772.55	W -20	5746	743.77	6.54
21	45.70	4569.57	W -21	3712	81.23	0.77
22	63.51	6350.51	W -22	3402	53.57	0.50
23	4.39	438.71	W -23	2460	560.74	6.62
24	2.51	251.10	W -24	2780	1,107.13	13.19
Total	311	31,113		117,950	70.63	8.86

Source: JSSMC

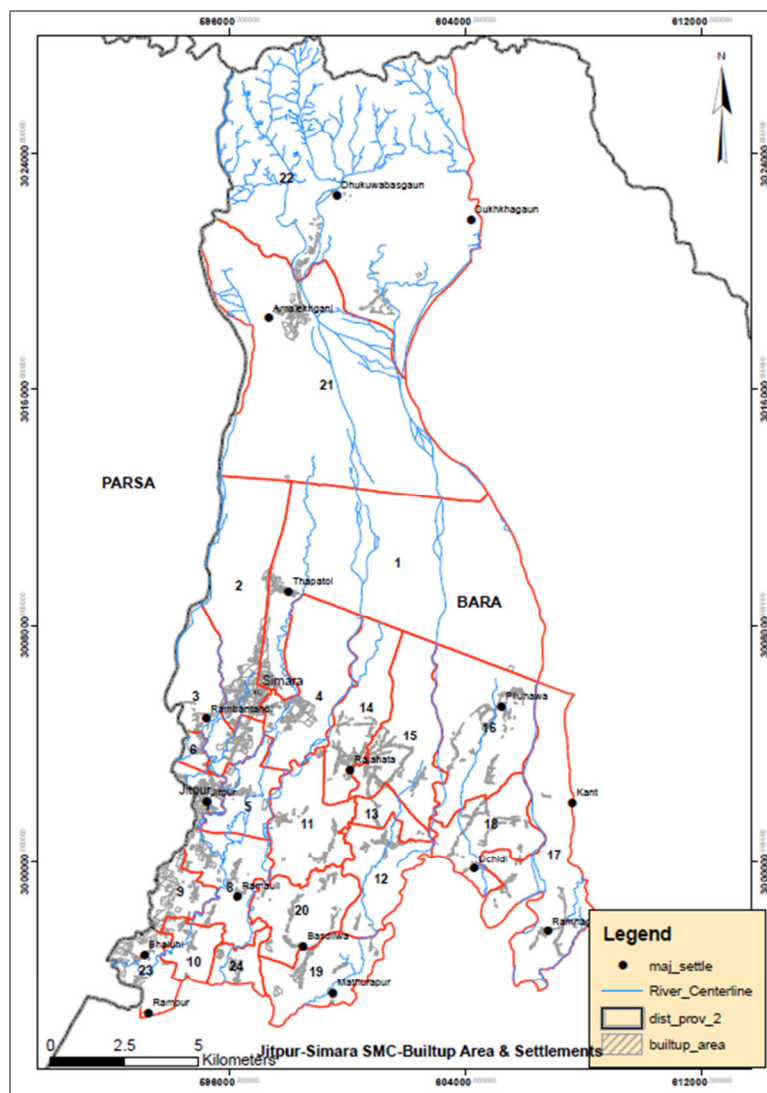


Figure 5. JSSMC ward distribution, settlements and built-up area.

The sub-metropolitan city contains many historical settlements such as Jitpur, Simara, Dumarwana, Parwanipur, scattered within the political and administrative boundaries. The table below (Table 2) presents ward wise settlements, population and households (HH) according to information obtained from the JSSMC.

Table 2. Summary of settlements, population and households in JSSMC (2074).

Ward No.	Households (HH)	Male	Female	Total	Major Settlements
1	1,471	3,317	3,015	6,332	Dudaura Tole, Gari Tole, Anamnagar Tole
2	1,820	4,467	4,455	8,922	Samjhauta Tole, Kamana Tole, Pashupati Tole, Fulbari Tole
3	855	2,067	1,888	3,955	Ramwan, Bajani, Chatimai
4	1,152	2,211	2,696	4,907	Shivamandir Tole, Boring Tole
5	810	2,555	2,455	5,010	Bakuliya, Bisaulia
6	590	2,390	1,987	4,377	Nagal, Bhusakpur
7	1,602	4,755	4,953	9,708	Jitpur
8	765	1,675	1,209	2,884	Ramauli, Losanda, Imlipatti
9	232	920	738	1,658	Chatapipara
10	490	1,710	1,742	3,452	Nitanpur, Baluwa Tole
11	803	2,702	2,468	5,170	Amardar Tole, Khayerwa Tole, Sisauniya Tole
12	853	2,708	2,524	5,232	Fattepur, Pipariya Tole, Shanti Tole
13	220	778	705	1,483	Kota, Sano Kota
14	925	2,234	2,534	4,768	Behari, Chaudhary Tole, Naya Basti
15	1,245	2,824	2,940	5,764	Bharati Tole, Parijat Tole, Bhawanipur Tole
16	1,955	5,084	5,554	10,638	Tagiya basti, Jaleswor Tole, Paini Tole
17	584	1,762	1,758	3,520	Ramnagar, Kata Tole
18	956	3,306	2,940	6,246	Badarwa, Lamedada, Kusmari
19	808	3,095	2,729	5,824	Matiarwa, Mathwarwapur, Inarwa
20	818	2,964	2,782	5,746	Busdilwa, Kanchanpur, Redcross Tole
21	735	1,831	1,881	3,712	Shanti Tole, Mahadev Tole
22	645	1,719	1,683	3,402	Chataki, Bijayabasti, Naya Basti
23	452	1,275	1,185	2,460	Rampur Tokani
24	425	1,403	1,377	2,780	Srastoka
Total	21,211	59,752	58,198	117,950	

Sources: JSSMC

Ward No. 16 is the highest populous with the total population of 10,638 and the least populous is ward no 13 (1,483).

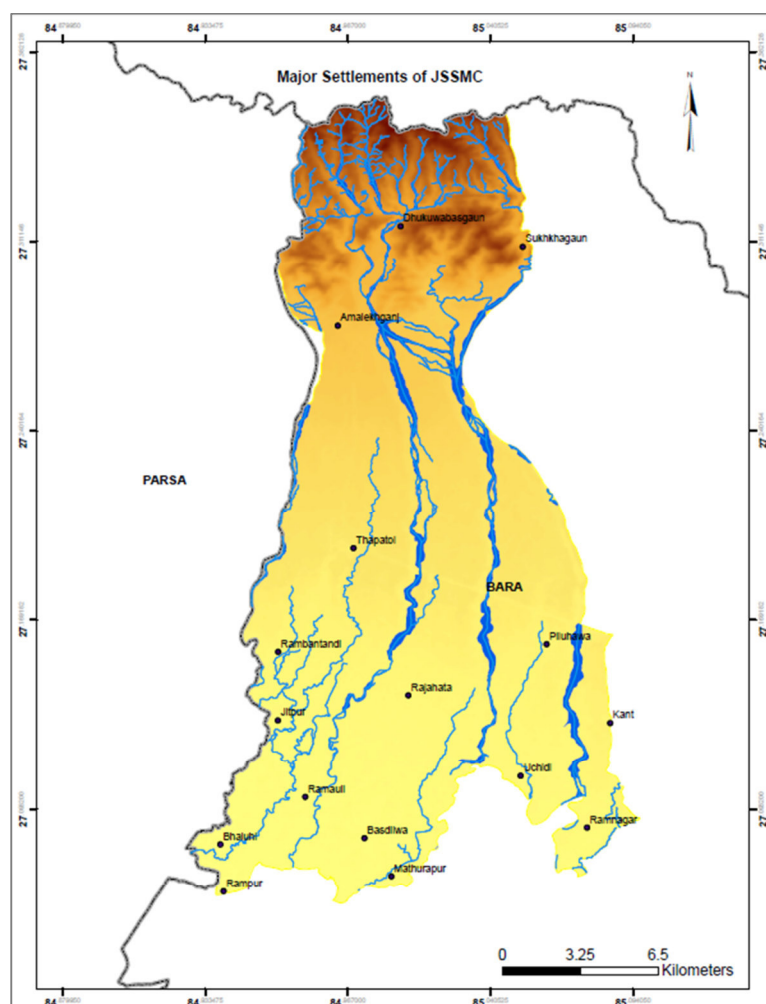


Figure 6. River System and major settlement in JSSMC.

3.3 Education and Educational Institutions

According to 2074 survey, the population above four years of age is estimated to be 103,076 out of which nearly 2.2% is said to be illiterate, indicating the municipality has higher amount of literacy rate than the national average (65%). Table 3 below presents the summary of population above four years of age (male/female) and literacy within the JSSMC.

Table 3. Summary of literate population in JSSMC (2074).

Gender	Population above four years	Distribution		
		Read & Write	Read only	None
Female	50,884	45,320	4,345	1,219
Male	52,192	42,340	8,830	1,022
Total	103,076	87,660	13,175	2,241

Source: JSSMC

The sub-metropolitan city contains 38 primary schools, out of which 30 were owned by the government followed by 20 (Gov: 16), 24 (Gov. 17), and 11 (Gov. 0) respectively lower

secondary, secondary and higher secondary schools were found in the sub-metropolitan city. Besides the schools there are two university level educational institutions. Table 4 below presents the list of higher secondary (currently Secondary Schools) institutions within the JSSMC.

Table 4. List of Secondary schools in JSSMC (2074).

S.N.	Name	Address	Levels
1	Nepal Rastriya H.S .School	Hattisar,Dumarwana, Bara	11--12
2	Janata H.S. School	Rajhatta,Dumarwana,Bara	11--12
3	Janjagriti H.S.School	Sakhuwaghat,Dumarwana, Bara	11--12
4	Mauwadevi S. School	Dakaha,Dumarwana, Bara	11--12
5	Nepal Rastriya H.S. School	Fattepur, Bara	11--12
6	Nepal Rastriya H.S. School	Pathlaiya,Bara	11--12
7	Nepal Rastriya H.S. School	Simara, Bara	11--12
8	Nepal Rastriya H.S. School	Auraha, Bara	11--12
9	Fa. Giri. Ra. Giri H.S.School	Jitpur,Bara	11--12
10	Nepal Rastriya H.S. School	Bakuliya,Bara	11--12
11	Nepal Rastriya H.S. School	Amlekhjung, Bara	11--12

Source: JSSMC

3.4 Landuse and Land Cover

Landuse and land cover (LULC) in JSSMC has been classified in to nine classes as below:

- 1) Cultivated land,
- 2) Built-up areas,
- 3) Forest,
- 4) Open Space,
- 5) Ponds,
- 6) Rivers,
- 7) Sand Deposits,
- 8) Transportation (roads) and
- 9) Canal.

The cultivated land has been further classified into irrigated land and unirrigated land (i. e. barren land), while the built-up areas are divided into three sub-classes such as i) residential areas, ii) institutional areas and iii) industrial areas. The table below presents the details about the landuse classes and sub-classes.

Table 5. Landuse classification in JSSMC.

S. N.	Landuse Classes	Landuse Sub-classes	Area (km ²)	Distribution (%)
1	Cultivated Land		170.1	51.74
1.1		Irrigated	169.64	51.60
1.2		Barren	0.46	0.14
2	Built-up		29.5	8.97
2.1		Residential	13.7	4.17
2.2		Institutional	7	2.13
2.3		Industrial	8.8	2.68
3	Forest		103.2	31.39
4	Open Space		0.51	0.16
5	Ponds		0.5	0.15
6	Rivers		18.4	5.60
7	Sand deposits		3.05	0.93
8	transportation		2.86	0.87
9	Canal		0.63	0.19
Total			328.75	100.00

The landuse classification and corresponding area indicated that the area has exceeded the area of the sub-metropolitan city that has to be verified in the send stage of the profile preparation processes. Figure below (Figure 7) presents the landuse classification of JSSMC.

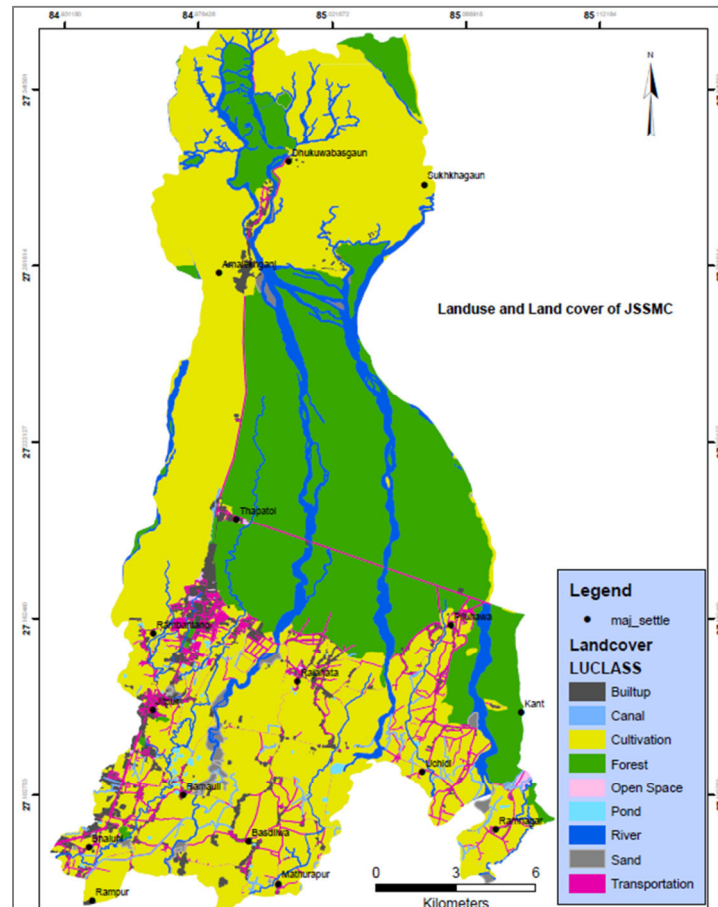


Figure 7. Landuse classification of JSSMC.

3.4 Agricultural Land and Distribution

Agriculture is the main subsistence source of livelihood in JSSMC. It is estimated that about 51% (~170 km²) of the land is being used for agricultural activities. Since the land in the Terai region is highly productive and fertile for the crop production and relatively better in irrigation system in comparison to other parts of the country. The main summer crop is rice; however winter crops such as wheat, maize, beans of various kinds, mustered are also popular. More recently people are also engaged on vegetable production while fruits such as mangos, liches, jackfruit, are also highly popular.

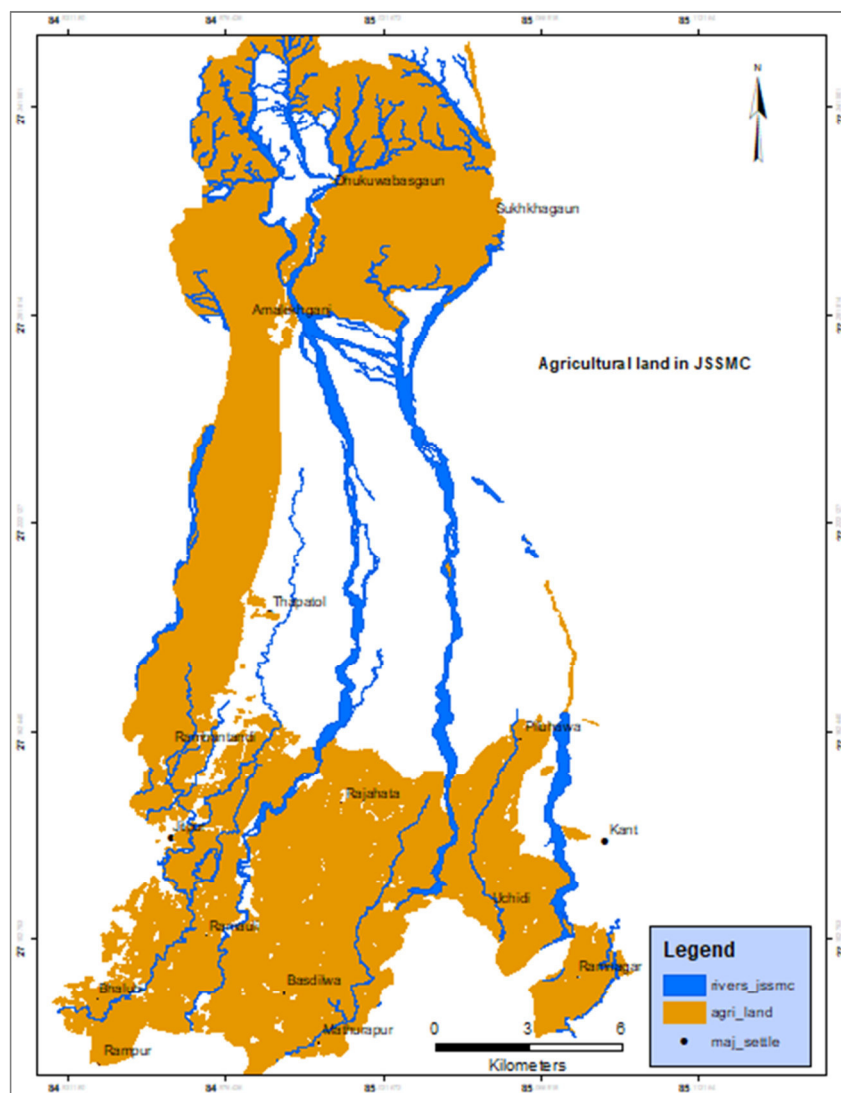


Figure 8. Agricultural land in JSSMC.

3.5 National Park and Forest

Part of the Parsa National Park (PNP) falls in the JSSMC in the toe side of Siwalik hill. The total area of PNP is about 627.4 km² out of which about 5% area is in JSSMC. The total forest area in JSSMC is about 103 km² as shown below in Figure 9.

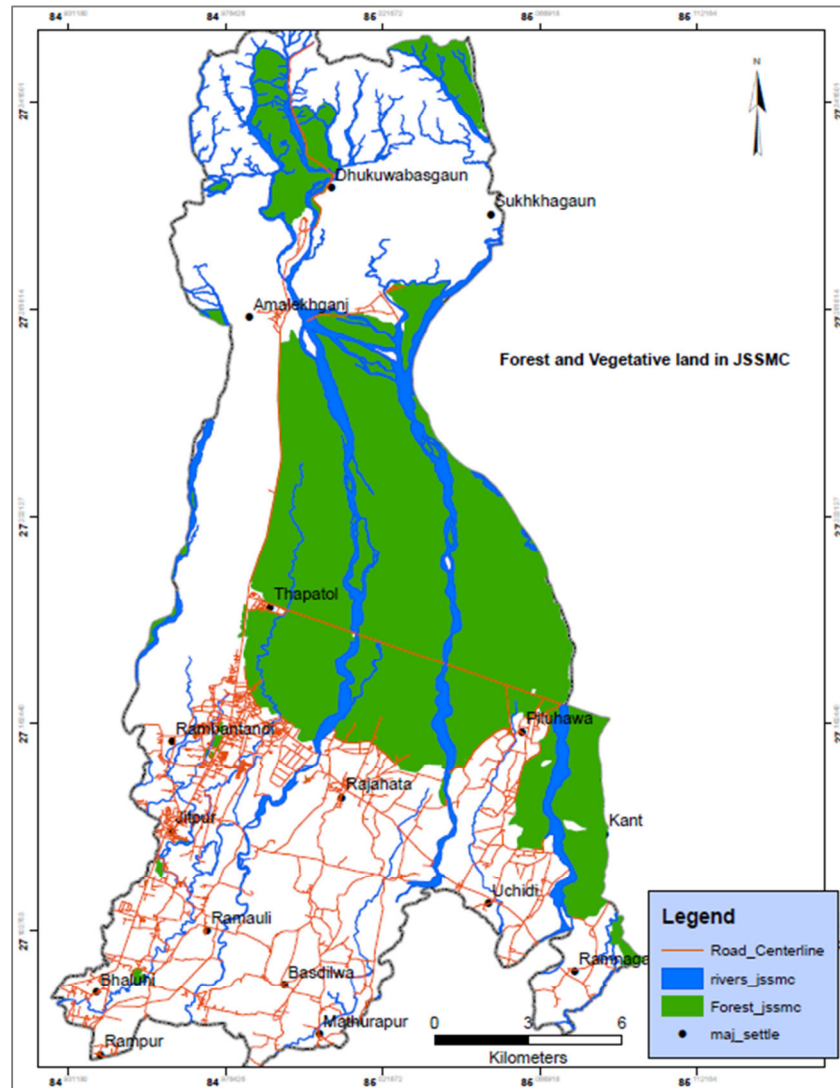


Figure 9. Forest and vegetative land and transportation Network in JSSMC.

3.6 Transportation Network

Transportation network in JSSMC has been well developed where most of the major settlements are connected by the roads. One of the important national highways (East-West Highway) is also runs through the sub-metropolitan city. The total length of the road in JSSMC is estimated to be 421.5 km out of which 52.6 km is black topped road that also includes the East-Waste Highways. The amount of Earth road is about 153 km while the gravel road is about 216 km.

The road network also been classified as urban, local and national as below:

- National Highway : 43 km
- Feeder Road : 6.9 km
- Urban Road : 79 km
- Local Road : 269 km
- Foot Trail : 23.5 km

Figure below (Figure 10) demonstrate the road network in the sub-metropolitan city:

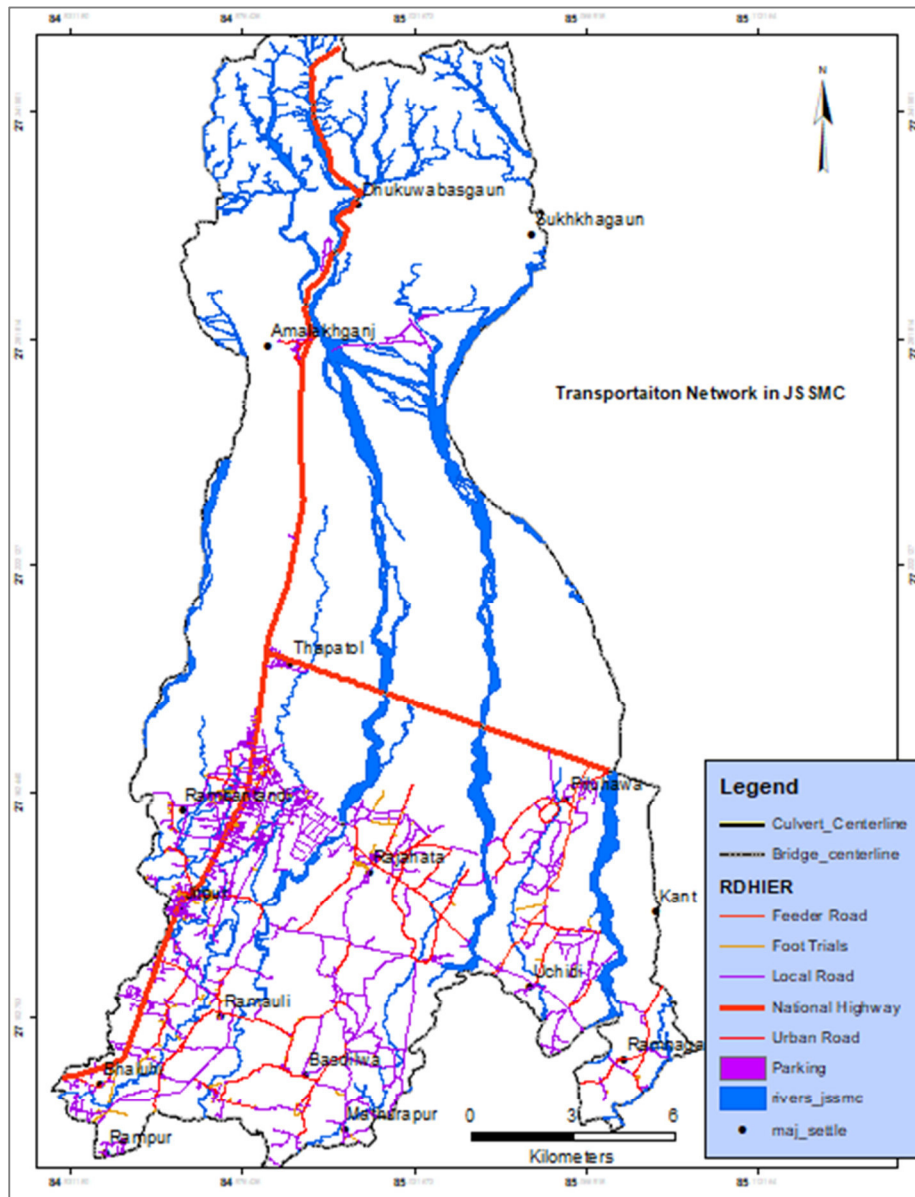


Figure 10. Transportation network in JSSMC.

3.7 Residential Area

The total households in the sub-metropolitan are estimated to be 21,211. The built-up area of those residential areas is about 4.17% of total land area of JSSMC. The following figure (Figure 11) presents the locations and areas of the residential built-up areas in JSSMC.

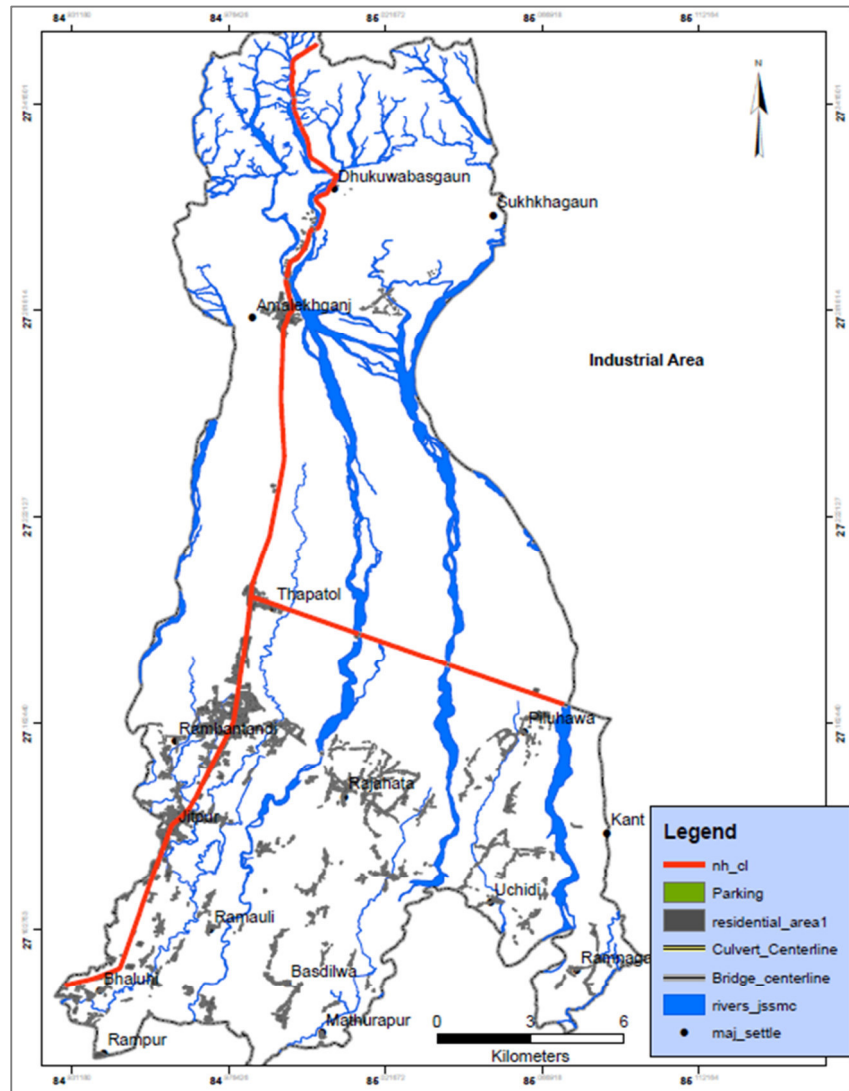


Figure 11. Residential area in JSSMC and national highways passing through the JSSMC.

3.8 Industrial Area

JSSMC is also contains small to medium level industries for which industrial area has been divided. Most of these industries are alongside of the national highways as indicated in the figure (Figure 12) below. The estimated area of the industrial built-up area is about 8.8 km² (2.68%).

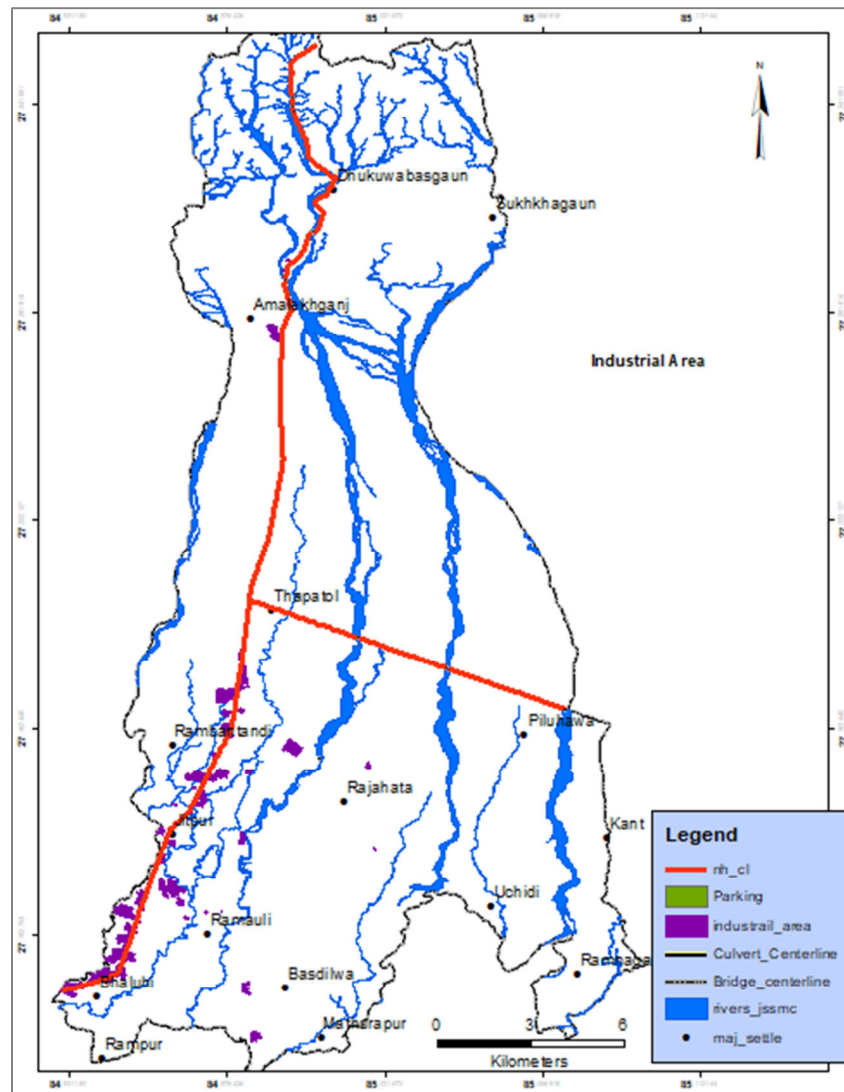


Figure 12. Locations of Industrial areas alongside of the national highways in JSSMC.

3.9 Ward Level Mapping

In this stage of profile preparation, an attempt has been made to prepare the ward level maps of the JSSMC. Landuse and political maps of all the 24 ward in JSSMC has been prepared and presented in the Annex.

Section 4: Concluding Remarks

Preparation of sub-metropolitan city profile is resources and time drive. Any information obtained from secondary sources must be field verified to make sure that the information is true and authentic. Any misleading data and information must be removed after field verification.

This study has initiated preparation of JSSMC profile, which is not the final. Since the profile preparation has been divided into two stages of work. This is the result of first stage work which includes the preparation of digital maps and figures of the sub-metropolitan city.

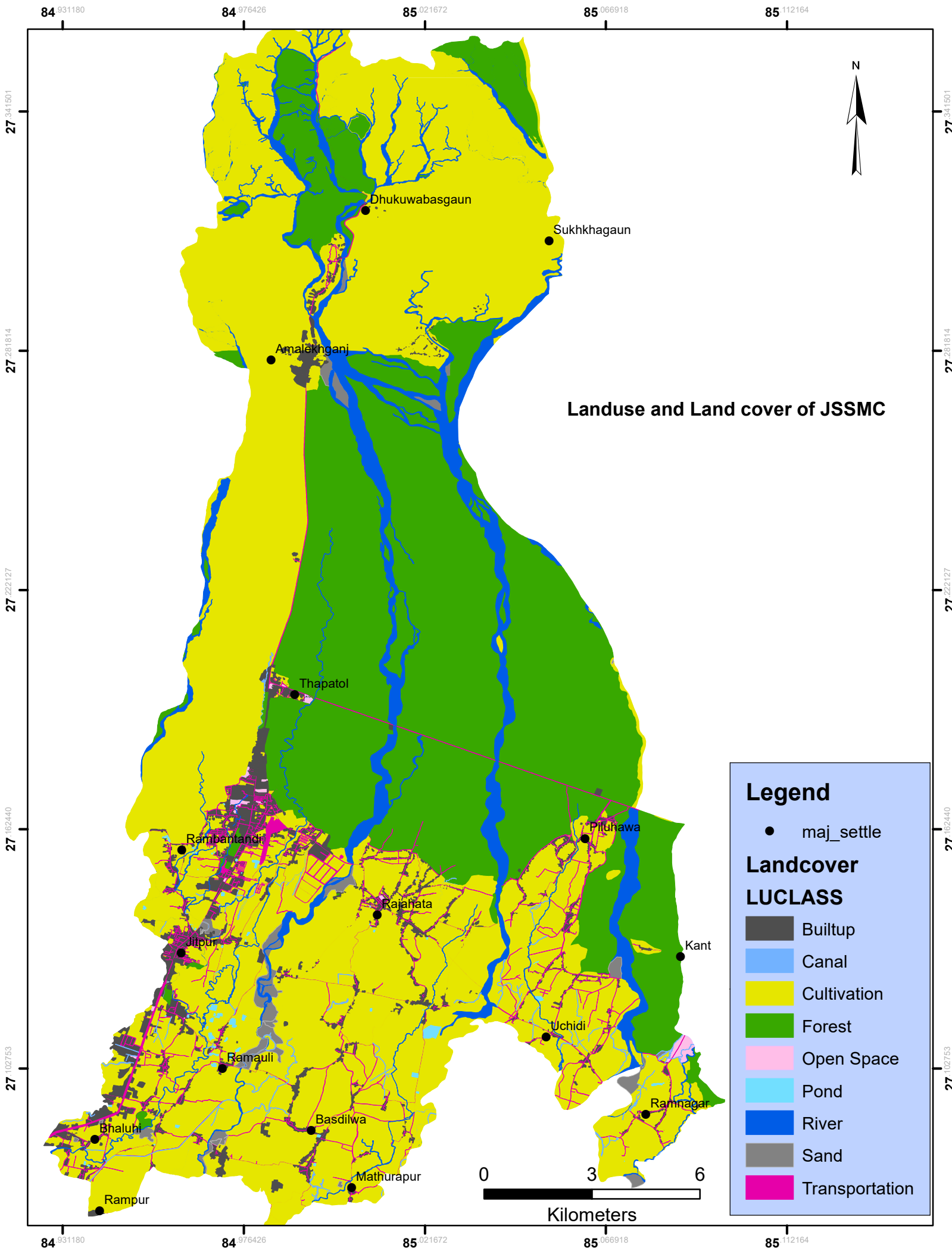
The data and information used at this stage of work were mostly from secondary sources such as remote sensing images, topographical maps, digital elevation model, open street maps and published reports and literatures. The data used in preparation of maps and figures shall be verified in the second stage of the profile preparation processes.

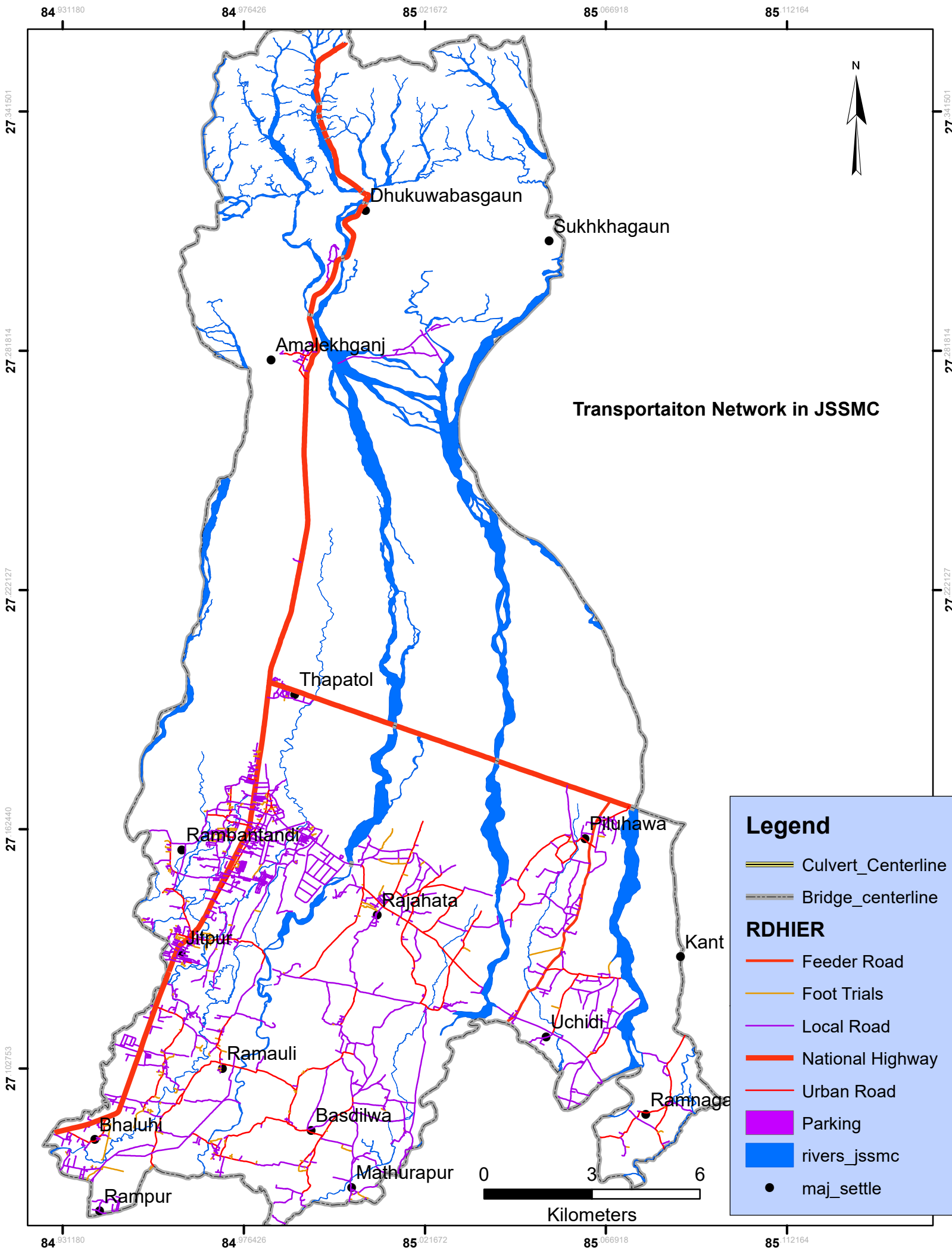
Following recommendations have been made to have the complete sub-metropolitan city profile:

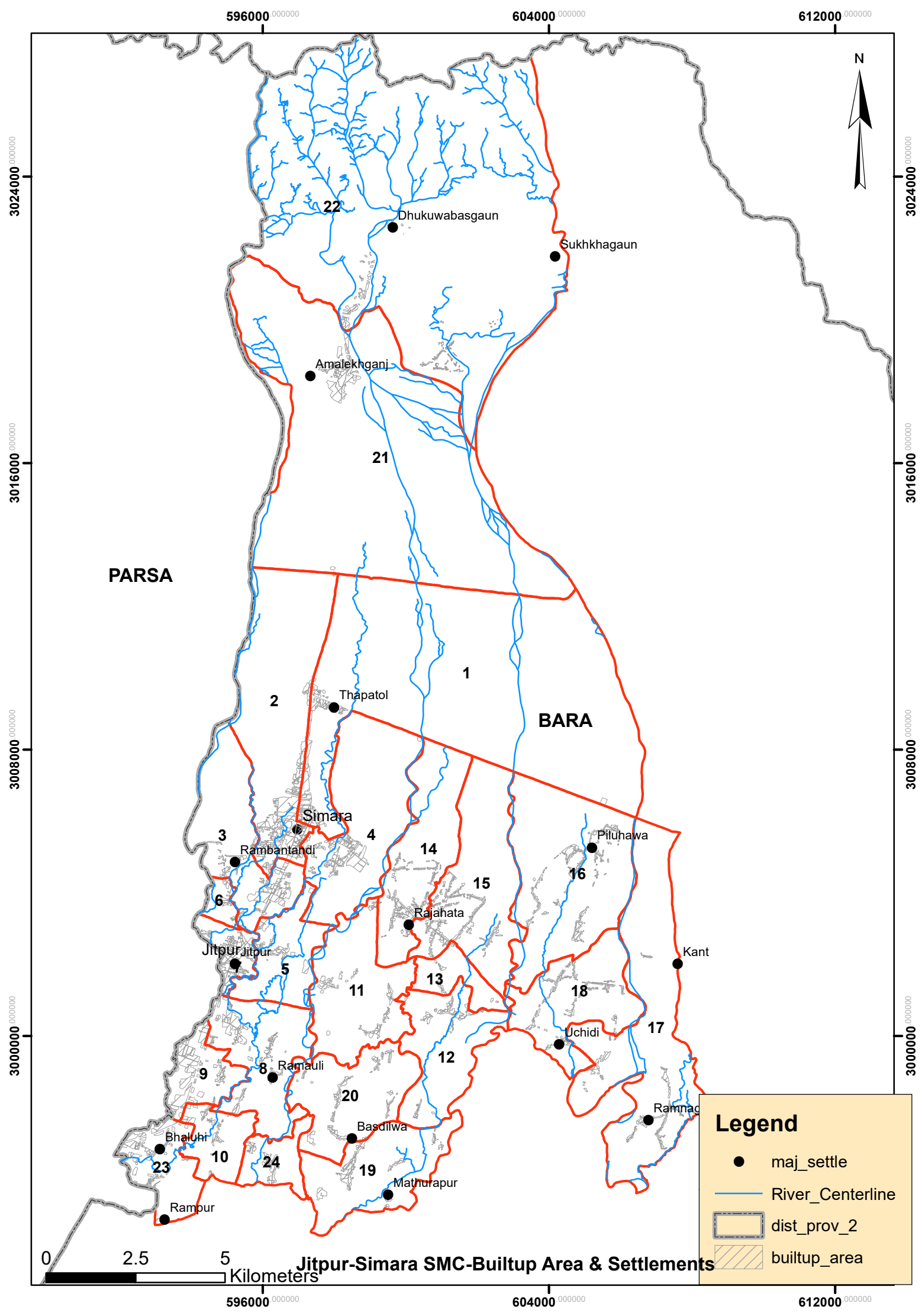
- 1) Field verification of the first stage work through GPS and other reference maps, walk over survey, consultation, etc.;
- 2) Socioeconomic survey (employees in different institutions, livelihood activities, income, health status, etc.) through detail household survey;
- 3) Population Survey (e. g. ethnicity, marginalized population, vulnerable population, economically active population, male-female ratio, etc.) can be done while conducting the socioeconomic survey, landless and other vulnerable population, disable population and their type;
- 4) Cultural and religious centers, activities performed in the conservation of local language, cultural and religious places, etc.;
- 5) Institutional survey and their service delivery (private, public and government);
- 6) Infrastructures such as roads of various kinds, bridges and culverts, playground and open spaces, electricity supply, drinking water supply, irrigation facilities, health care and hospitals, educational institutions;
- 7) Conservation of natural resources, forest and bio-diversity, community forestry,
- 8) Industrial areas and types of industries, employment opportunities;
- 9) Cooperatives and local youth clubs and their activities;
- 10) Tourism industries and potential areas and activities to be performed for the promotion of tourism development;
- 11) Agricultural production and practices (type of grain and quantities), and identify any surplus of the grains;
- 12) Types of disasters (flood, river bank undercutting, fire, thunderstorms, etc.) and disaster reduction plan at local level;
- 13) Public safety and security;
- 14) Export and Import facilities and requirements;

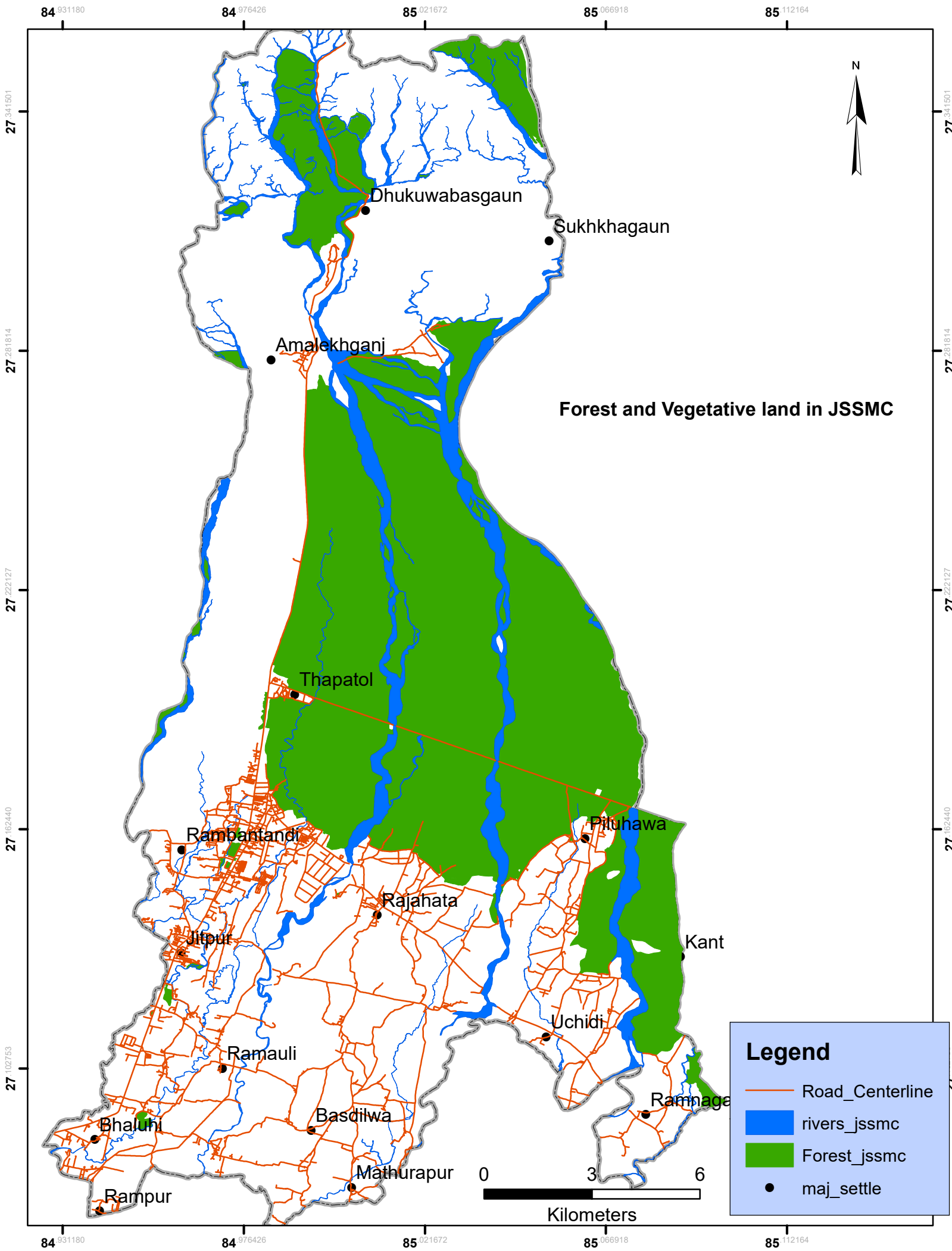
The profile shall made suitable recommendation of different interventions for the improvement of socioeconomic activities, infrastructure development, social security, conservation and DRR.

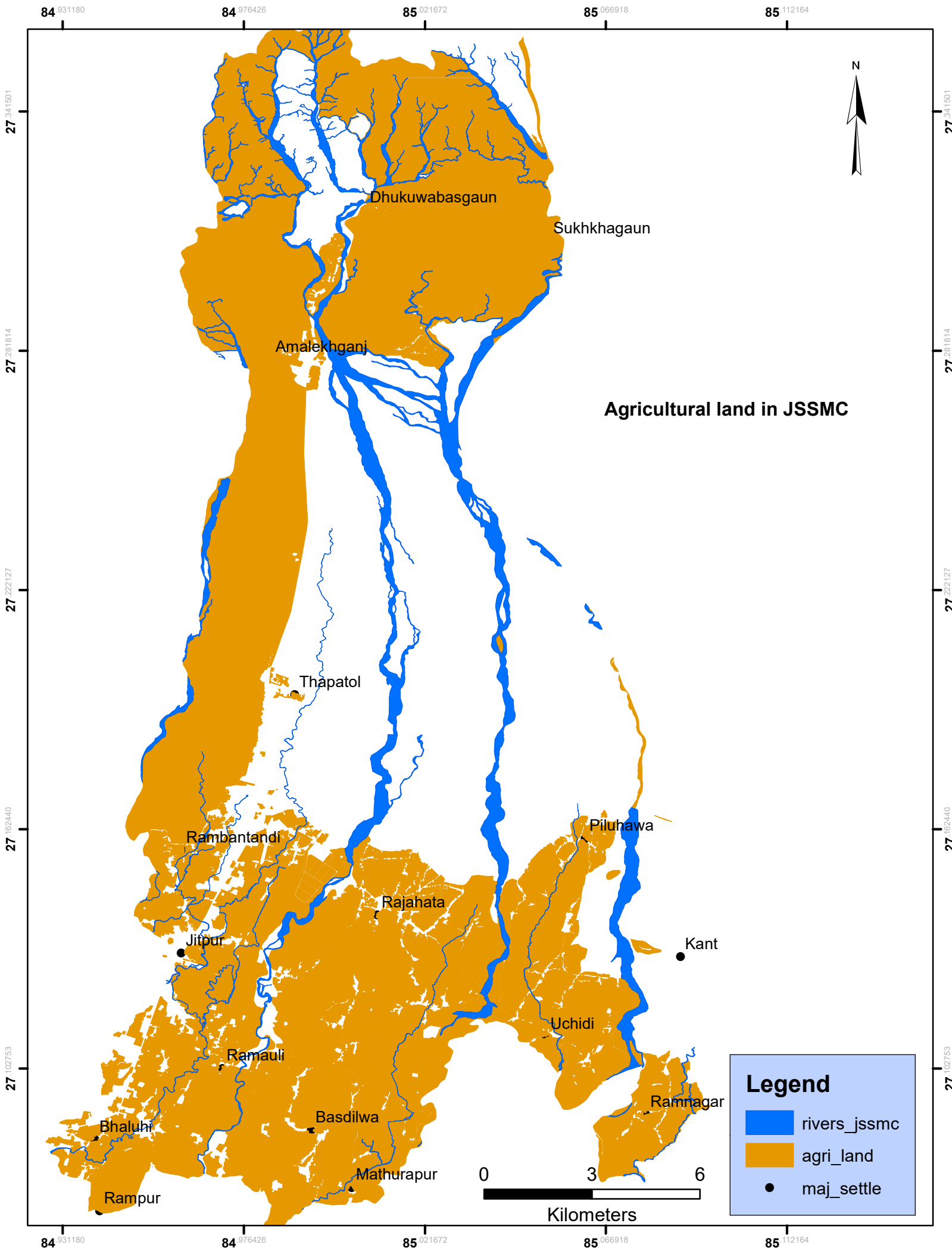
Annexes

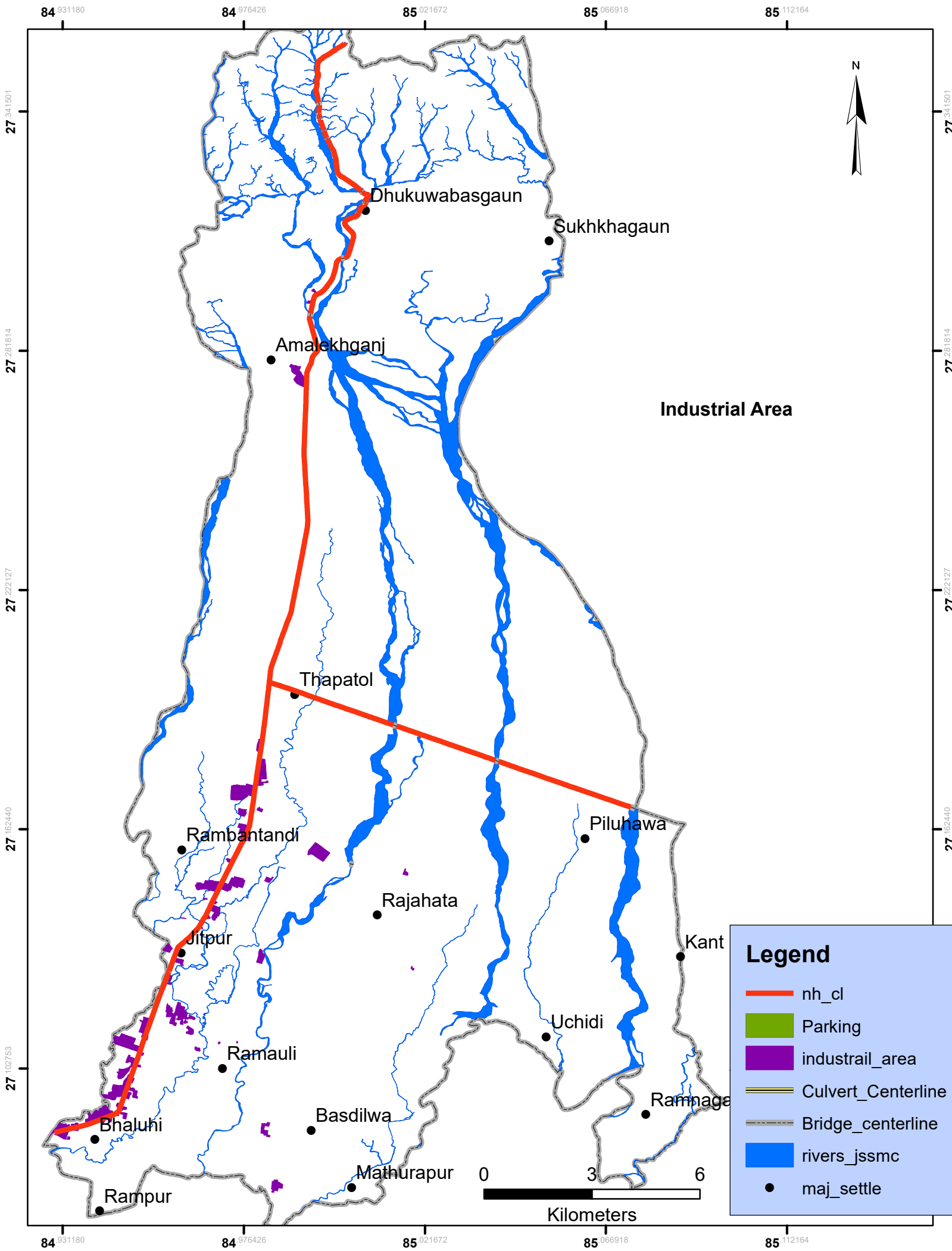


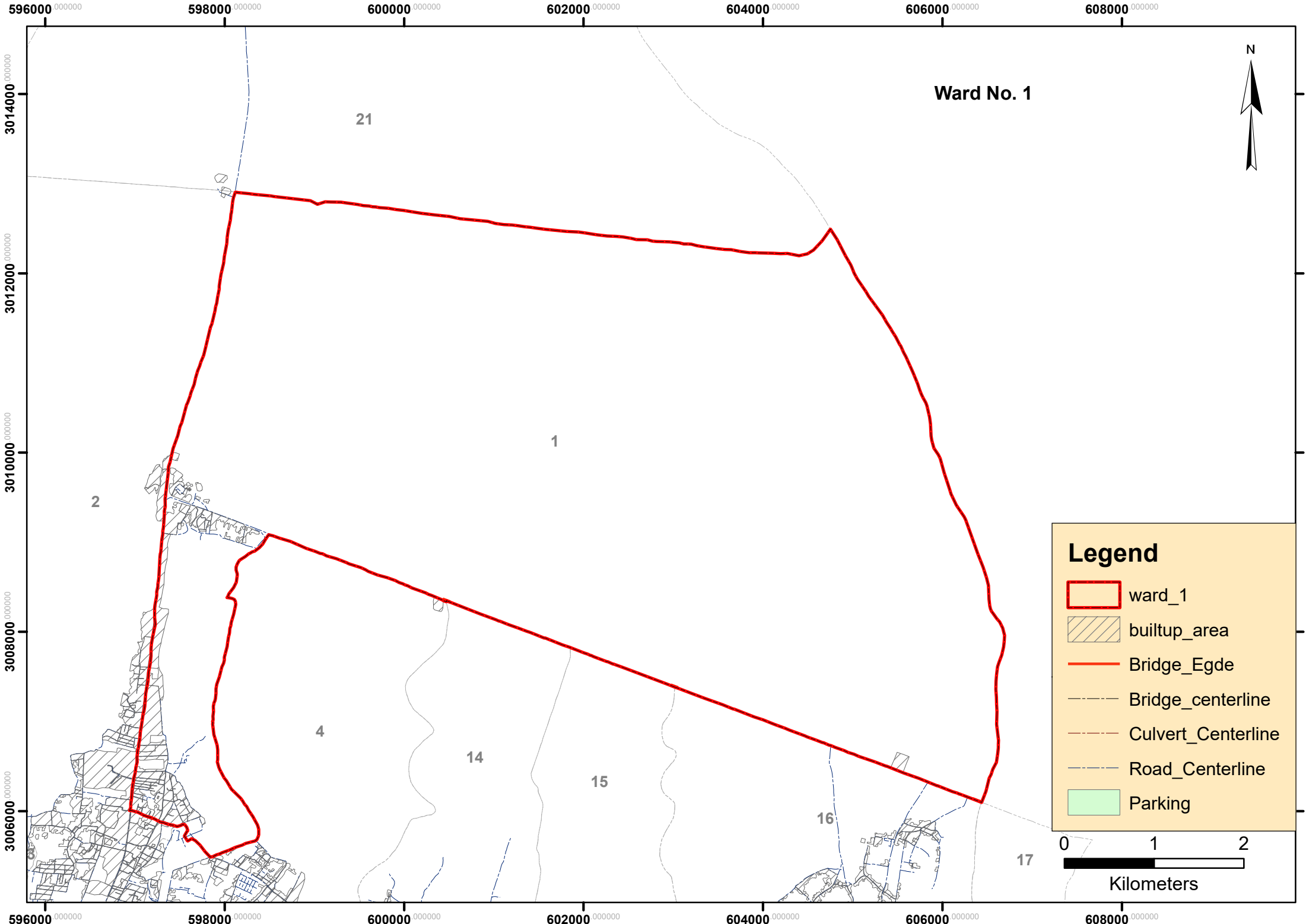












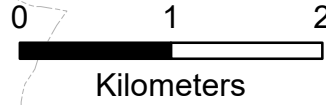


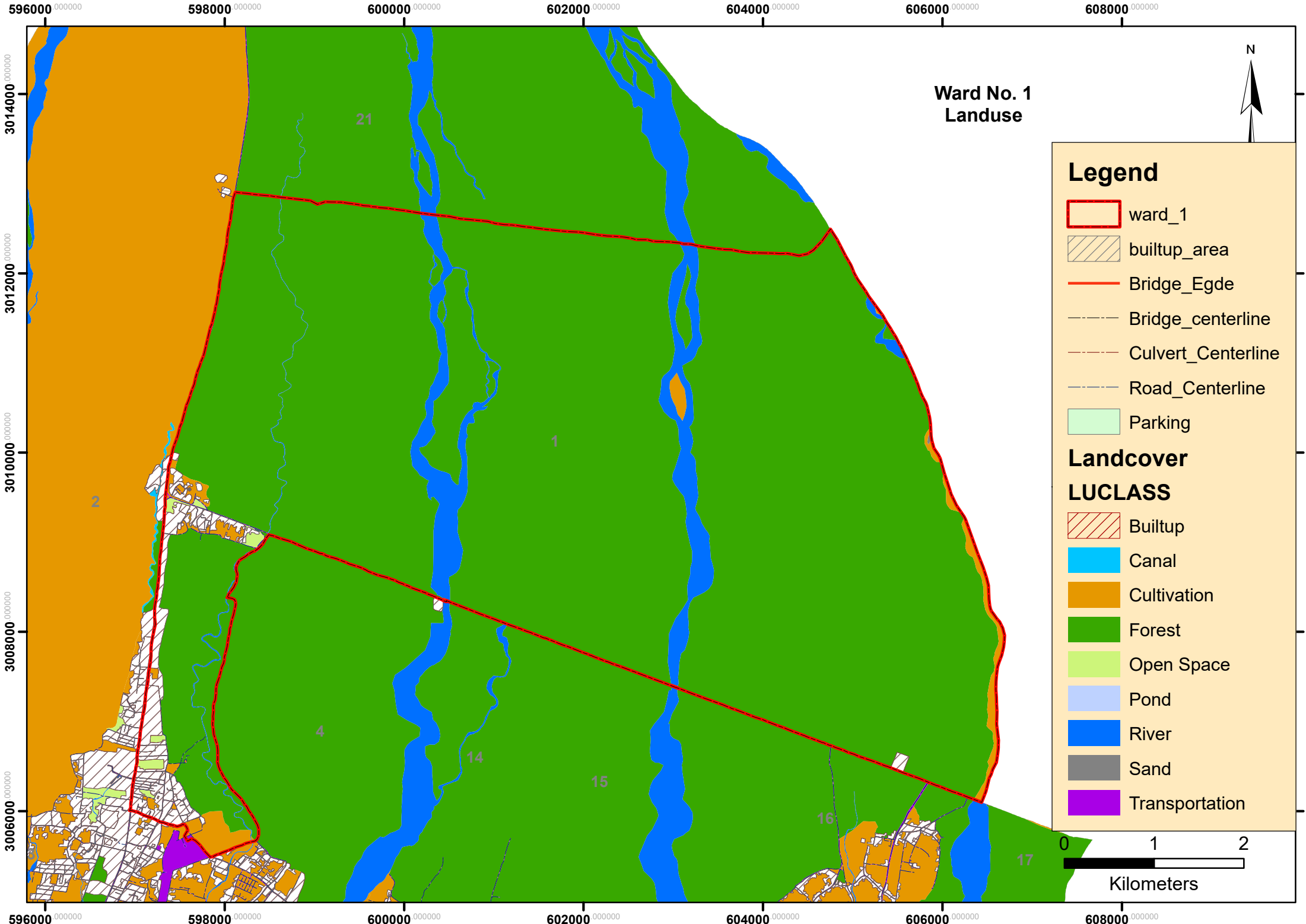


Ward No. 1

Legend

-  ward_1
-  builtup_area
-  Bridge_Egde
-  Bridge_centerline
-  Culvert_Centerline
-  Road_Centerline
-  Parking





Ward No. 1
Landuse

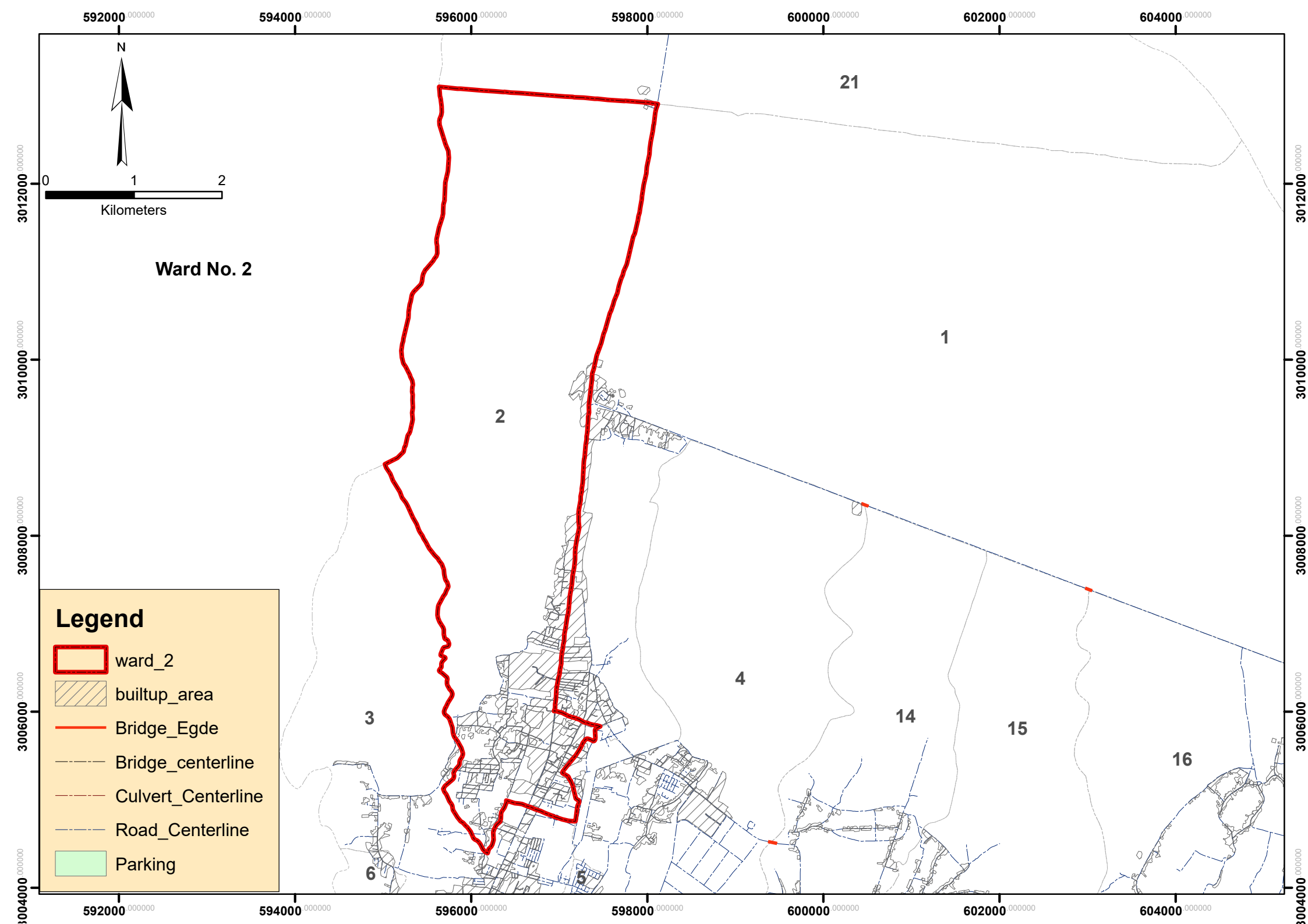
Legend

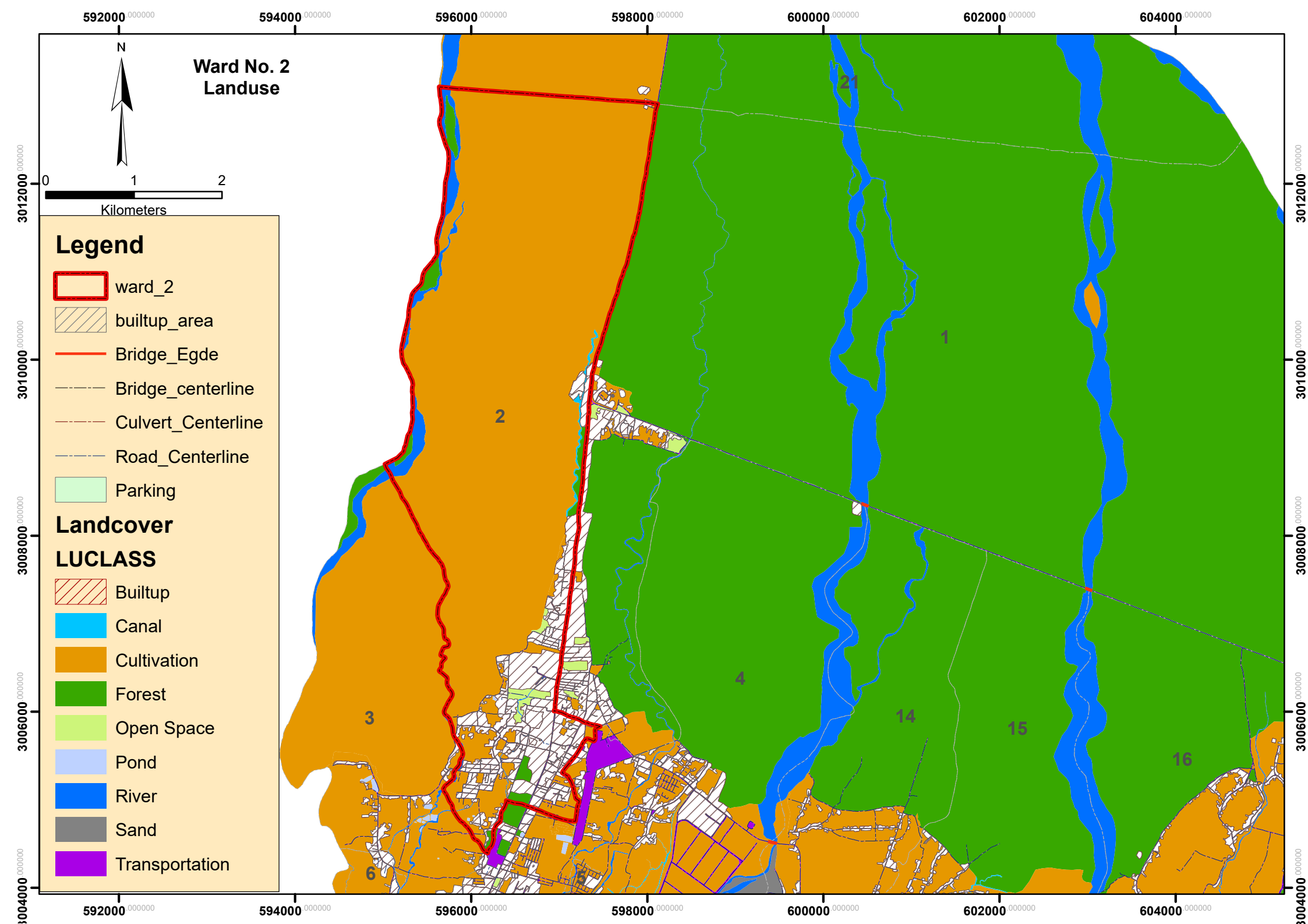
- ward_1
- builtup_area
- Bridge_Edge
- Bridge_centerline
- Culvert_Centerline
- Road_Centerline
- Parking

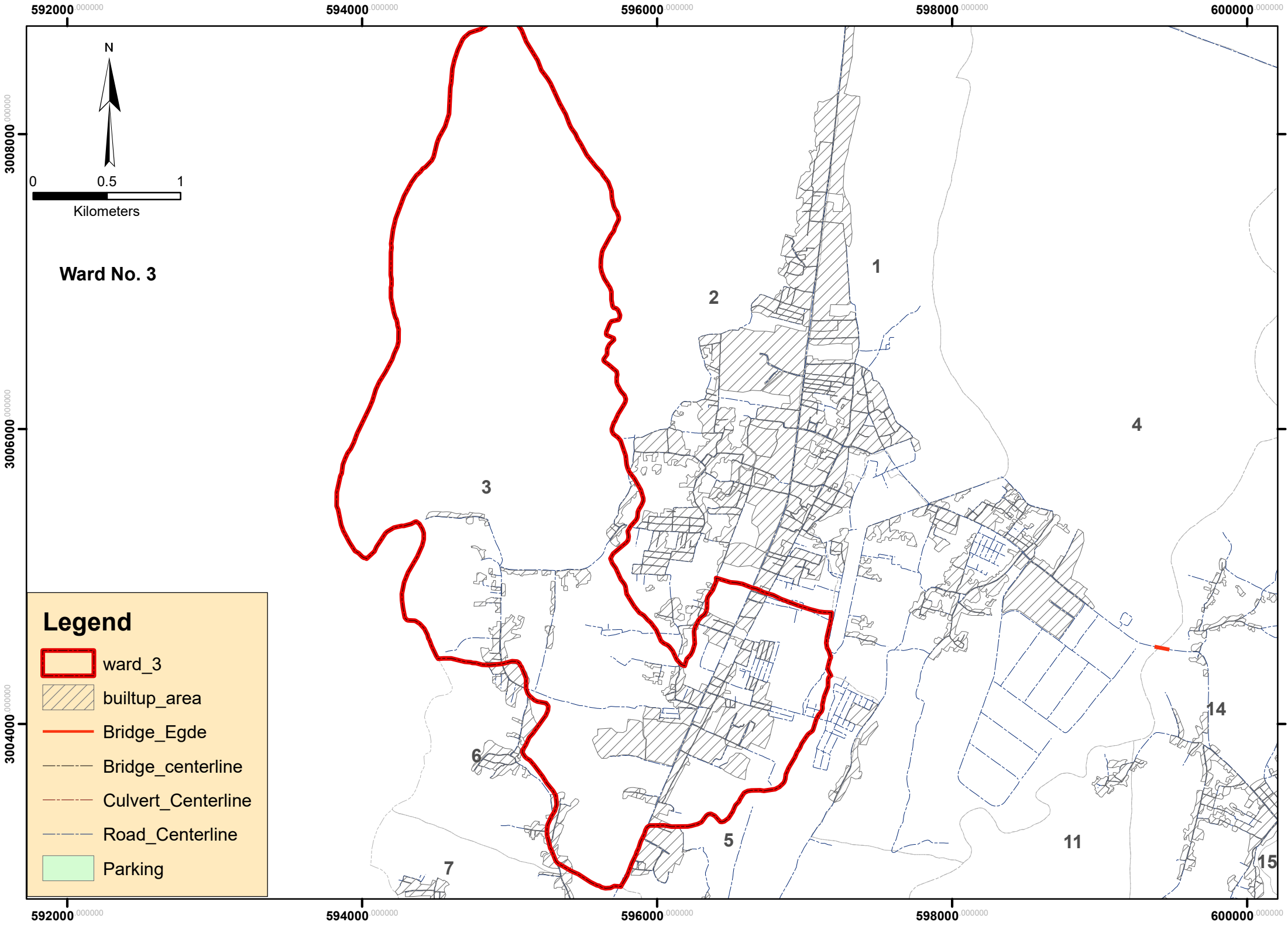
Landcover

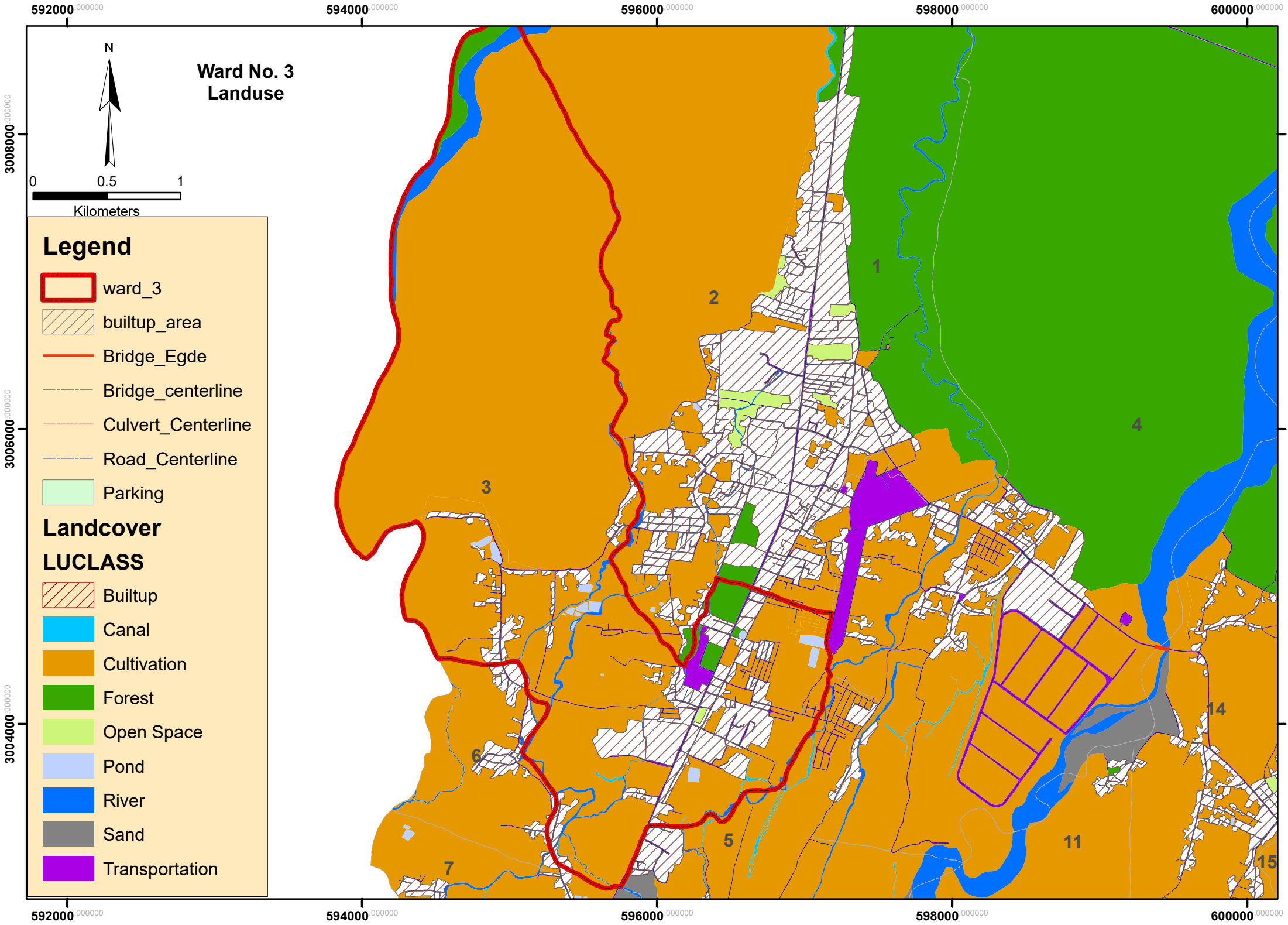
LUCCLASS

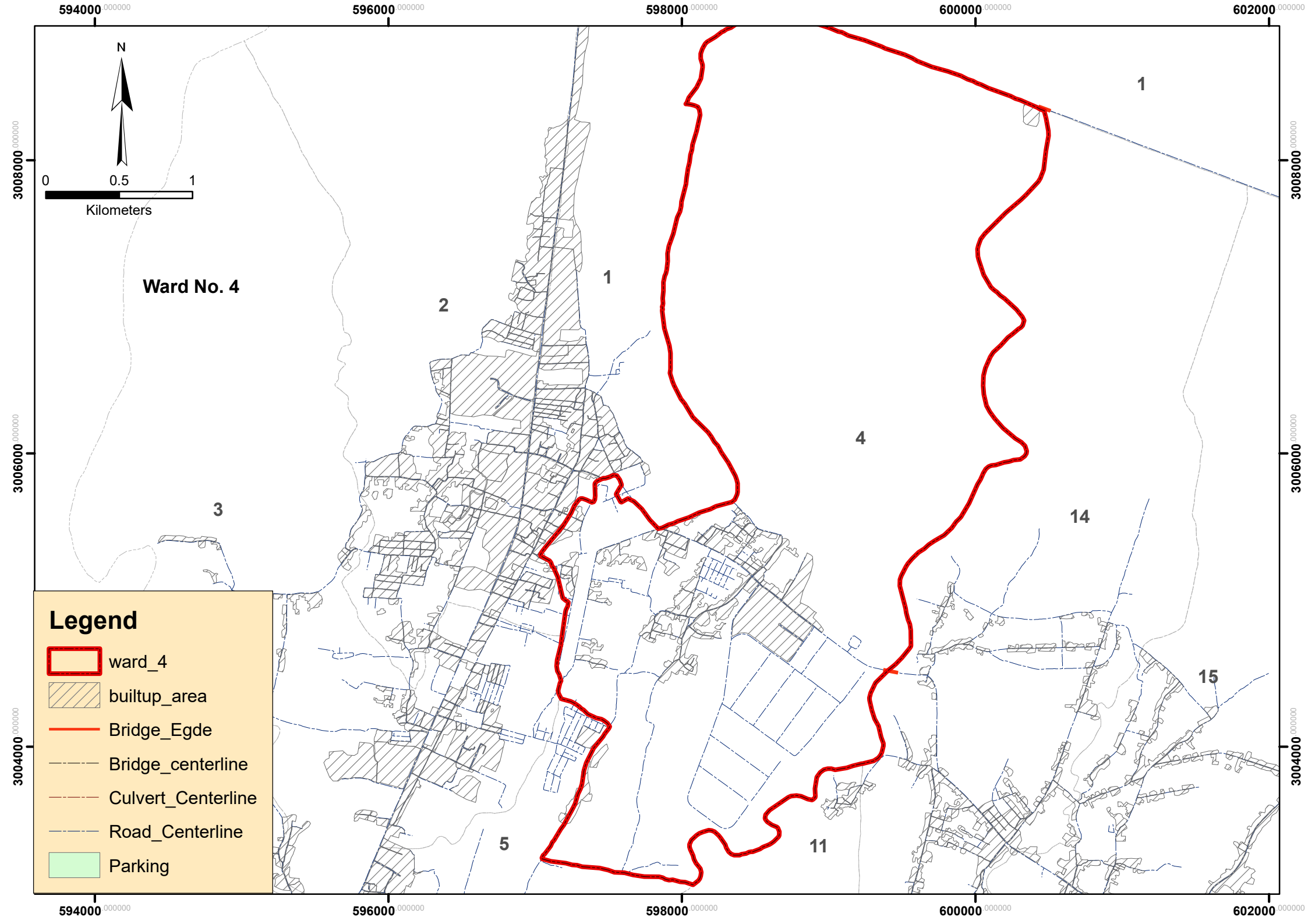
- Builtup
- Canal
- Cultivation
- Forest
- Open Space
- Pond
- River
- Sand
- Transportation

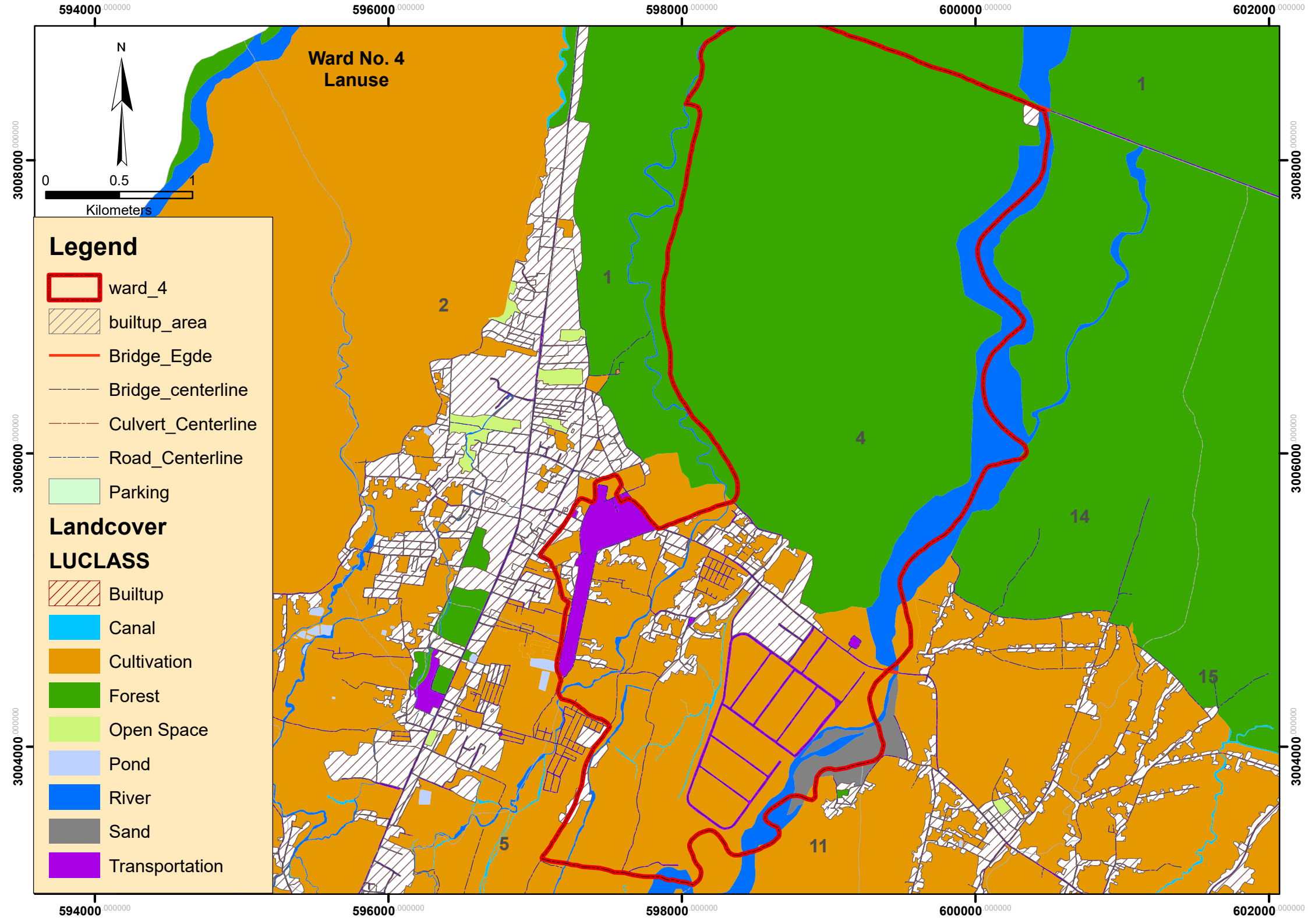


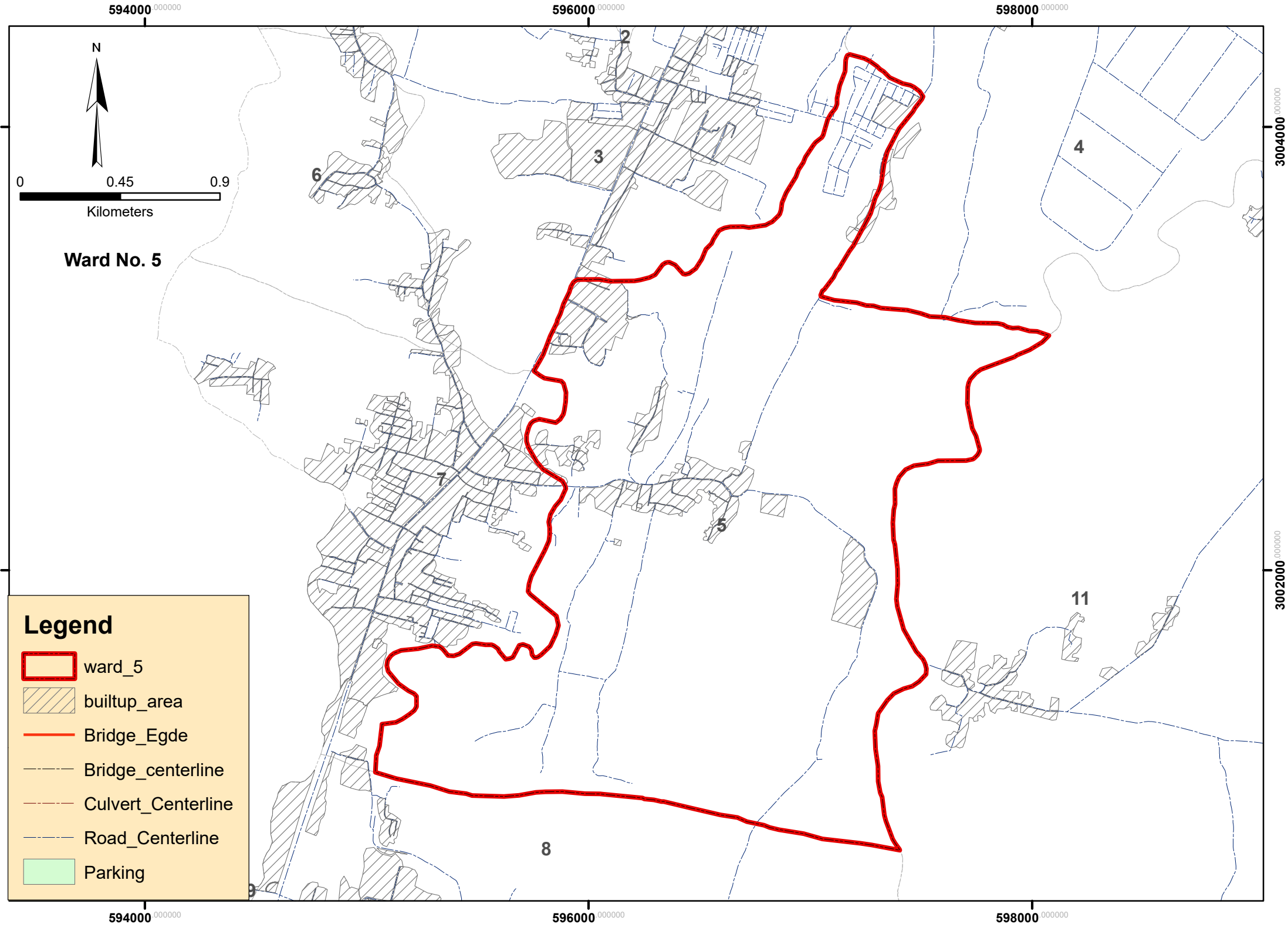


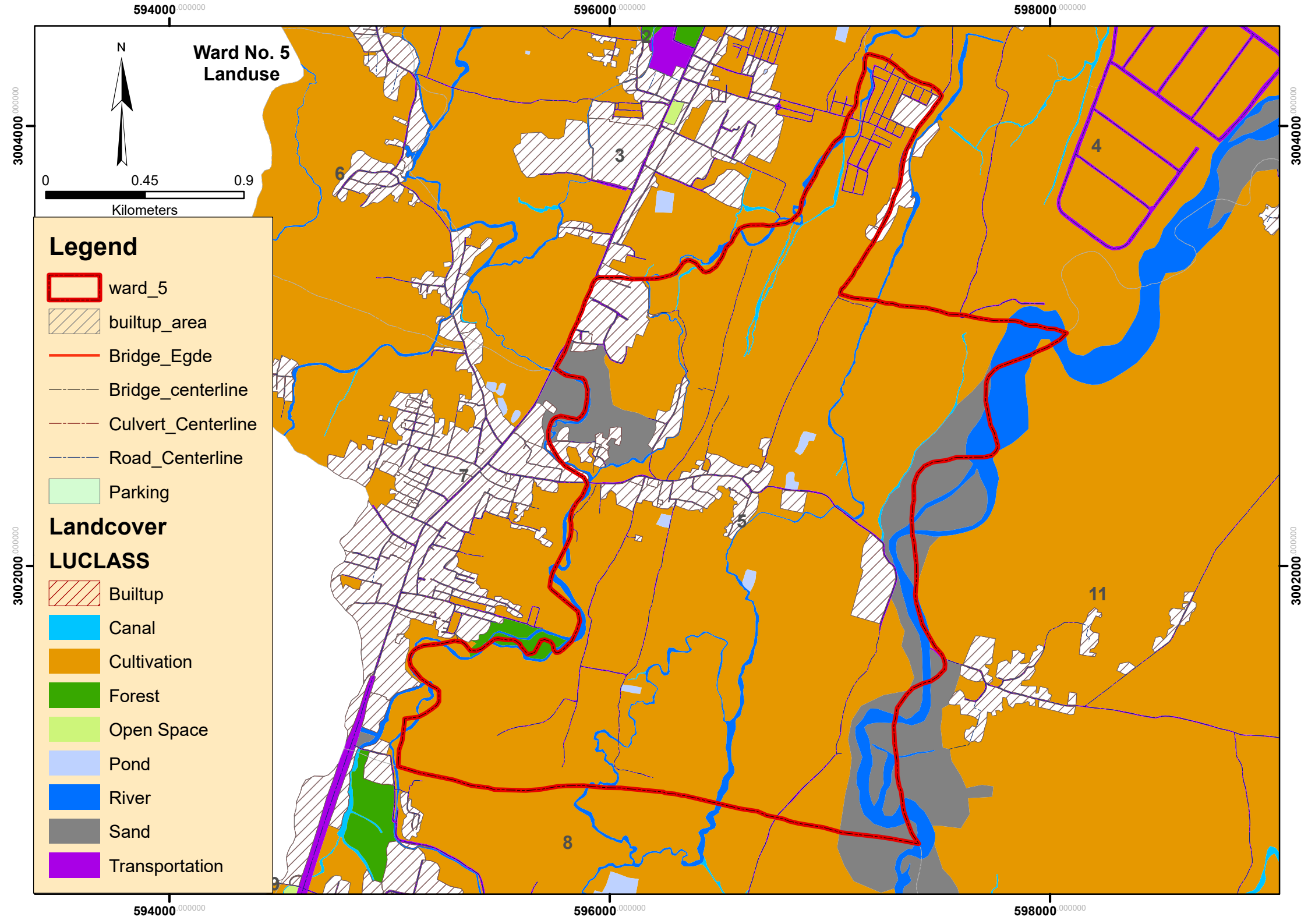


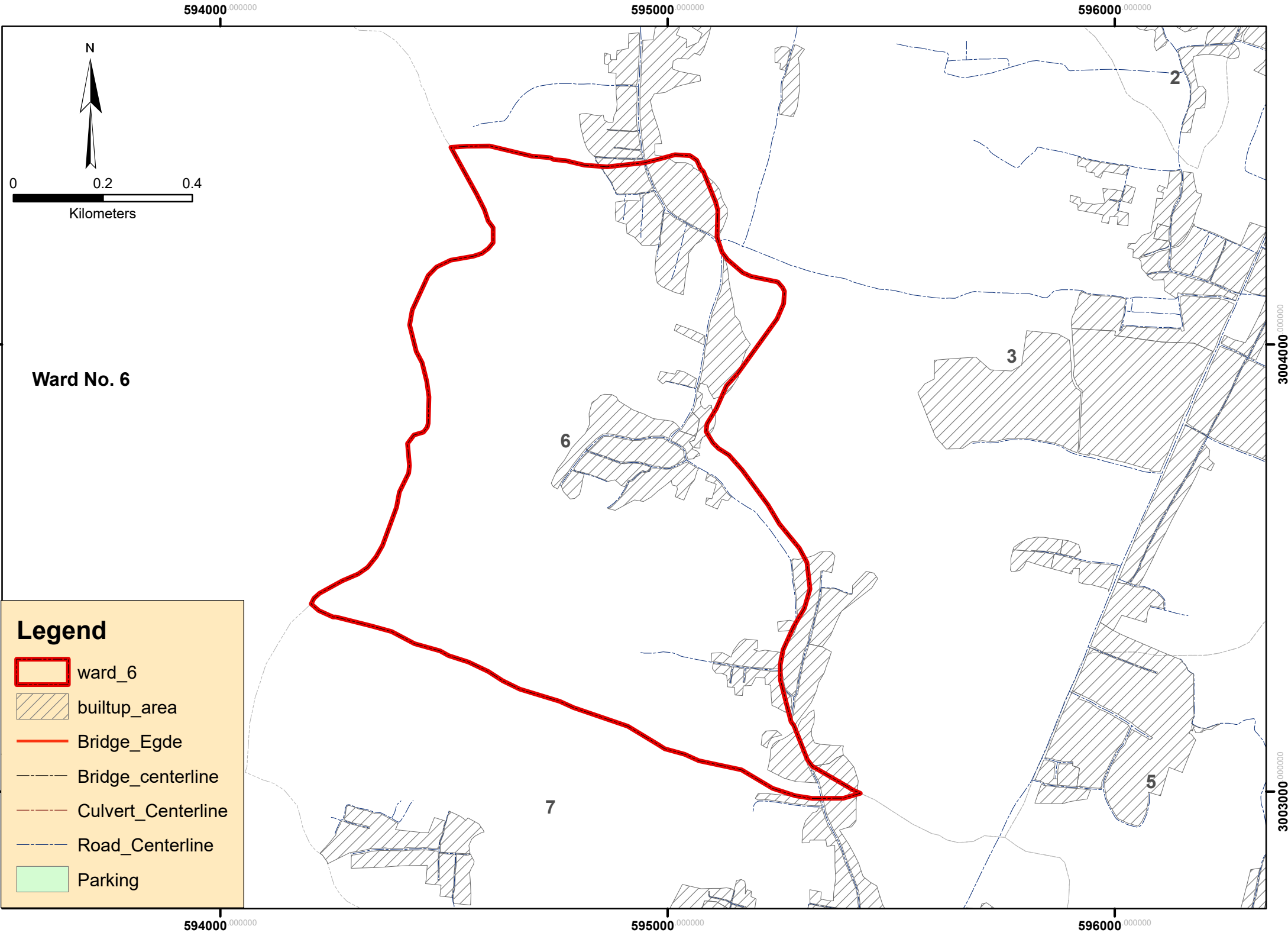




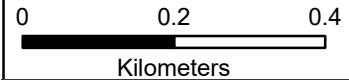








Ward No. 6
Landuse



Legend

- ward_6
- builtup_area
- Bridge_Egde
- Bridge_centerline
- Culvert_Centerline
- Road_Centerline
- Parking

Landcover

LUCCLASS

- Builtup
- Canal
- Cultivation
- Forest
- Open Space
- Pond
- River
- Sand
- Transportation

