

Payra-Kuakata Comprehensive Plan Focusing on Eco-Tourism

Kalapara Pourashava Urban Area Plan: 2021-2031

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Payra Kuakata Comprehensive Plan Focusing on Eco-Tourism

Draft Urban Area Plan of Kalapara Pourashava

June 2023

রেজিস্টার্ড নং ডি এ-১

বাংলাদেশ



গেজেট

অতিরিক্ত সংখ্যা
কর্তৃপক্ষ কর্তৃক প্রকাশিত

বৃহস্পতিবার, আগস্ট ২৯, ২০২৪

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
গৃহায়ন ও গণপূর্ত মন্ত্রণালয়
পরিকল্পনা শাখা-৩

প্রজ্ঞাপন

তারিখ: ০৬ ভাদ্র ১৪৩১ বঙ্গাব্দ/ ২১ আগস্ট ২০২৪ খ্রিষ্টাব্দ

নং ২৫.০০.০০০০.০৩২.১৪.০১৬.১৫(অংশ-১)/৩৬৪—তদানিন্তন পূর্ব পাকিস্তান সরকারের ১৭ জুলাই ১৯৬৫ তারিখের ৪৬৪ নং স্মারকে গঠিত ‘Urban Development Directorate’ এর কার্যাবলির ২নং ক্রমিকে বর্ণিত “to prepare and co-ordinate regional plans, master plans and detailed layout and site plans for the existing as well as the new urban centres excluding the areas covered by the present town development authorities of Dhaka, Chittagong and Khulna” এর প্রদত্ত ক্ষমতাবলে গণপ্রজাতন্ত্রী বাংলাদেশ সরকার “পায়রা বন্দর নগরী ও কুয়াকাটা উপকূলীয় অঞ্চলের পরিবেশ পর্যটনভিত্তিক সমন্বিত পরিকল্পনা প্রণয়ন” শীর্ষক প্রকল্পের আওতায় মাস্টার প্ল্যান (১টি রিজিওনাল প্ল্যান, ০৭ টি স্ট্রাকচার প্ল্যান, ০৭টি রুরাল এরিয়া প্ল্যান, ০৬টি আরবান এরিয়া প্ল্যান এবং এ্যাকশন এরিয়া প্ল্যান ফর সোনার চর এক্সক্লুসিভ টুরিস্ট জোন) প্রণয়ন সম্পন্ন করিয়াছে।

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(২৪৪৫১)

মূল্য : টাকা ৪.০০

বিশেষ দৃষ্টব্যঃ অনুমোদিত প্ল্যানসমূহ নগর উন্নয়ন অধিদপ্তরের প্রধান কার্যালয়, বরিশাল আঞ্চলিক অফিস, বরগুনা ও পটুয়াখালী জেলার জেলা প্রশাসকের কার্যালয় এবং সংশ্লিষ্ট উপজেলা ও পৌরসভা কার্যালয়ে জনসাধারণের পরিদর্শনের সুবিধার্থে সংরক্ষিত থাকিবে।

রাষ্ট্রপতির আদেশক্রমে

মোহাম্মদ খাদেমুর রহমান
সহকারী সচিব।

Executive Summary

The Urban Area Plan (UAP) is formulated to serve as a guide to the future town's infrastructure development together with the land use control. The Urban Area Plan is prepared for the Paurashava area and is meant for a period of 10 years. The Urban Area Plan is more elaborate than the Structure Plan and is divided into four chapters – Strategic Planning Zones, Transportation and Traffic Management Guidelines, Drainage and Environmental Management Guidelines and Ward Action Plan including Landuse Guidelines. Therefore, Urban Area Plan is the mid-level plan that covers the existing urban plan of Kalapara Paurashava. Urban Area Plan would guide land use and infrastructure within the area potential for urban settlements within next 10 years. This plan aims to formulate Urban Area Plan and Action Area plan at local level.

The presentation of this Report is in compliance with the Terms of Reference for Payra Kuakata Comprehensive Plan Focusing on Eco-Tourism. Kalapara a Paurashava of Patuakhali district is located at Kalapara Upazila in the southern part of the country. The Paurashava was established 1st March, 1997, as a A category Paurashava and covers 2 mouzas . The current population is approximately 22339 (BBS, 2022).

As per the planning standards set for present development plan, an amount of total 2031.83 acre of land proposed for urban services for next 10 years (With extension area). The future development infrastructure, amenities and services facilities are allocated in conformity with planning standards for urban areas based on the demand of local dwellers as collected through PRA survey.

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CHAPTER- 1: INTRODUCTION

1.1 Introduction

Urban Area Plan is concerned with the planned sustainable development of the urban area of a town or settlement and the protection of its environs. In establishing the limits of the urban area, this Plan considers existing development, projects approved for development but not yet built, and development in progress. Urban Area Plan includes those areas which require economic, physical and social renewal and areas likely to be subject to large scale development over the lifetime of the plan. The Land use Plan is one of the four components of Urban Area Plan. Land use Planning rules are statutory rules to control land use according to planning standard. It is based on land use policies including Local Plans, such as residential density, road standard, provision of infrastructure and services. The relevant Acts and Master Plans of the cities are the legal instruments, which is in force with regard to exercise planning control and standards. Therefore, future land use of Kalapara paurashava Area will be shaped by intermingling relation between existing and proposed land use.

The Urban Area Plan (UAP) will consist of the following plans:

- Land use Plan
- Transportation and Traffic Management Guidelines
- Drainage and Environmental Management Guidelines

1.2 Purpose of Urban Area Plan

Urban Area Plan is a statutory planning document to guide future urban development up to the year 2031. The plan will play an important role in enabling Pourashava Office to play greater role as a facilitator for promoting private sector development initiatives. These plans act as guidance to promote development, co-ordinate development and control development.

1.3 Reflection from Upper-Tier Plans

The Structure Plan provides a long term strategy up to the year 2041 for the development of Kalapara Upazila. It consists of a report and a map. It identifies the magnitude and direction of growth and recommends strategic and sectoral policies over the long term for the Kalapara

Upazila core urban area. The Urban Area Plan provides a mid-term strategy to the year 2031 for the development of the existing potential urban area and those areas likely to come under urbanization pressure over the next decade.

1.4 Area Coverage under Urban Area Plan

Kalapara, a Paurashava of Patuakhali district, is located at Kalapara Upazila in the southern part of the country. Kalapara became police station in 1928. It was upgraded to an upazila in November, 1983. Kalapara Upazila consists of 9 wards, 9 Unions, 58 mauzas, 24 mahallas and 217 villages. The Paurashava was established on 1st March, 1997 and covers 2 mouzas (4 sheets). The Paurashava consists of 9 wards with an area 4.56 sq.km (Field Survey, 2018). The Paurashava is bounded on the north by Chakamaiya and Tiakhali Union of Kalapara Upazila, on the west by Tiakhali Union of Kalapara Upazila, on the south by Nilgani and Mithagonj Union of Kalapara Upazila and on the east by Lalua Union of Kalapara Upazila.

Table- 1: Ward wise Area of Kalapara Pourashava

Ward Name	Area (sq. km)	Area (Acre)
Ward No-01	1.41	349.15
Ward No-02	0.31	77.41
Ward No-03	0.35	85.88
Ward No-04	0.17	42.10
Ward No-05	0.29	70.81
Ward No-06	0.20	48.69
Ward No-07	0.23	56.18
Ward No-08	0.47	115.43
Ward No-09	1.13	280.45
Total	4.56	1126.10

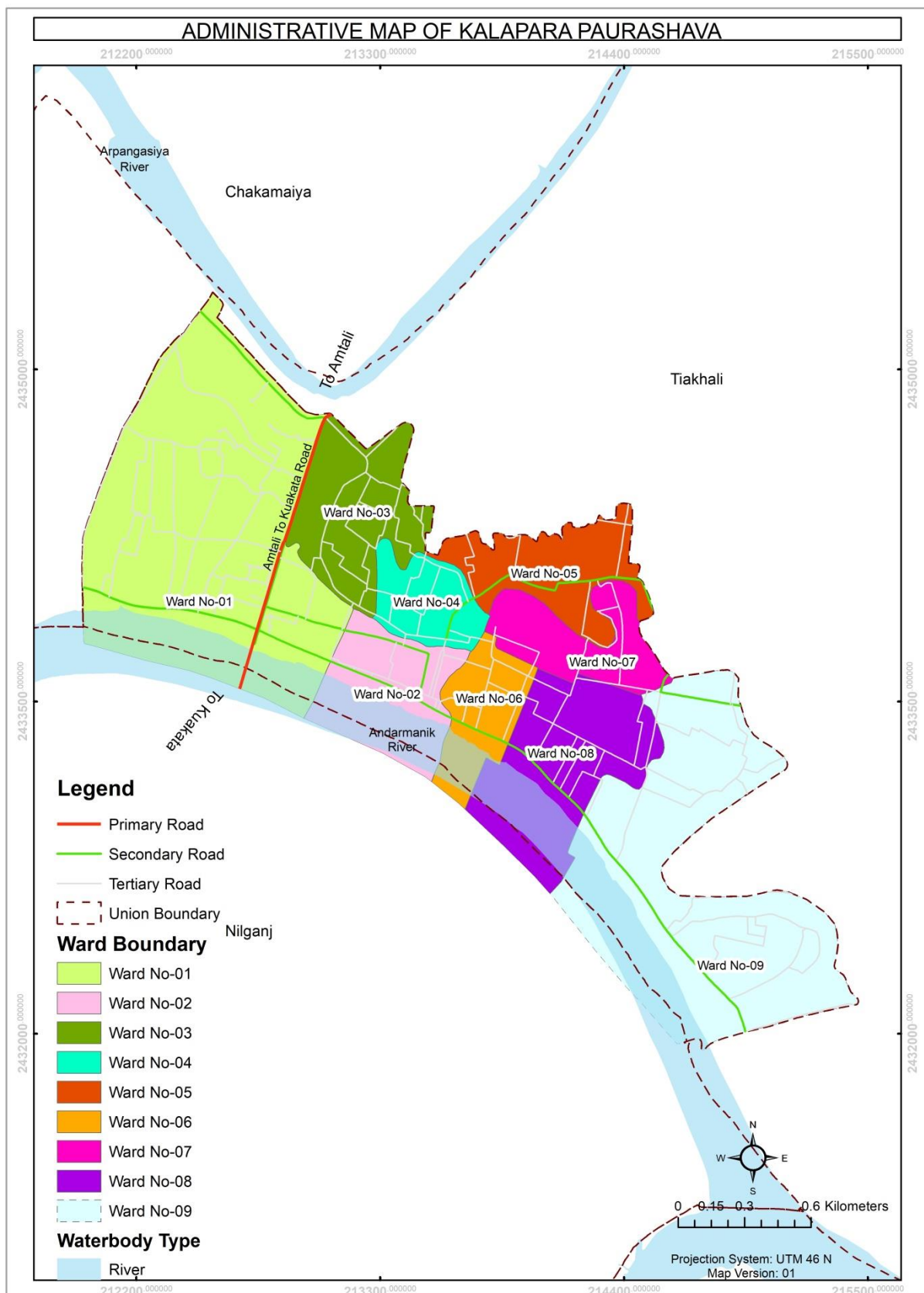


Figure 1: Administrative of Kalapara Pourashava

CHAPTER- 2: STRATEGIC PLANNING ZONES (SPZ)

2.1 SPZ Classification

The urban area of Kalapara has been divided into 4 Strategic Planning Zones (SPZ), each of them needs to be examined and actions related to promotion have to be identified. Strategic planning zones are important because they help to ensure that land use is managed in a coordinated and efficient manner, taking into account the needs and priorities of different stakeholders.

The Strategic Planning Zones of Kalapara Upazila are listed below:

SPZ 01: Upazila Town center (UTC)

SPZ 02: Urban

SPZ 03: Urban Fringe (West and East)

SPZ 04: New Urban Area (West and North)

Table- 2: Demarcated Area of SPZ

Table 2: Delineated Area of SPZ					
SPZ Category	Sub-Category	Mouza Name	JL No	Sheet No	Area (Acre)
New Urban Area	West New Urban Area	Khepupara	6	1	377.93
	North New Urban Area	Khepupara	6	2	261.52
		Khepupara	6	1	8.45
		Badurtali	7	2	194.72
		Badurtali	7	1	52.58
Sub Total					895.2
Upazilla Town Center		Khepupara	6	3	32.87
Urban		Khepupara	6	2	149.93
		Khepupara	6	3	365.31
		Badurtali	7	3	26.74
Sub Total					574.85
Urban Fringe	West Urban Fringe	Khepupara	6	1	304.16
	East Urban Fringe	Badurtali	7	3	257.55
Sub Total					561.71
Total					2031.76

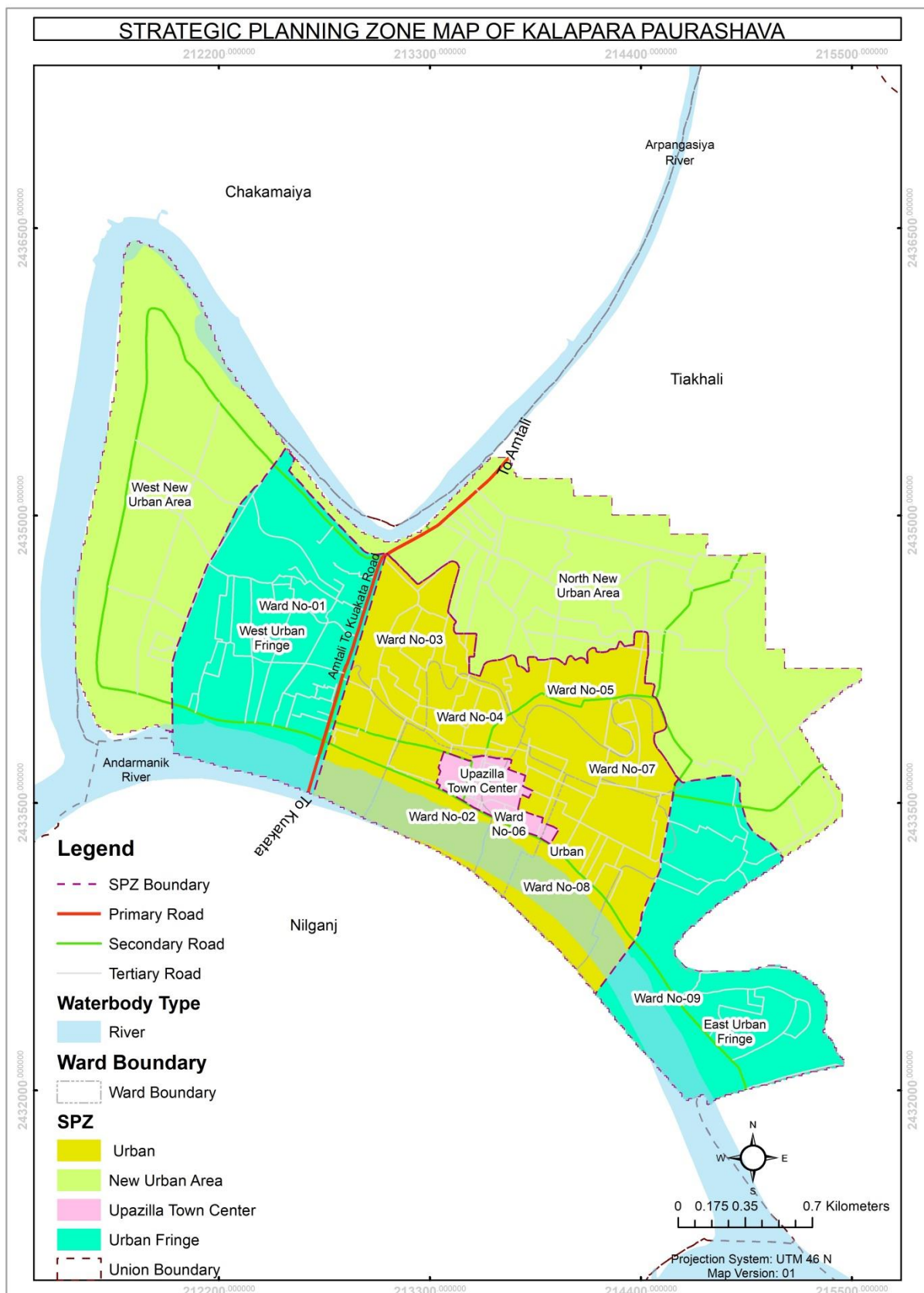


Figure 2: Strategic Planning Zones of Kalapara Pourashava

SPZ 01: Upazila Town center (UTC):

This Upazila town center is the administrative and commercial center of the upazila. It is the place where the upazila administration is located. SPZ 01 UTC is located in the center of Kalapara Pourashava. The zone comprises a high concentration of office buildings, retail stores, wholesale market, financial institutions, government buildings, and other commercial establishments. It is the most densely populated and busiest area of the Pourashava, with a high volume of pedestrian and vehicular traffic. It is also typically the most expensive area of the city in terms of real estate prices.

The CBD area comprises the main Bazar of the Upazila named Kalapara katchaBazar. Moreover, it is one of the growth centers in this Upazila. The main economic activities of Kalapara are centered on this bazar. It has a medium road network with the other parts of the Upazila as well as outer areas. In mixed-use areas, there are mainly residential buildings. Moreover, the Kalapara govt offices like AC land, Agriculture office, upazilla office, kalapara Court, Zila parisad Banglow, water development board, post office etc are located here.

Major Issues and Problems:

- Traffic congestion and lack of parking facilities.
- Hazardous infrastructures development.
- Highest density development area
- Poor road network and drainage system
- Highest land values
- Water logging is a common problem during the rainy season.

Opportunities

- Improving and widening the existing roads may reduce the transportation problem and improve the transportation system.
- Located beside the river and near the highway.
- Road widening
- Old canal network around the zone.
- Construction and establishment of Multi-storied infrastructures.
- Some ponds are proposed to be reserved as drinking water sources.

Action Required

- Widening of roads and Construction of drainage should be pivotal. This will substantially reduce the traffic and drainage problem. The local authorities can invest in infrastructure such as roads, drainage systems to make the area more accessible and safer for businesses and customers.
- Promote all investors to ensure that the area develops with a positive image of Kalapara.
- Parking facilities are necessary to avoid congestion.
- Restoration of Old canals and big ponds should be completed by the respective authority.
- Prepare an action plan.

SPZ 02: Urban

This is adjacent to UTC, with existing high to moderate densely developed and open/green space. The zone comprises the relatively high density development area except CBD zone. This is the prime residential area of Kalapara Pourashava. This zone is occupied by most of the people in this Pourashava. Moreover, it is predicted that high development will occur over time in this area. Depending on this analyses, a lot of public facilities and services are also proposed in this zone. This area will promote high-density residential and Arterial commercial land uses.

Major Issues and Problems:

- Building footprints are growing uncontrolled without any authorization.
- Major commercial activities are amalgamating with core residential areas rapidly.
- Need proper drainage network with conservation of natural water bodies.
- No initiative for the provision of infrastructure reserve.
- Several road are in poor condition.

Opportunities

- Though this area is predicted to be highly developed, there is much space for a planned or systematic approach to development.
- Proximity to the CBD area and Upazila Road.
- Major roads and canals form the boundary. Thus, the transportation network has a good opportunity for well development.
- Several public and community services are proposed here to facilitate the local people.

Action Required

- Defer development activities on land required for new road.
- Initiate community-based actions to prepare local development plan.

- Pursue different government agencies to prepare infrastructure plans before development takes place.
- Linear development should be discouraged to contain the urban areas in manageable limits in view of the resource constraint.

SPZ 03: Urban Fringe (West and East):

Low-density development area refers to the low-density cluster of rural settlements and shows a comparatively low growth rate than the medium-density area during the past years. Similarly, it is assumed that low development will occur over time in this area. This area will encourage low-density residential development and neighborhood commercial land uses. Moreover, some major Utility and Public Facilities are proposed in this zone that will serve the major urban areas. Low-density Residential is intended primarily for low-density, single-family, detached residential dwellings and vacant land with constraints to development at higher densities. Areas where availability of utilities and public facilities and where sensitivity to the natural environment or natural hazards indicate reduced sensitivity, are appropriate for such type of low-density development. Commercial development in such areas should be limited to only neighborhood retail facilities which include convenience retail and service establishments relying upon frequent purchases and having small trade area

The zone comprises the relatively low density development area around the periphery of the Pourashava. This area describes urban agriculture with rural settlements in nature. This zone covers most portions of Ward 01 and ward 09

Issues and Problems

- These zones are situated mainly in semi-urban and urban fringe areas.
- Very Low-density development.
- Spontaneous development without proper infrastructure provision
- No initiative for the provision of infrastructure reserve.

Opportunities

- Due to Low-density development, it has a rural nature.
- Immense Utility and Public Facilities are proposed in this zone such as water treatment plant, waste disposal site, Bus Terminal etc. that will serve the major areas of the potential urban area.
- The transport corridor and natural setting marks the zone as high-quality residential area.

Action Required

- Identify the alignment of proposed roads and roads that need up-gradation.
- Initiate community-based awareness programs to preserve and protect water bodies.
- Motivate the community to maintain a proper ground coverage and open space ratio
- Initiate community-based actions to prepare local development plans.
- Pursue different government agencies to prepare infrastructure plans before development takes place.
- Prepare Local Area Plan on a priority basis.

SPZ 04: New Urban Area:

This is located outside of existing Paurashava boundary, based on spatial analysis which is verified by public hearing with local people and administration. This zone describes the potential urban areas of Kalapara Pourashava. Pourashava population is increasing day by day. The city is expanding to north and west to meet the need of expanding population.

Major Issues and Problems:

- Semi-urban area
- Low/moderate density
- Spontaneous development without proper infrastructure provision
- No initiative for provision of infrastructure reserve

Opportunities

- Low density development
- High land
- Proximity to the existing urban area
- Major road and canal forms the boundary

Action Required

- A layout plan should be prepared and maintained by respective authority.
- Identify the alignment of proposed roads and roads those need up-gradation;
- Defer development activities on land reserve required for new road and road up-gradation.
- Initiate community based awareness program to preserve and protect water bodies.

CHAPTER- 3: TRANSPORTATION AND TRAFFIC MANAGEMENT GUIDELINES

3.1 Introduction

This section of the Urban Area Plan (UAP) intends to set out some guidelines for the transport sector development and its relevant institutional setup. The major areas of concern are network and infrastructure, traffic regulations, services, and institutional aspect. Also, different instructions are grouped under individual guidance notes on different topics.

The critical question here is how far the scenario of the future can be predicted with some level of accuracy. Specially, in a sector like transport that is heavily dependent upon technology, the underlying assumptions can shift quickly that can render much of the decisions invalid.

3.2 Existing Conditions of Transportation Facilities

A comprehensive transportation study is undertaken to investigate the existing transportation infrastructure, transportation modes and modal share scenario of Kalapara Paurashava and to estimate the anticipated transportation needs of the town up to the year 2031. Accordingly, the transportation study is conducted to determine the present travel patterns and the characteristics of existing transportation facilities to forecast the future travel demand and develop transportation guidelines. Traffic volume survey has been conducted to find out the scenario of average daily traffic, peak hour traffic and off-peak hour traffic. Origin-Destination survey has been carried out to know the pattern of traffic generation, traffic distribution, traffic modes and traffic costing, travel behavior etc. Growth center survey has been conducted at 5 points in Pourashava to determine the traffic congestion factors and conditions. Stakeholder interview has been accomplished to understand the traffic conditions in this area and find out the potential decisions to solve traffic problems.

3.3 Existing Road Network

The primary roads are the urban highways whose function is to channelize the longer movement from one place to another and beyond. The primary road of Kalapara Paurashava is connected in north directions and these roads maintain connectivity with the outside areas of Paurashava. Moreover, the primary roads are also connected with secondary roads. Secondary road cannot provide access to individual buildings because the consequent

frequency of interruptions would give rise to traffic dangers. Tertiary road connect secondary road with access road. The national highway Dhaka to patukhali to kalapara to kuakata passes through this paurashava.

From the physical feature survey it has been observed that about 73.09% (53.01 km) of the roads are Pucca, 12.76% (9.25 km) roads Katcha and the rest of the roads are Semi-pucca 10.26% (14.14 km).

Existing Road Category of Kalapara Pourashava

Road Category	Length (km)	Percentage
Path	21.41	29.52
Primary Road	1.32	1.81
Secondary Road	7.69	10.60
Tertiary Road	42.11	58.06
Grand Total	72.52	100.00

Table- 3: Existing Road Type of Kalapara Pourashava

Type	Length (km)	Percentage
Katcha	9.25	12.76
Pucca	53.01	73.09
Semi Pucca	10.26	14.15
Total	72.52	100.00

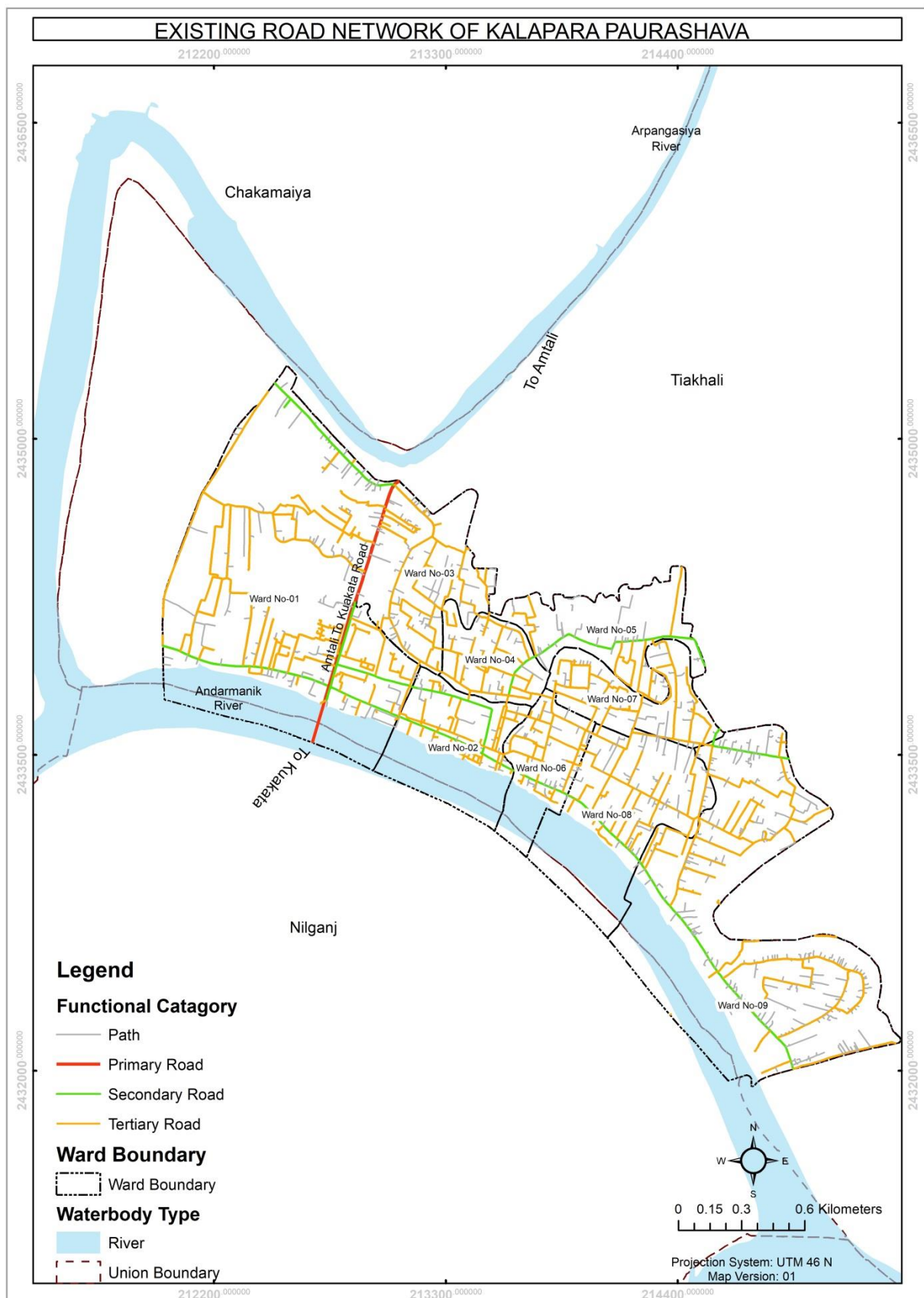


Figure 3: Existing Road Network of Kalapara Pourashava

3.4 Existing Waterways

Water transport network of Kalapara Paurashava has significant importance in carrying both people and goods. Boat, trawler and launch are used for carrying both passenger and commodity frequently. There is an existing launch ghat in Kalapara.

3.5 Others Transportation System

A proposal has already been made for a rail way to pass through this Paurashava.

3.6 Transportation Development Plan

3.6.1 Future Projections and Travel Demand Forecasting

With the increase of population, demand on travel will increase with time. Estimating the demand for transportation facilities and services is one of the most important analysis tasks in transportation planning. The demand includes not only passenger travel but also the movement of goods. Whether conducting a regional transportation planning study or examining the impacts of transportation of a new development site, estimating expected travel demand at some future date is critical point of departure for transportation planning.

At Kalapara Paurashava, the existing road network is quite sufficient for accommodating present volume of traffic. At Kalapara Paurashava about 12.7% of the roads are katcha and needs to be constructed as pucca or at least semi-pucca. Moreover, most of the roads are narrow. Alignment of main roads should be straight for improving transport quality. Widening of these roads and new construction of some roads will act as a vital role for accommodating future traffic volume. Moreover, the people of Kalapara Paurashava depend on both road network and water transport network. This will also help to reduce pressure on road transport network. Forecasting travel demand requires variety of data such as historical data on traffic, missing link, economic importance, trip generation and distribution pattern, routes choice, modal spilt, etc. Growth direction is also a considerable component for the demand analysis of the road.

3.6.2 Road Network Plan

Kalapara is a small town with a very low volume of internal and external traffic movement. Considering traffic volume and discussion with Paurashava authority and PRA, consultants have established a road hierarchy based on the functional area within the Paurashava as well as the internal and external linkage. Existing Access roads will be connected with Tertiary

and Secondary roads for better mobility. Following table shows the standard of future development of road network.

Table- 4: Standard for Future Development of the Road Network of Kalapara Paurashava

Landuse Category	Road Classification	Right of Way (RoW)
Circulation Network	Primary Road	80-100 feet
	Secondary Road	60 feet
	Tertiary Road	40 feet
	Access Road	12-20 feet

Table- 5: Proposed Road Network

Proposed Road Category	Length (Km)	%
Primary Road	3.60	4.85
Secondary Road	8.12	10.95
Tertiary Road	61.33	82.66
Access Road	1.14	1.54
Total	74.19	100.00

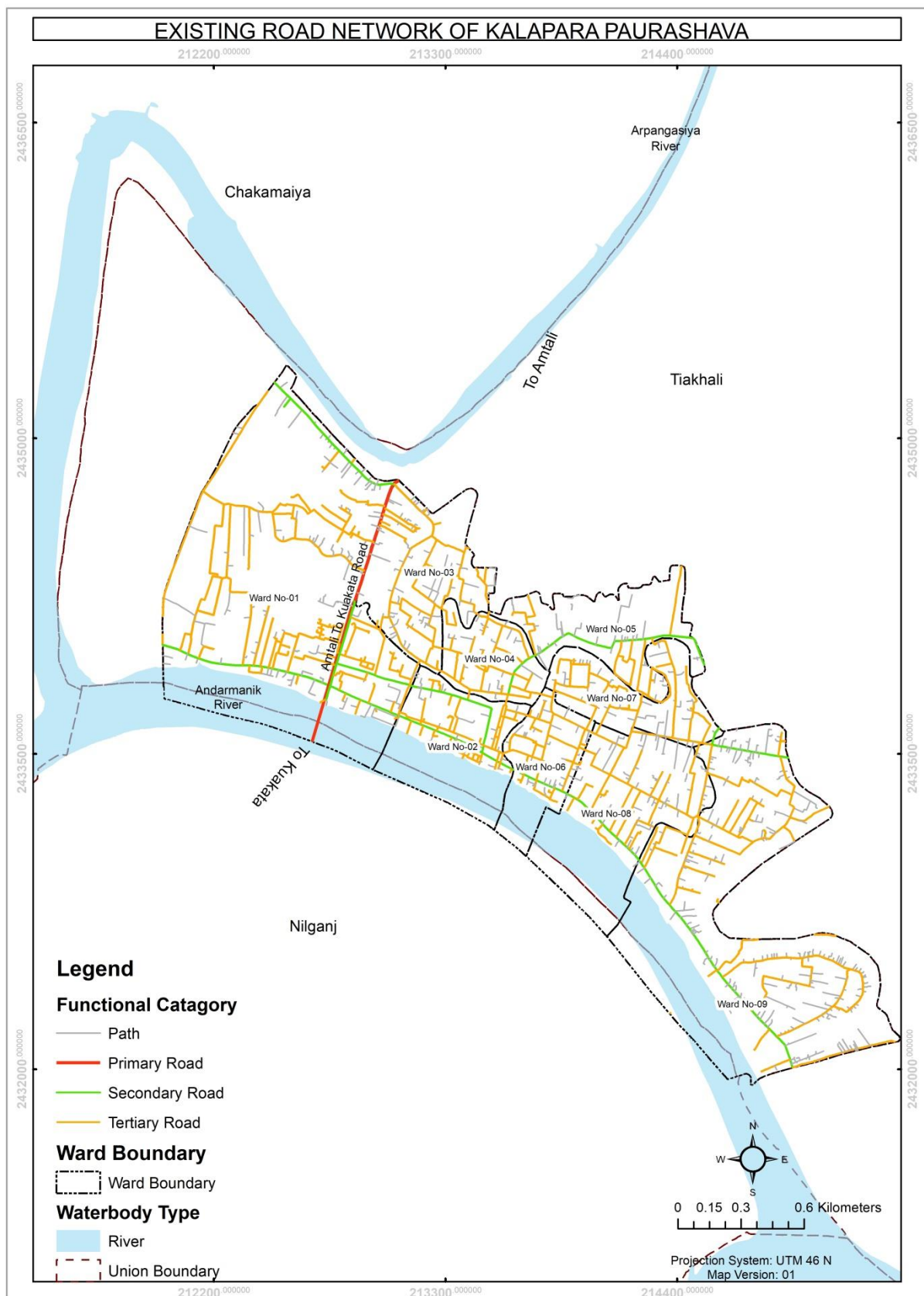


Figure 4: Proposed Road Network

3.6.3 Proposals for Improvement of Existing Road Network

The improvement plan for existing road network has been prepared considering two categories of roads which are as follows:

- Roads connecting Paurashava with Regional Road Network
- Roads serving as internal network of the Paurashava

All of the Roads should be developed in 10 years implementation time. It will be done in two phases; 1st phase (5 years) and 2nd phase (5 years). In the master plan, about 65.92 kilometers roads have been proposed for widening. Summary of road widening proposal has been shown in Table 7.

Table- 6: Data Inventory of Proposed Road Network (Widening)

ID	Road Type	Existing Width (feet)	Name	Functional Category (Existing)	Status	Functional Category (Proposed)	Proposed Width (ft)	Length (m)
AR-13	Katcha	5.96		Tertiary Road	Widening	Access Road	40	68.93
AR-14	Katcha	5.96		Tertiary Road	Widening	Access Road	40	143.35
AR-15	Katcha	4.97		Tertiary Road	Widening	Access Road	40	120.96
AR-16	Katcha	5.96		Tertiary Road	Widening	Access Road	40	130.40
AR-17	Pucca	9.94		Tertiary Road	Widening	Access Road	40	112.80
AR-18	Katcha	4.97		Tertiary Road	Widening	Access Road	40	420.51
AR-19	Katcha	4.97		Tertiary Road	Widening	Access Road	40	144.50
PR-01	Pucca	23.85	Amtali To Kuakata Road	Primary Road	Widening	Primary Road	180	3,598.86
SR-136	Pucca	9.94		Secondary Road	Widening	Secondary Road	60	2,236.97
SR-152	Pucca	11.92		Secondary Road	Widening	Secondary Road	60	162.81
SR-166	Pucca	9.94		Secondary Road	Widening	Secondary Road	60	607.57
SR-172	Katcha	13.91		Secondary Road	Widening	Secondary Road	60	2,033.37
SR-219	Pucca	17.89		Secondary Road	Widening	Secondary Road	60	3,079.98
TR-1	Semi Pucca	8.94		Tertiary Road	Widening	Tertiary Road	40	617.99

TR-10	Katcha	4.97		Tertiary Road	Widening	Tertiary Road	40	350.53
TR-100	Pucca	5.86		Tertiary Road	Widening	Tertiary Road	40	184.38
TR-101	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	12	318.10
TR-102	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	12	289.84
TR-103	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	494.53
TR-104	Semi Pucca	4.97		Tertiary Road	Widening	Tertiary Road	40	192.20
TR-105	Pucca	11.92		Secondary Road	Widening	Tertiary Road	40	672.28
TR-106	Katcha	5.96		Tertiary Road	Widening	Tertiary Road	40	298.76
TR-107	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	340.94
TR-108	Semi Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	288.55
TR-109	Semi Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	66.81
TR-11	Katcha	5.96		Tertiary Road	Widening	Tertiary Road	40	270.96
TR-110	Semi Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	15.19
TR-111	Semi Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	175.28
TR-112	Semi Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	84.57
TR-113	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	142.85
TR-114	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	262.03
TR-115	Katcha	9.94		Tertiary Road	Widening	Tertiary Road	40	1,003.79
TR-116	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	539.74
TR-117	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	134.40
TR-118	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	94.75
TR-119	Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	211.78
TR-12	Semi Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	123.25
TR-120	Pucca	21.86		Secondary Road	Widening	Tertiary Road	40	172.37
TR-121	Pucca	23.85		Secondary Road	Widening	Tertiary Road	40	315.20
TR-122	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	76.45
TR-123	Semi Pucca	4.97		Tertiary Road	Widening	Tertiary Road	40	68.67

TR-124	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	107.57
TR-125	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	68.29
TR-126	Katcha	15.90		Tertiary Road	Widening	Tertiary Road	40	30.85
TR-127	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	89.47
TR-128	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	106.83
TR-129	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	20.99
TR-130	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	311.61
TR-131	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	19.84
TR-132	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	28.93
TR-133	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	2.63
TR-134	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	6.30
TR-135	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	8.85
TR-137	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	21.59
TR-138	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	85.65
TR-139	Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	142.48
TR-140	Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	119.64
TR-141	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	220.37
TR-142	Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	143.31
TR-143	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	212.73
TR-144	Semi Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	59.95
TR-145	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	114.41
TR-146	Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	735.17
TR-147	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	249.51
TR-148	Semi Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	407.59
TR-149	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	23.67
TR-150	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	103.94
TR-151	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	62.61
TR-153	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	37.22

TR-154	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	231.08
TR-155	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	143.15
TR-156	Katcha	7.95		Tertiary Road	Widening	Tertiary Road	40	413.59
TR-157	Pucca	8.94		Tertiary Road	Widening	Tertiary Road	40	114.02
TR-158	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	75.56
TR-159	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	637.10
TR-160	Katcha	7.95		Tertiary Road	Widening	Tertiary Road	40	54.89
TR-161	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	358.91
TR-162	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	108.68
TR-163	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	280.91
TR-164	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	260.49
TR-165	Pucca	17.89		Tertiary Road	Widening	Tertiary Road	40	22.22
TR-167	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	52.64
TR-168	Semi Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	127.47
TR-169	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	213.82
TR-170	Pucca	12.92		Tertiary Road	Widening	Tertiary Road	40	137.04
TR-171	Katcha	9.94		Tertiary Road	Widening	Tertiary Road	40	596.36
TR-173	Pucca	12.92		Tertiary Road	Widening	Tertiary Road	40	658.65
TR-174	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	587.86
TR-175	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	242.66
TR-176	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	628.24
TR-177	Katcha	3.97		Tertiary Road	Widening	Tertiary Road	40	967.08
TR-178	Katcha	9.94		Tertiary Road	Widening	Tertiary Road	40	911.44
TR-179	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	185.51
TR-180	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	229.09
TR-181	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	496.42
TR-182	Katcha	7.95		Tertiary Road	Widening	Tertiary Road	40	391.67
TR-183	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	91.69

TR-184	Katcha	9.94		Tertiary Road	Widening	Tertiary Road	40	607.55
TR-185	Katcha	4.97		Tertiary Road	Widening	Tertiary Road	40	322.37
TR-186	Katcha	5.96		Tertiary Road	Widening	Tertiary Road	40	355.61
TR-187	Katcha	9.94		Tertiary Road	Widening	Tertiary Road	40	750.79
TR-188	Katcha	9.94		Tertiary Road	Widening	Tertiary Road	40	171.78
TR-189	Semi Pucca	4.97		Tertiary Road	Widening	Tertiary Road	40	209.93
TR-190	Semi Pucca	8.94		Tertiary Road	Widening	Tertiary Road	40	817.81
TR-191	Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	41.76
TR-192	Semi Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	44.70
TR-193	Katcha	5.96		Tertiary Road	Widening	Tertiary Road	40	356.86
TR-194	Katcha	7.95		Tertiary Road	Widening	Tertiary Road	40	123.60
TR-195	Semi Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	224.00
TR-196	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	347.37
TR-197	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	986.43
TR-198	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	264.06
TR-199	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	344.38
TR-2	Semi Pucca	3.97		Tertiary Road	Widening	Tertiary Road	40	92.35
TR-20	Semi Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	109.97
TR-200	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	508.62
TR-201	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	241.04
TR-202	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	460.82
TR-203	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	331.27
TR-204	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	301.63
TR-205	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	171.50
TR-206	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	174.87
TR-207	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	73.08
TR-208	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	302.62
TR-209	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	151.84

TR-21	Katcha	5.96		Tertiary Road	Widening	Tertiary Road	40	62.74
TR-210	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	175.65
TR-211	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	269.97
TR-212	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	131.46
TR-213	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	59.97
TR-214	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	78.27
TR-215	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	81.58
TR-216	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	242.75
TR-217	Pucca	13.91		Tertiary Road	Widening	Tertiary Road	40	19.29
TR-218	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	72.99
TR-22	Katcha	5.96		Tertiary Road	Widening	Tertiary Road	40	38.56
TR-220	Pucca	14.90		Secondary Road	Widening	Tertiary Road	40	320.93
TR-221	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	159.41
TR-222	Pucca	9.94		Secondary Road	Widening	Tertiary Road	40	295.18
TR-223	Pucca	9.94		Secondary Road	Widening	Tertiary Road	40	293.28
TR-224	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	23.23
TR-225	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	119.53
TR-226	Pucca	11.92		Secondary Road	Widening	Tertiary Road	40	1,683.89
TR-227	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	233.59
TR-228	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	247.30
TR-229	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	301.97
TR-23	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	62.72
TR-230	Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	53.52
TR-231	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	83.74
TR-24	Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	95.32
TR-25	Katcha	4.97		Tertiary Road	Widening	Tertiary Road	40	313.04
TR-26	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	16.23

TR-27	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	125.79
TR-28	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	135.80
TR-29	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	16.18
TR-3	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	474.78
TR-30	Pucca	9.94		Secondary Road	Widening	Tertiary Road	40	946.51
TR-31	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	34.36
TR-32	Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	230.92
TR-33	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	20.51
TR-34	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	97.13
TR-35	Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	37.63
TR-36	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	152.95
TR-37	Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	9.16
TR-38	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	95.95
TR-39	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	177.24
TR-4	Katcha	6.96		Tertiary Road	Widening	Tertiary Road	40	221.21
TR-40	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	718.92
TR-41	Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	93.69
TR-42	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	166.21
TR-43	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	106.27
TR-44	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	50.94
TR-45	Pucca	14.90		Tertiary Road	Widening	Tertiary Road	40	150.03
TR-46	Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	29.05
TR-47	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	128.53
TR-48	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	517.00
TR-49	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	95.62
TR-5	Pucca	13.91		Tertiary Road	Widening	Tertiary Road	40	51.89
TR-50	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	42.01
TR-51	Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	102.92

TR-52	Pucca	11.92		Secondary Road	Widening	Tertiary Road	40	34.66
TR-53	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	228.92
TR-54	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	198.98
TR-55	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	222.92
TR-56	Pucca	14.90		Tertiary Road	Widening	Tertiary Road	40	43.65
TR-57	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	45.86
TR-58	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	148.76
TR-59	Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	105.83
TR-60	Semi Pucca	6.96		Tertiary Road	Widening	Tertiary Road	40	24.94
TR-61	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	85.04
TR-62	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	120.00
TR-63	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	191.79
TR-64	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	70.36
TR-65	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	589.01
TR-66	Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	96.19
TR-67	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	93.05
TR-68	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	461.41
TR-69	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	335.19
TR-70	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	47.82
TR-71	Semi Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	47.00
TR-72	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	75.94
TR-73	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	72.97
TR-74	Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	75.91
TR-75	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	158.14
TR-76	Pucca	9.94		Secondary Road	Widening	Tertiary Road	40	826.90
TR-77	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	245.45
TR-78	Katcha	5.96		Tertiary Road	Widening	Tertiary Road	40	281.35
TR-79	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	323.11

TR-78	Pucca	11.92		Tertiary Road	Widening	Tertiary Road	40	712.28
TR-79	Katcha	8.94		Tertiary Road	Widening	Tertiary Road	40	159.55
TR-8	Katcha	6.96		Tertiary Road	Widening	Tertiary Road	40	492.40
TR-80	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	145.50
TR-81	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	390.96
TR-82	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	195.51
TR-83	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	195.24
TR-84	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	40	556.46
TR-85	Pucca	8.94		Tertiary Road	Widening	Tertiary Road	40	238.36
TR-86	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	280.04
TR-87	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	12	371.56
TR-88	Semi Pucca	4.97		Tertiary Road	Widening	Tertiary Road	12	98.18
TR-89	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	12	249.35
TR-9	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	208.66
TR-90	Pucca	11.92		Secondary Road	Widening	Tertiary Road	40	230.72
TR-91	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	110.90
TR-92	Pucca	7.95		Tertiary Road	Widening	Tertiary Road	40	179.97
TR-93	Pucca	11.92		Secondary Road	Widening	Tertiary Road	40	335.04
TR-94	Katcha	7.95		Tertiary Road	Widening	Tertiary Road	40	92.69
TR-95	Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	120.71
TR-96	Pucca	9.94		Secondary Road	Widening	Tertiary Road	40	1,657.43
TR-97	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	33.71
TR-98	Semi Pucca	5.96		Tertiary Road	Widening	Tertiary Road	40	536.29
TR-99	Pucca	9.94		Tertiary Road	Widening	Tertiary Road	12	202.14

3.6.4 Proposals for New Road

To accommodate the traffic volumes about 10-15% land has been considered of total planning area. About 8.26 kilometers new roads have been proposed to ensure accessibility in the area. Summary of new road proposal has been shown in Table 7. Proposed Road Network of Kalapara Paurashava has been presented in Figure 5.

Table- 7: Data Inventory of Proposed Road Network (New Road)

ID	Road Type	Existing Width (feet)	Name	Functional Category (Existing)	Status	Functional Category (Proposed)	Proposed Width (ft)	Length (m)
TR-232		0		Tertiary Road	New	Tertiary Road	20	129.81
TR-233		0		Tertiary Road	New	Tertiary Road	20	78.77
TR-234		0		Tertiary Road	New	Tertiary Road	20	579.40
TR-235		0		Tertiary Road	New	Tertiary Road	20	191.19
TR-236		0		Tertiary Road	New	Tertiary Road	20	83.61
TR-237		0		Tertiary Road	New	Tertiary Road	20	998.19
TR-239		0		Tertiary Road	New	Tertiary Road	20	1,588.46
TR-240		0		Tertiary Road	New	Tertiary Road	20	676.25
TR-241		0		Tertiary Road	New	Tertiary Road	20	240.69
TR-242		0		Tertiary Road	New	Tertiary Road	20	208.48
TR-243		0		Tertiary Road	New	Tertiary Road	20	721.73
TR-244		0		Tertiary Road	New	Tertiary Road	20	433.31
TR-245		0		Tertiary Road	New	Tertiary Road	20	1,220.07
TR-246		0		Tertiary Road	New	Tertiary Road	20	153.04
TR-247		0		Tertiary Road	New	Tertiary Road	20	432.02
TR-248		0		Tertiary Road	New	Tertiary Road	20	490.24
TR-249		0		Tertiary Road	New	Tertiary Road	20	37.34

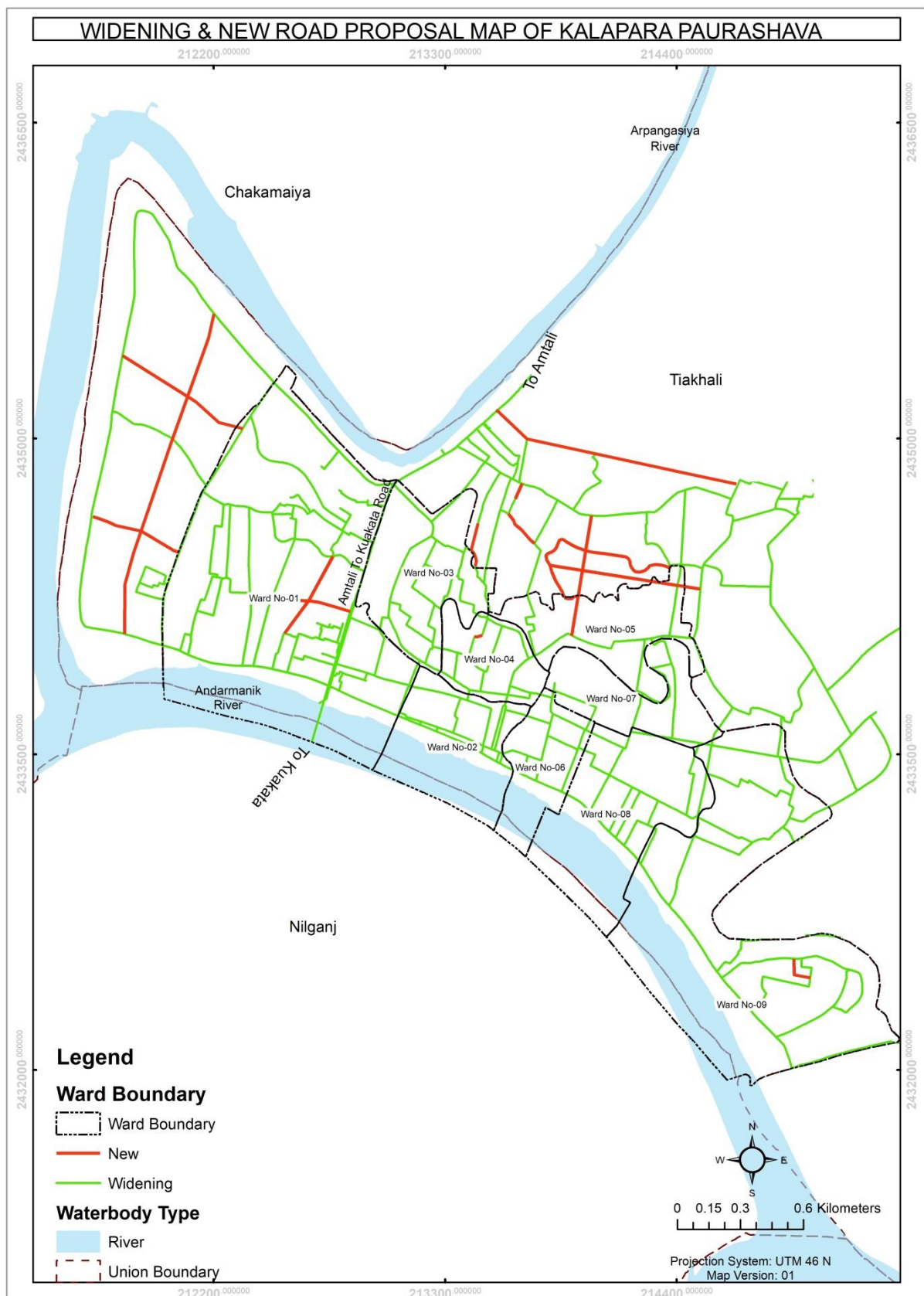


Figure 5: Road Widening and New Road Line of Kalapara Pourashava

3.7 Guidelines for other Transportation Facilities

In the field of transportation facilities, the consultant has proposed such facilities as bus terminal, truck terminal, rickshaw stands, baby taxi/tempo stands and passenger shed for local bus users.

Table- 8: List of Transport Facilities

Transport Facility	Area(Acre)	Ward No.
Rickshaw/Auto Stand	0.63	3
Auto/Rickshaw Stand	0.19	5
Bus Terminal	1.47	1
Helipad	2.11	1,2
Truck Terminal	0.72	3

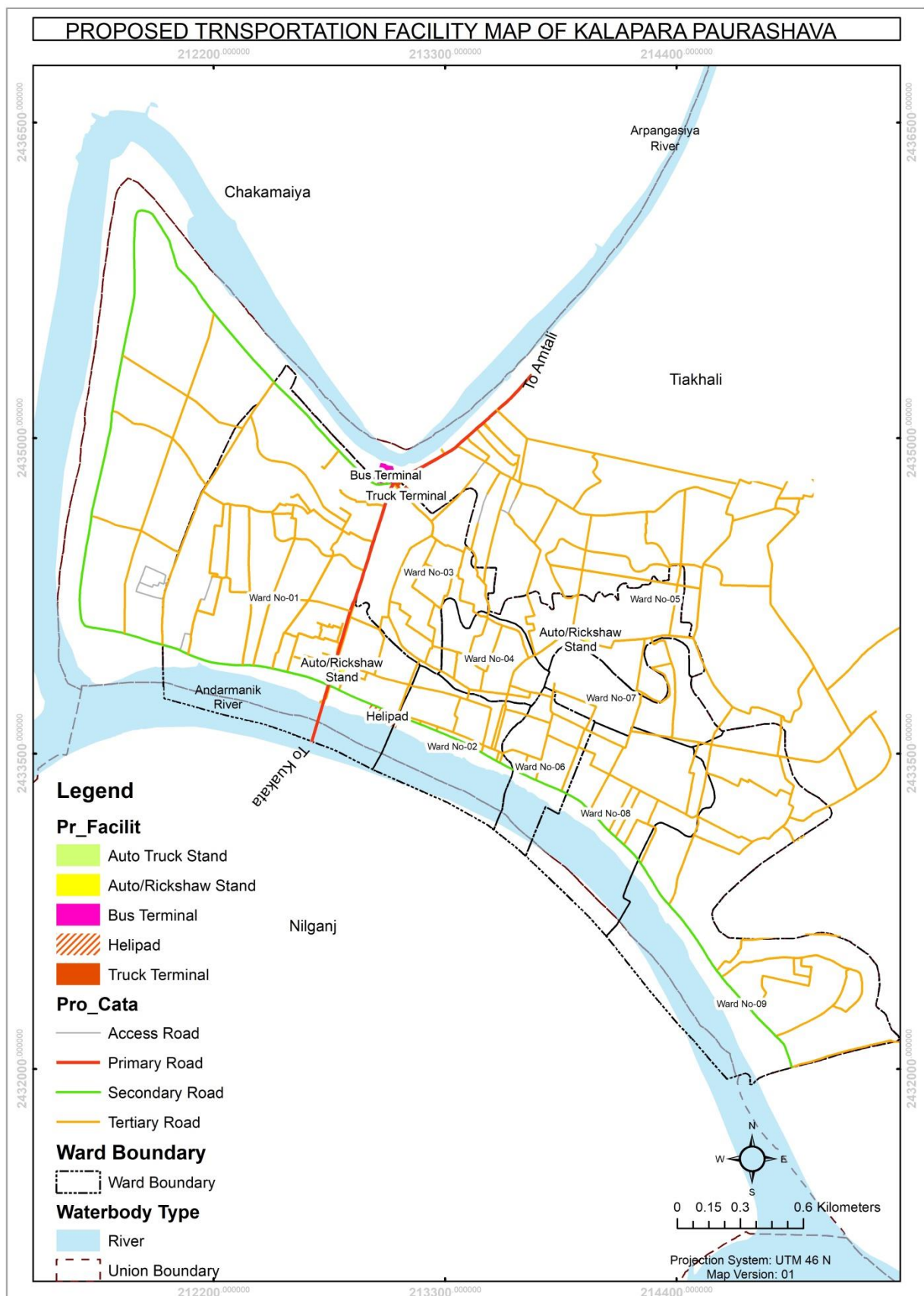


Figure 6: Proposed Transport Facilities of Kalapara Pourashava

CHAPTER- 4: DRAINAGE AND ENVIRONMENTAL MANAGEMENT GUIDELINES

This chapter states about existing conditions, Sub-basin catchment area analysis and methodology of Drainage Development Plan. A brief inventory of the existing drainage system of Kalapara has been made. While assessing the drainage conditions, the serviceability, structural conditions, obstruction, siltation, blockages are taken into consideration. And finally the drainage and environmental management plan, and its implementation strategies have been described.

4.1 Existing Drainage Network

4.1.1 Man-Made Drainage Network

Paurashava has only 5.86 km of drainage network at Kalapara Paurashava area. This drainage network served mainly ward no 8, 1 and 3. Maximum people of the Paurashava deprived from drainage facility at Kalapara Paurashava.

Table 9 shows the ward wise manmade drainage coverage in Kalapara Paurashava. Total length of man made drain in Kalapara Paurashava is 25.54 Km Pucca drain and 0.32 km katcha drain and it covers almost every wards except ward no 5 and 6. The highest drainage coverage is in ward no. 08. Total length of drains in this ward is 1.67 kilometer. **Figure 7** Shows the existing Drainage Network of Kalapara Paurashava.

Table- 9: Existing Drainage network of the Pourashava

Drain	Katcha (m)	Pucca(m)	Total	Percentage
Ward No-01	40.38	4371.26	4411.63	17.00
Ward No-02		2289.78	2289.78	8.83
Ward No-03		3805.61	3805.61	14.67
Ward No-04		2745.67	2745.67	10.58
Ward No-05		885.82	885.82	3.41
Ward No-06	198.84	2168.62	2367.46	9.13
Ward No-07		1926.90	1926.90	7.43
Ward No-08		2644.13	2644.13	10.19
Ward No-09	155.27	4712.21	4867.48	18.76
Grand Total	394.49	25549.99	25944.47	100

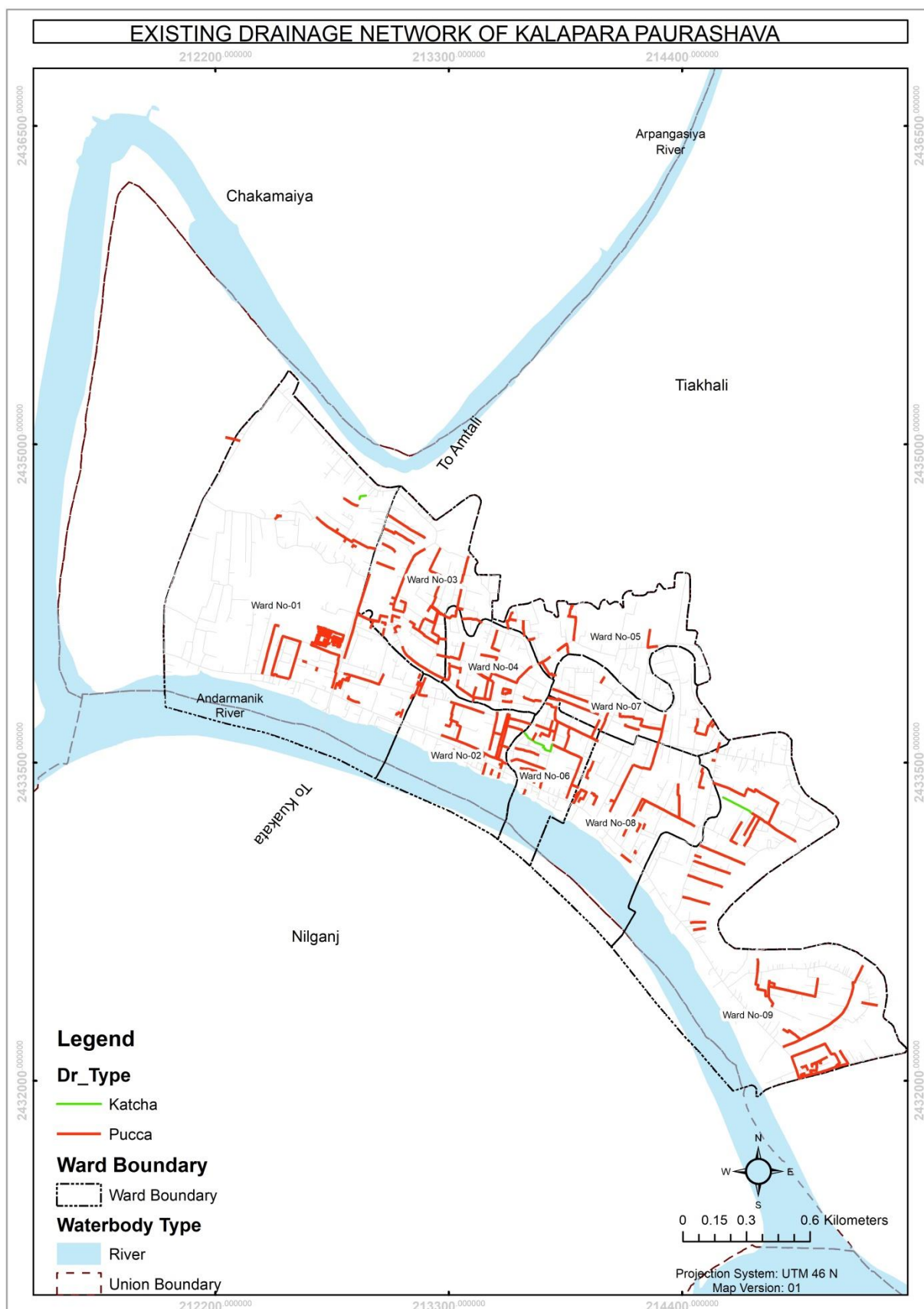


Figure 7: Existing Drainage Network of the Pourashava

4.1.2 Natural Canal & River

The natural drainage network is composed of 1 river and 23 khals/canals. Generally those khals are flowing from north to south. Those river and natural canals cover 1072 sqm (river 926 sqm and canals 146.7 sqm) of area. The river flows on the eastern part of the Paurashava. During monsoon season all drainage water is release to this river which results in flooding almost every year.

Table- 10: Existing Waterbody Type in the Pourashava

Ward	Borrow Pit	Canal	Ditch	Fish Pond	Pond	River	Tank (Dighi)	Total(SkM)	Percentage
Ward No-01		30.39	5.96	16.45	6.58	185.23		244.61	20.50
Ward No-02		20.45	0.69	3.98		185.23		210.35	17.63
Ward No-03		10.68	1.12	8.39	2.14			22.33	1.87
Ward No-04		11.34	0.53	3.09	0.46			15.42	1.29
Ward No-05		12.76	0.99	6.95	3.47			24.18	2.03
Ward No-06		10.23	0.99	1.57	0.57	185.23		198.58	16.64
Ward No-07		10.23	0.92	7.25	1.17			19.57	1.64
Ward No-08		0.99	2.08	6.80	6.43	185.23	0.67	202.20	16.94
Ward No-09	0.17	39.71	3.49	20.71	6.87	185.23		256.17	21.47
Grand Total	0.17	146.79	16.76	75.18	27.69	926.15	0.67	1193.40	100.00

There are linkages between natural and man-made drains. But how much effective and active the linkage is with the poorly maintained man-made drains is a question. Almost half of the depth of the man-made drain is filled with solid waste; as a result, the channel is not functioning properly.

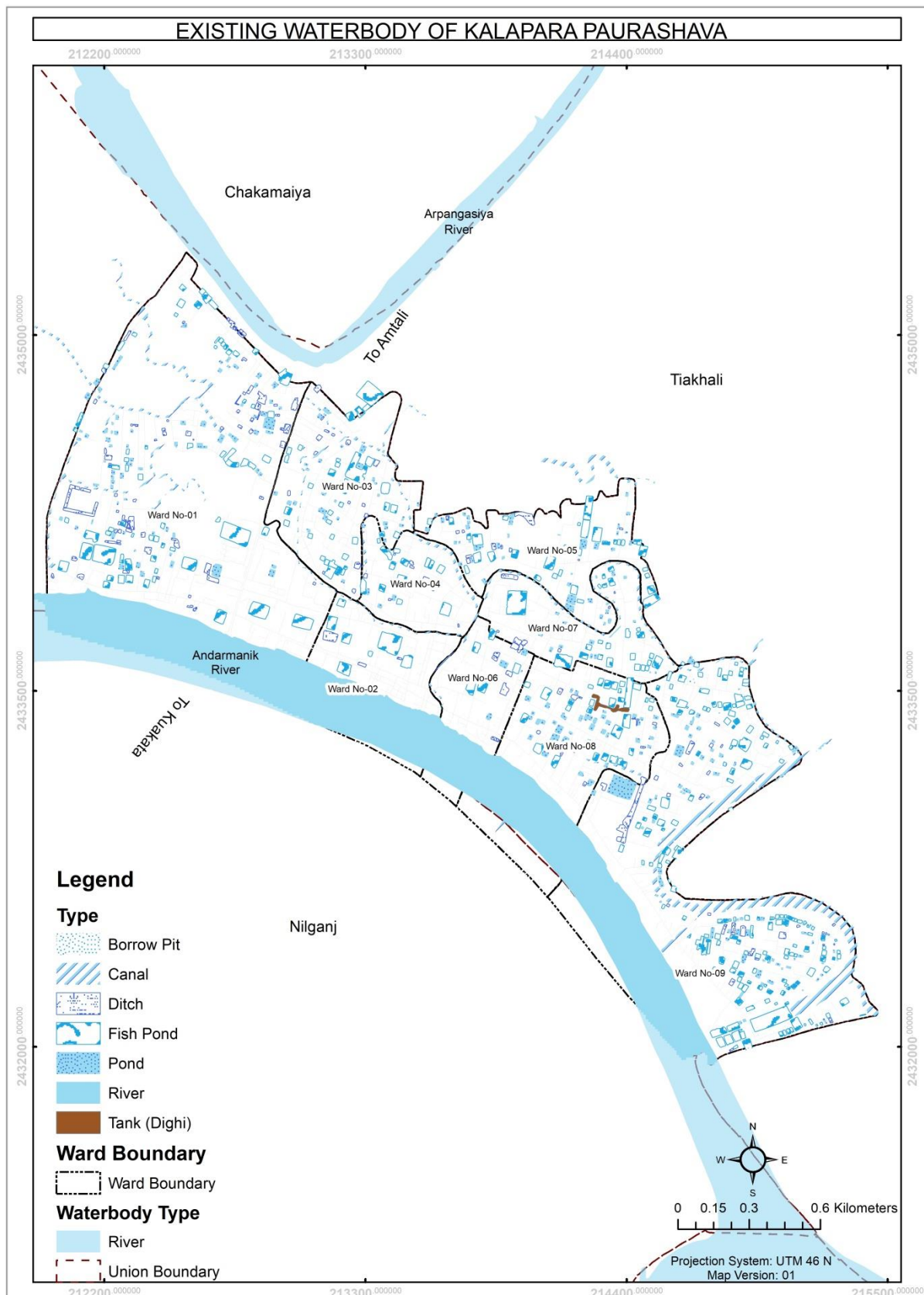


Figure 8: Existing Waterbody Type in the Pourashava

4.1.3 Topographic Condition of Existing Drainage Network

The Paurashava is mainly medium-high land except some low-lying strips, canals and river. A small part of it is urban, sign of very slow urbanization process is visible in few isolated locations and generally it is an agricultural area characterized by crop production. In the Paurashava, it has been found that roads are not very high than the surrounding area except the Regional Highway. The height varies from 0.96 meter to 6.92 meter among the adjacent lands and roads. Lowest land elevation is found in the Ward No. 5 and highest in the Ward No. 7.

Drainage catchments for Kalapara Paurashava and urban area are delineated using digital elevation model (DEM) with Strategic resolution of 1m which is collected from Topographic Survey. However, this DEM is resampled into 10m Strategic resolution for the processing of drainage catchment delineation as shown in Figure-1-6. The Sub-watershed analysis has been conducted using ArcGIS Strategic analysis and Archydro extension tools.

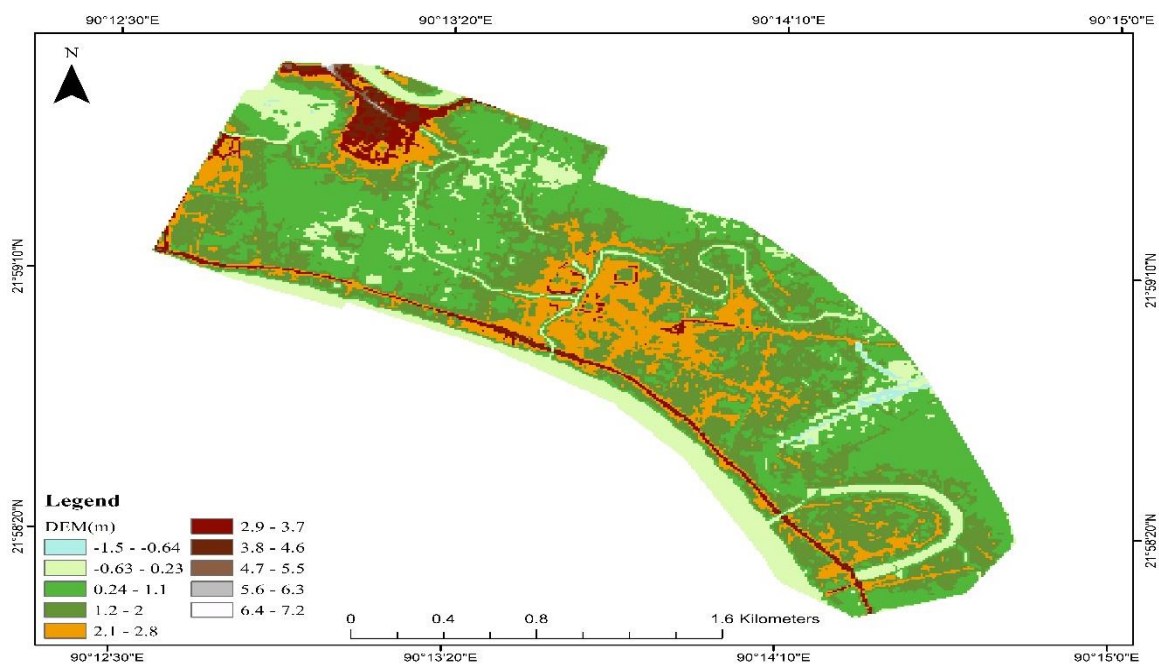


Figure 9: Digital Elevation Model (DEM) of Kalapara Urban Area

4.1.4 Analysis of Sub-catchments area and Identification of Drainage Outfalls

Watershed analysis requires filling the sinks (depression) of the study area as first step. The sinks are low elevation areas in DEMs that are surrounded by higher terrain that disrupts the flow path. Filling sinks create a hydrological connected DEM for watershed analyses. The fill process helps to raise the value of a cell identified as a sink cell to match the elevation of

its downhill neighbor. Using Arc hydro tool extension of ArcGIS, flow direction has been determined for the study area from the processed DEM. The main concept of the model is that water from cell would flow to the adjacent cell which has steepest gradient. It also assumes the catchment as depression without any ponds or pits. After filling the DEM sinks, a flow direction was computed by calculating the steepest slope and by encoding into each cell eight possible flow directions towards the surrounding cells. This is called the 8-direction pour point model to determine flow path. Flow direction and accumulation maps of the Paurashava and urban area are shown below.

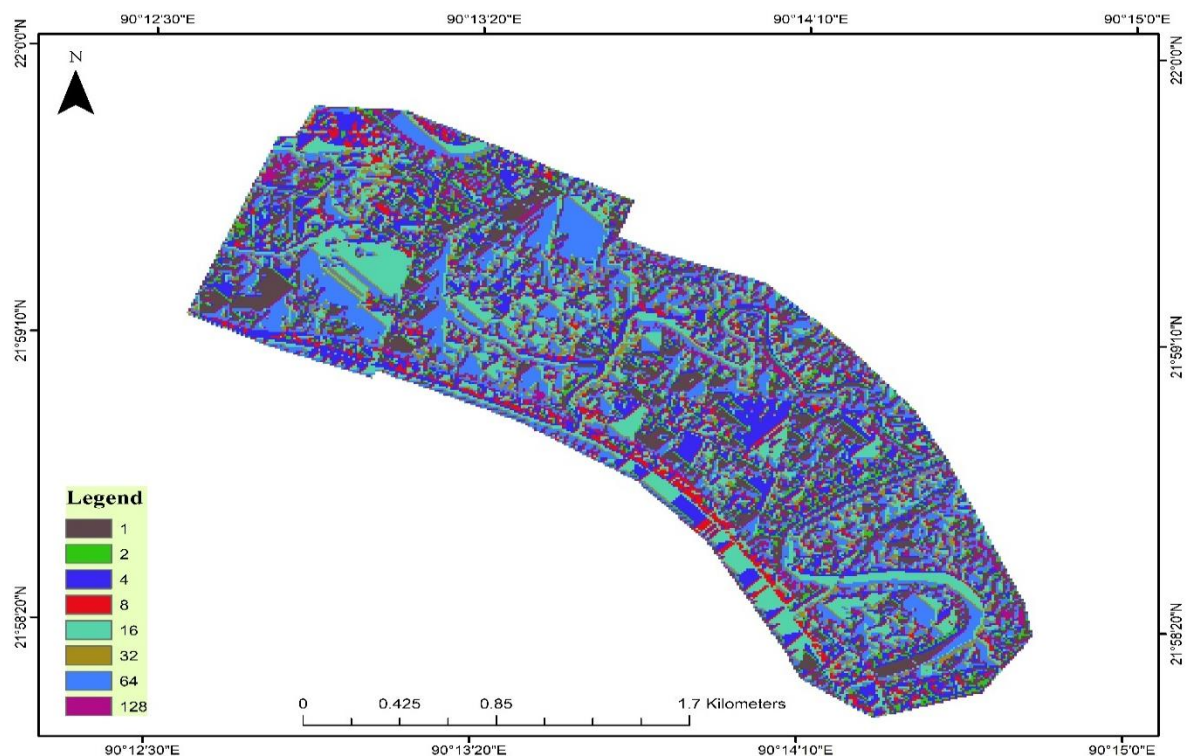


Figure 10: Flow direction map of Kalapara Paurashava.

Flow direction map is used for flow accumulation map. The flow accumulation is generated by addressing each cell of the DEM, counts how many upstream cells contribute to flow through the given cell. Flow direction and accumulation maps are then used to delineate the stream network. Figure-9 shows flow accumulation maps of the Paurashava and urban area.

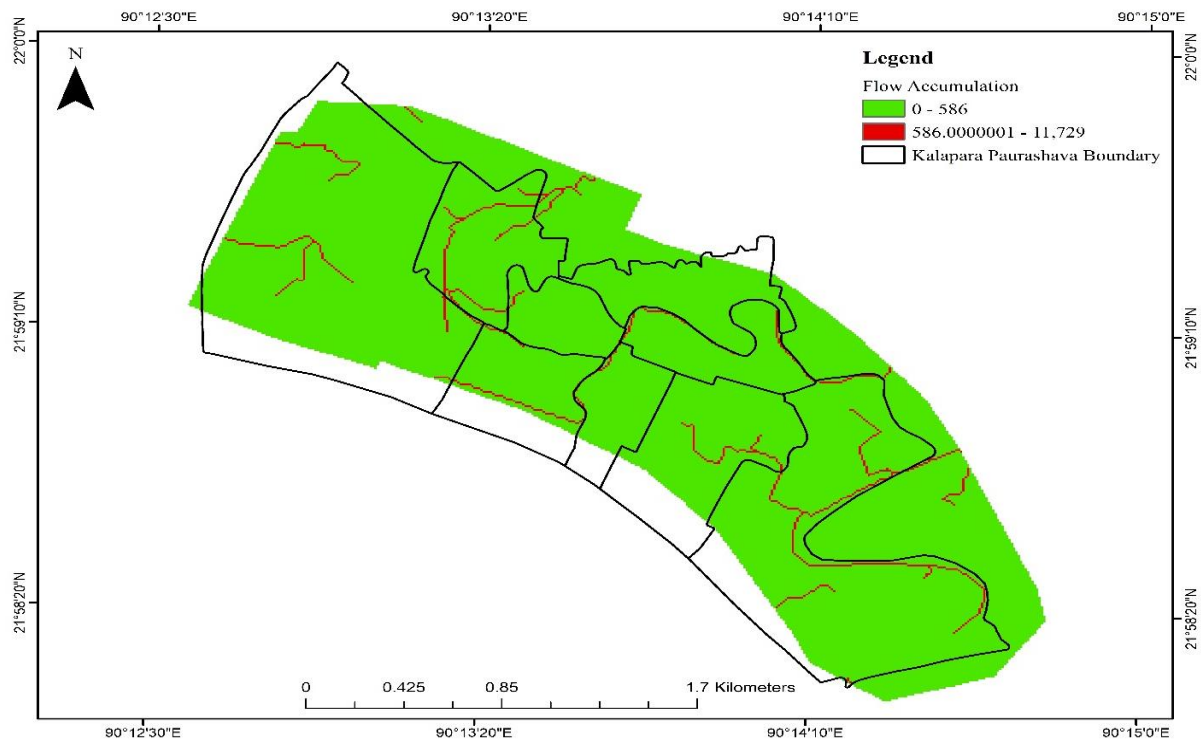
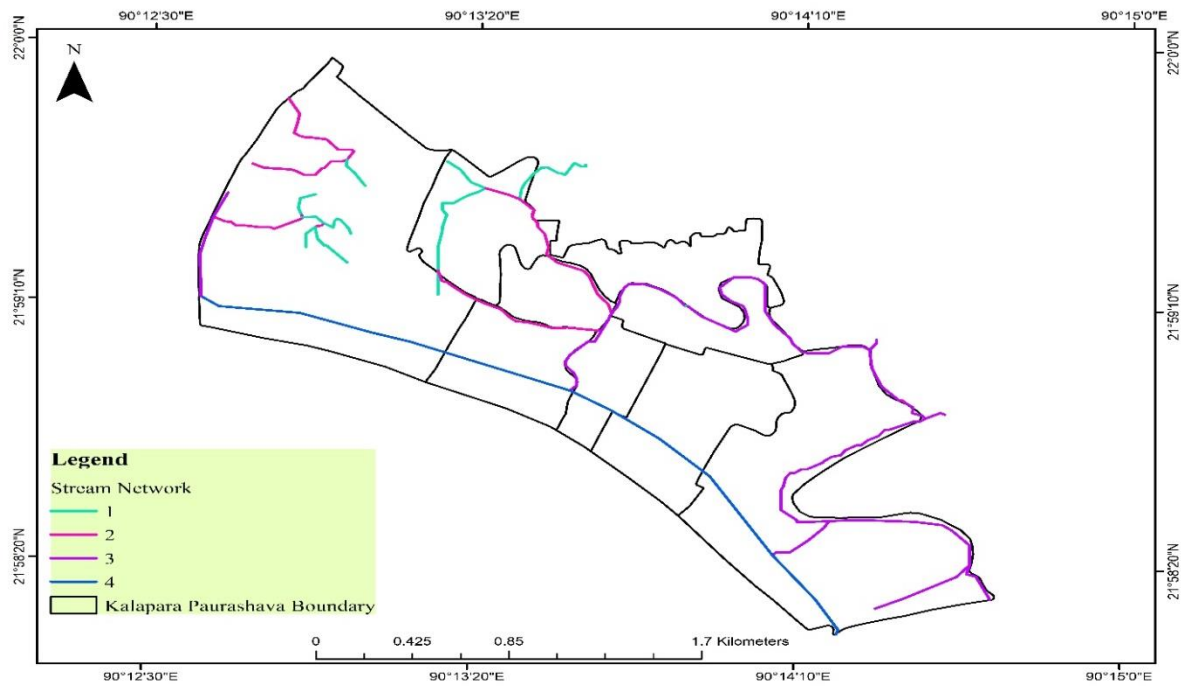


Figure 11: Flow accumulation map of Kalapara Paurashava

The stream network can be divided into segment which will determine the outlets of the basin. Watershed divide is assumed as a line whose flow accumulation value is zero and those cells, which have flow accumulation value greater than a threshold value provided by the user, is assumed as stream channel or river. After applying trial and error methods, the threshold value 5% (Kalapara) of the longest flow path was used to determine the drainage network. An extensive field survey in Paurashava urban area was done to check the accuracy of delineated drainage network except



Paurashava. However, some major corrections of delineated drainage network are made on the basis of field report information. Figure 12 shows the drainage network of the Paurashava and urban area.

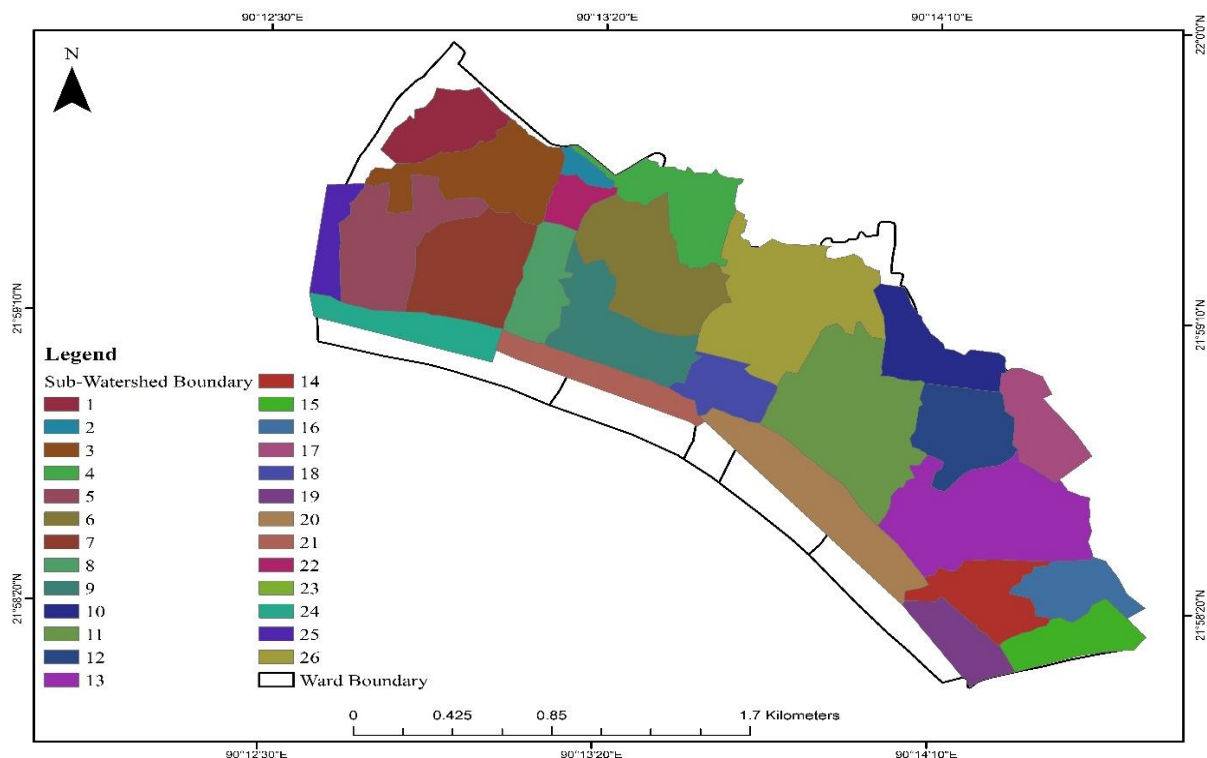


Figure 12: Drainage network map of Kalapara Paurashava.

In Kalapara Paurashava, the location of main drainage outlets are very close to the culvert of River (Ward no.2 & 66) and it falls into the River .

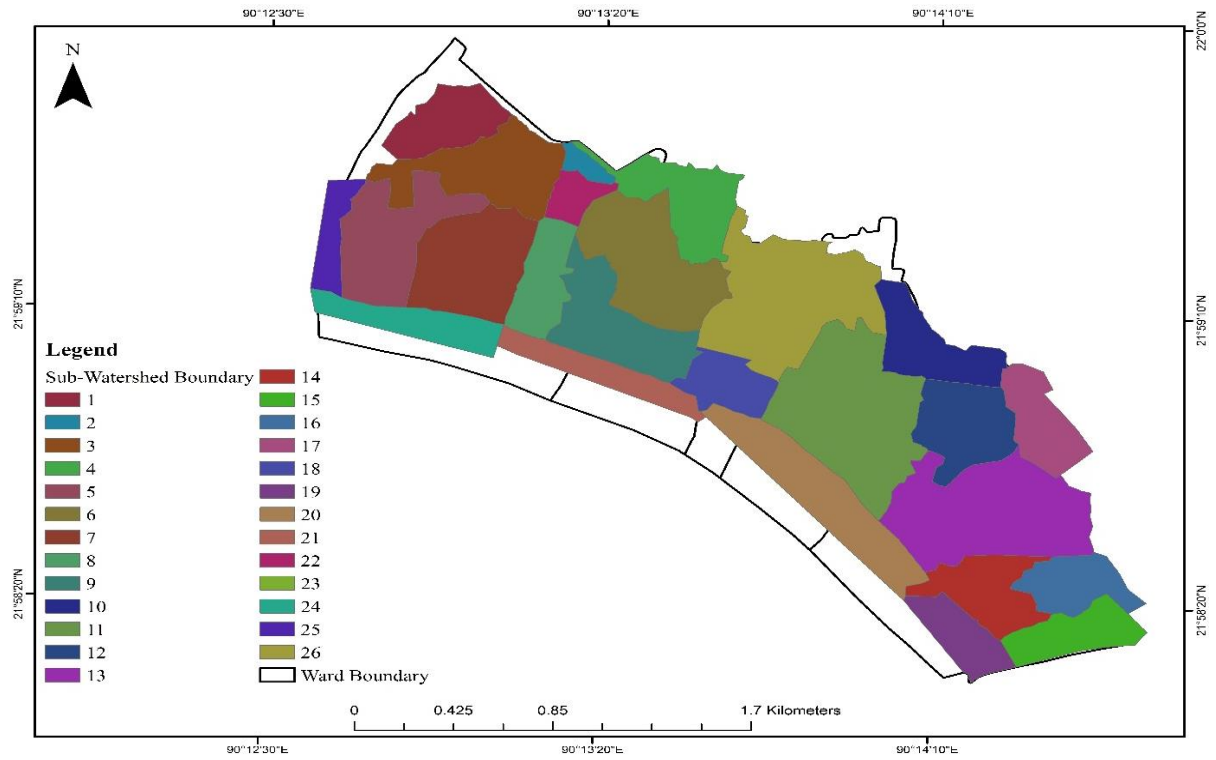


Figure 13: Sub-catchments map of Kalapara Paurashava

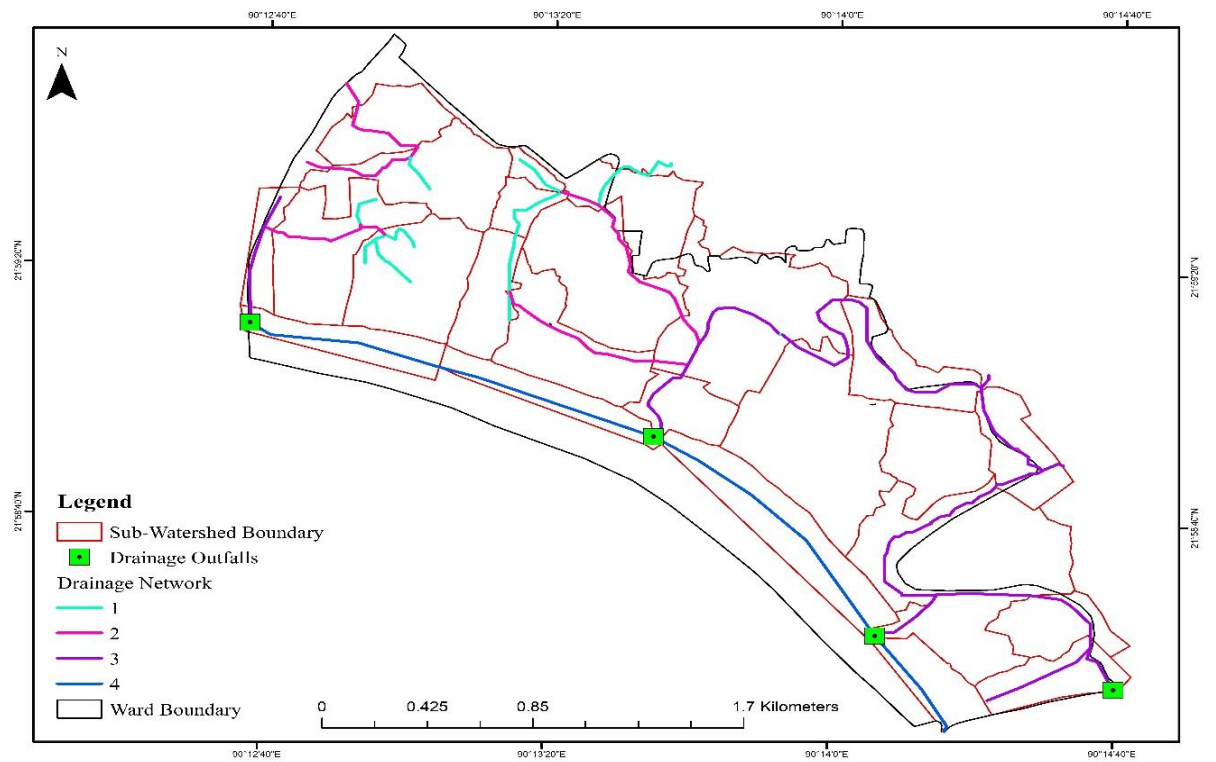


Figure 14: Map of sub-watersheds outlet in Kalapara Paurashava

4.2 Plans for Drainage Network

4.2.1 Proposed Drainage Network

The existing khals and rivers in Kalapara Paurashava will act as primary drainage network. Based on these primary drains, drainage network system of Kalapara Paurashava will be established..

4.2.2 Outfall

There are some sluice gates without any formal outfall of drains in or outside Kalapara Paurashava. The secondary drains mainly discharge storm water to the nearby khals and borrow pits, which act as primary drain. The existing sluice gates situated by the side of Bishkhali River are being proposed to be upgraded as three outfalls for drainage development plan of Kalapara Paurashava.

4.2.3 List of Infrastructure Measures for Drainage and Flood Control Network

A total of 7 Bridges, 20 culverts, 8 Shakos and 3 sluice gates will be established for drainage and flood control network of Kalapara Paurashava.

CHAPTER-5: URBAN AREA PLAN

5.1 Introduction

The land use plan is the principal component of the Urban Area Plan. The plan must consider the allocation of land for residence, business, industry, potential municipal facilities, public and private recreation, major institutional facilities, mixed uses, open space and natural and fragile areas. Optimum intensities and standards of development must be established for each use classification and location based on current development, natural land characteristics, and projected municipal services and facilities.

Allocations of land use must consider impacts on surface and ground water resources, wetlands, coastal features, and other sensitive and fragile natural resources. Judgments must be made on the ability of various existing and new land use controls to properly protect these natural resources.

The characteristics, trends and projections of population and employment will be essential input to the allocation of land areas for use. The plan should show how the projections have been used to determine amounts of land needed for residential, industrial, and other purposes. These quantitative relationships carry over to other components of the plan in that certain facilities and services (utilities, transportation, recreation areas etc.) are needed to support the land allocation to each use.

5.2 Existing Land Use

The overall pattern of existing land uses and possible future land distribution for various land uses can be observed. The information shows the quantity of land coverage for various land use categories over different spatial planning areas in the Paurashava.

Table-02: Existing Land use distribution

Landuse	Area(Acre)	Percentage
Administrative/ Public Service	36.97955189	3.28
Agriculture	174.3060993	15.48
Commercial	7.211464868	0.64
Community Service	12.09258684	1.07
Education and Research	22.34754523	1.98
Health Service	3.27907182	0.29
Manufacturing and Processing	27.25891867	2.42
Mixed Use	22.38089103	1.99
Open Space and Recreational	0.090985198	0.01

Residential	434.9007378	38.62
Road	47.34017053	4.20
Service Activity	10.72537232	0.95
Transportation and Communication	8.086023493	0.72
Waterbody	319.102491	28.34
Total	1126.10191	100.00

5.3 Existing Urban Facilities

Table-03: Existing Urban Facilities

Existing Facilities				
LGED Office	1	Cyclone Preparedness Program, P.I.O Office		1
Family Planning	1	Police Station		1
College	2	Mosque		38
Diagnostic Center	1	BWDB		1
Fire Service	1	Paurashava		1
Health Complex	1	Primary School		8
High School	5	Temple		35

5.4 Land use plan components

5.4.1 Designation of Land Use

One of the objectives of land use plan is to designate appropriate areas for residential, commercial, industrial, parks and open space, and various types of community and public facilities that will be mutually supportive, equitably distributed and will accommodate the projected need for reasonable development opportunities in each sector. Following is the classification of land use that may be used as a guide for designating appropriate areas for

different types of land uses in the potential paurashava depending upon its size and its socio-economic and physical characteristics.

5.4.2 Land Development Management Zones

As a basis of land development management for Kalapara paurashava, the urban area plan designates fourteen development management zones as listed below and which are indicated on the potential urban area plan map.

For each of these zones, land uses are indicated in three categories –permitted uses, conditional uses and use requiring a special plan review.

Figure 5: Table-05: Land Zone Definition

	Land use	Permit	Remarks
1	Residential a. Low density residential b. Medium density c. High density residential d. Planned residential e. Special area (aborigine's area, fishermen's area, low income housing)	Residential developments for: 1. Flats 2. Condominium 3. Town house 4. Terrace House 5. Semi-Detached House 6. Detached House 7. Strata-Landed Housing 8. Retirement Housing 9. Serviced Apartments 10. Student Hostel	The developments in this zone are subject to controls on building form and building height as determined by the competent authority. The quantum of all ancillary or non-residential uses needed for support or management of a residential estate are to be determined by the competent authority according to the scale of the residential development.
2	Commercial a. Central Business District/ Town center b. Community commercial c. Neighborhood commercial d. ICT/e-commerce center e. Urban Street Vendor	Developments for: 1. Offices 2. Mixed Uses (e.g. Office/Shopping/Cinema/Hotel/Flat) 3. Convention/Exhibition Centre 4. Commercial 5. Bank 6. Market/Food Centre/Restaurant 7. Cinema 8. Entertainment 9. Foreign Trade	The developments in this zone are subject to controls on the type and quantum of commercial uses as determined by the competent authority.

	f. Farmer's market	10. Mission/Chancery	
3	Residential and Commercial	<ol style="list-style-type: none"> 1. Flats with commercial uses at 1st storey 2. Shop 3. Residential Developments (e.g. Flats) 	<p>Commercial areas are normally restricted to the 1st storey. Commercial areas may be allowed above and/or below the 1st storey subject to evaluation by the competent authority.</p> <p>Where the competent authority allows commercial areas above and/or below the 1st storey, the total quantum of the floor area of commercial uses in the 1st and other storeys shall not exceed the maximum allowable floor area at the 1st storey</p>
4	Commercial and Residential	<ol style="list-style-type: none"> 1. Mixed Commercial & Residential development (e.g. Shopping/Hotel/ Office & Residential) 	<p>Commercial areas shall not be located above residential areas.</p> <p>The type and quantum of commercial and related uses and the total quantum of such commercial and related uses shall be determined by the competent authority. The total quantum of commercial and related uses shall not, unless otherwise allowed by the competent authority exceed 40% of the maximum allowable floor area</p>
5	Industrial and Manufacturing 1 (IM-1)	Clean and Light industrial factories with one or more predominant uses as mentioned in industrial development act.	<p>The quantum of permitted ancillary uses shall not exceed 40% of the total floor area.</p> <p>The types of uses that may be allowed are subject to the evaluation of the competent authority and other relevant authorities.</p>
6	Health Facilities	<ol style="list-style-type: none"> 1. Hospital 2. Polyclinic 3. Clinic/Dental Clinic 4. Veterinary Clinic 5. Nursing Home 6. Medical suite 	Hospitals shall only be allowed subject to evaluation by the competent authority

7	Education and Research	<ol style="list-style-type: none"> 1. Kindergarten 2. Primary School 3. Secondary School 4. Junior College 5. Institute of Technical Education 6. Polytechnic 7. University 8. Religious School/Institute 9. Foreign System School 10. Special Education School (e.g. School for the Disabled) 	
8	Public Administrative and Community Facilities	<p>Public Administrative</p> <ol style="list-style-type: none"> 1. Courts 2. Police Station 3. Fire Station 4. Prison 5. Drug Rehabilitation Centre/Halfway House 6. Reformatory Centre <p>Community Institutions</p> <ol style="list-style-type: none"> 7. Association premises 8. Community Centre/Club 9. Community Hall 10. Welfare Home 11. Child Care Centre 12. Home For The Aged 13. Home For The Disabled 14. Workers' Dormitory <p>Cultural Institutions</p> <ol style="list-style-type: none"> 15. Television/Filming Studio Complex 16. Performing Arts Centre 17. Library 18. Museum 19. Arts Centre/Science Centre Concert Hall 	The specific institutional use that may be allowed for a site is subject to evaluation by the competent authority.
9	Open Space/ Green Space	<ol style="list-style-type: none"> 1. Park 2. Play-grounds (stadium, Play field etc.) 3. Natural and underdeveloped resources areas (critical habitat areas, areas with natural beauty such as river bank or char, heritage sites etc.) 4. Coastal Afforestation 5. Swamp Area 6. Natural Open Space 	<p>Where additional sites for open space are deemed necessary, they may be secured by the competent authority.</p> <p>The notations used to delineate the park connectors may not show their precise boundaries which are subject to interpretation and determination by the competent authority.</p>

10	Waterbody	<ol style="list-style-type: none"> 1. River 2. Major Drain & Canal 3. Reservoir 4. Pond 5. Pond (Conservation) 	<p>The notations used to delineate the drainage reserves may not show their precise alignment which are subject to interpretation and determination by the competent authority and other relevant authorities. Additional drainage reserves may be secured by the competent authority for any locality as may be deemed necessary.</p>
11	Road	<ol style="list-style-type: none"> 1. Roads (all category) 2. Cycle tracks 3. Footpath 4. Special facilities for disabled and elderly people 	<p>The notations used to delineate the route of the roads may not show their precise alignment, which is subject to interpretation and determination by the competent authority and other relevant authorities.</p> <p>All roads including their junctions are subject to widening and improvement, as may be determined by the competent authority. Buffers along and adjoining roads may be required to be set aside where deemed necessary by the competent authority. Additional road reserves may be secured by the competent authority for any locality as may be deemed necessary.</p>
12	Transportation Facilities	<ol style="list-style-type: none"> 1. Bus, truck, taxi terminal 2. Rickshaw/tempo/ bike stand 3. Launch/boat/steamer terminals 4. Helipad/airport 5. Driving Circuit/Test Centre 6. Petrol Station 	<p>Petrol Station/Kiosk shall only be allowed subject to evaluation by the competent authority</p>
13	Public Services and Utilities	<ol style="list-style-type: none"> 1. ICT center 2. Fire service 3. Sewerage treatment/disposal area 4. Waste disposal area 5. Water supply/ treatment plant 6. Rainwater harvest area 7. Power station 8. Graveyard/Cemetery/ Cremations area 9. Electrical Substation 10. Power Station 11. Sports Facilities (Gymnasium) 	<p>Additional sites for such purposes for any locality may be secured by the competent authority where deemed necessary.</p>
14	Agriculture	<ol style="list-style-type: none"> 1. Agrotechnology Par 2. Aquaculture Farm (e.g. Aquarium fish) 3. Plant Nursery 4. Hydroponics Farm 5. Agriculture research/ experimental station 	

5.4.3 Composite Urban Area Plan

URBAN AREA PLAN MAP OF KALAPARA PAURASHAVA, PATUAKHALI (2021-2031)

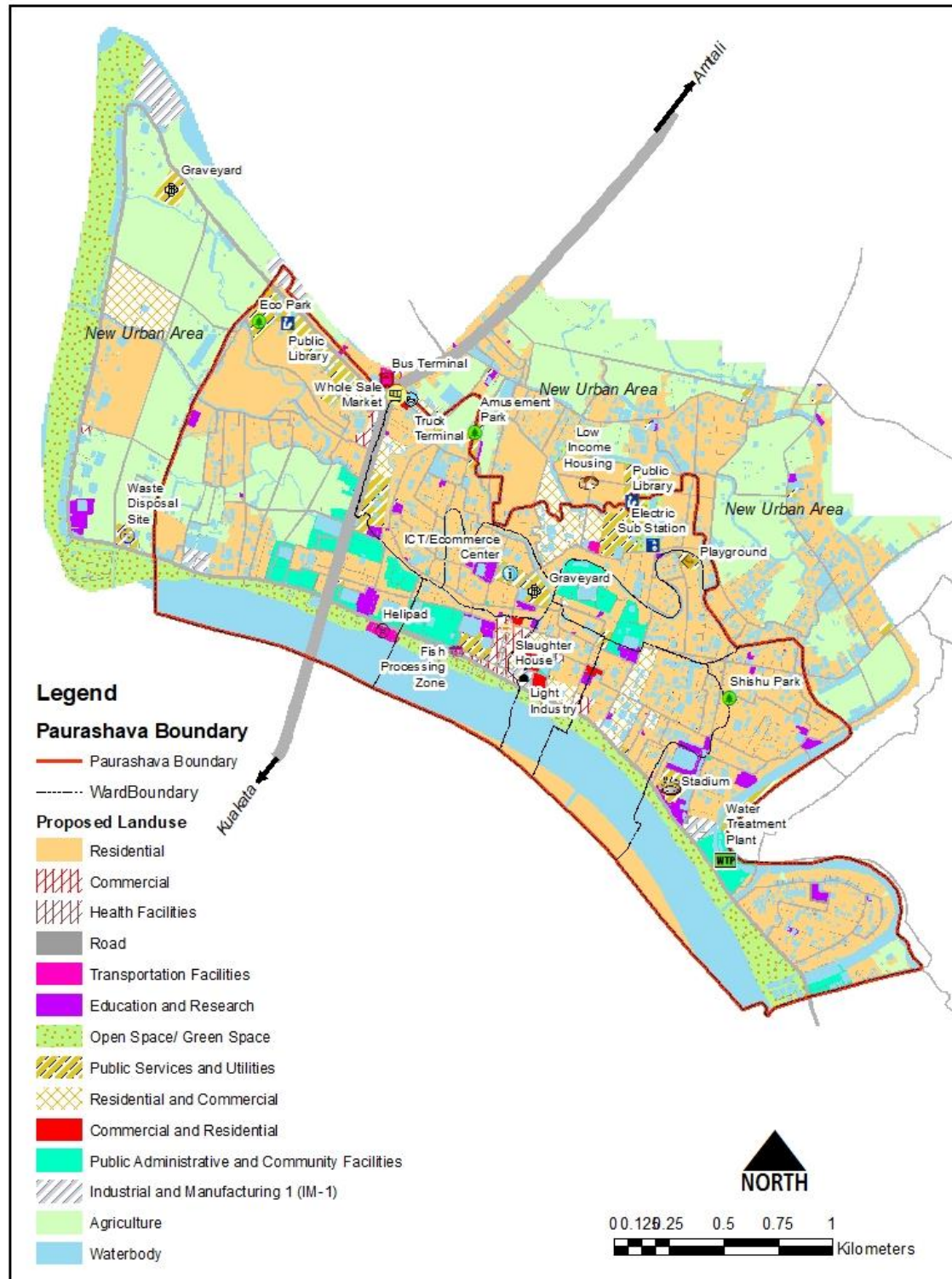


Table-02: Proposed Land use distribution (With New urban Area)

Land use	Area (Acre)	Percentage
Agriculture	451.91	22.241
Commercial & Residential	5.40	0.266
Commercial Use	13.45	0.662
Education and research	25.70	1.265
Health Facilities	0.47	0.023
Industrial and manufacturing 1 (LM-1)	21.00	1.033
Open Space/green space	151.85	7.474
Public Administrative And Community Facilities	51.27	2.523
Public Services and Utilities	70.44	3.467
Residential & Commercial	18.94	0.932
Residential & Institution	0.42	0.021
Residential and Commercial	39.31	1.935
Residential Use	648.16	31.900
Transport facilities	3.93	0.193
Transportation and Communication	74.82	3.682
Waterbody	454.77	22.382
Total	2031.83	100.000

Proposed Facilities of Kalapara Paurashava

SPZ Name	ID NO	Proposed Landuse	Proposals Name	Area (Acre)	Location (Ward)	Mouza Name	JL No	Sheet No	Plot No
Urban Fringe	Hea-04	Health Facilities	Clinic	2	1	Khepara	6	1	136,132
Urban Fringe	PSU-04	Public Services and Utilities	Park	3.10	1	Khepara	6	1	136,297,149,135,134,289,133132
Urban Fringe	Com-03	Commercial Use	Community Commercial	3.77	1	Khepara	6	1	137,145,132,136
Urban Fringe	PSU-04	Public Services and Utilities	Public Library	1.5	1	Khepara	6	1	136
Urban Fringe	P-Admin24	Public Services and Utilities	Councilor's Office	.33	1	Khepara	6	1	185

SPZ Name	ID NO	Proposed Landuse	Proposals Name	Area (Acre)	Location (Ward)	Mouza Name	JL No	Sheet No	Plot No
Urban Fringe	Open_32	Open Space/green space	Bangabondhu River View	6.1	1	Khepara	6	1	236,238,240,243,245,251,250,252,247,251,254
Urban	Trf-41	Transport facilities	Auto/Rickshaw Stand	0.19	1	Khepara	6	3	612,613,605
Urban	Trf-221,2	Transport facilities	Helipad	0.11	1,2	Khepara	6	3	614,624,627
Urban	Tr_f12	Transport facilities	Bus Terminal	1.47	1	Khepara	6	2	329,332,333,334,335,337
Urban	P-Admin-27	Public Services and Utilities	Councilor's Office	0.04	2	Khepara	6	3	612
Urban	Com_36	Commercial Use	Fish Processing Zone	0.08	2	Khepara	6	3	653,654
Open_33	Open_33	Open Space/green space	River Bank Recreation	1.58	2	Khepara	6	3	664,667,674,675,676,677,678,684,685,686,687,688,689,690,713,714,715,716,724
Urban	PSU-40	Transport Facility	Truck Terminal	0.72	3	Khepara	6	2	339,377,361,362,539,377,537
Urban	Com-17	Commercial Use	Wholesale Market	0.20	3	Khepara	6	2	361,362,539
Urban	PSU-16	Public Service & Utility	Secondary Transfer Station	0.58	3	Khepara	6	2	364,377,403,404

SPZ Name	ID NO	Proposed Landuse	Proposals Name	Area (Acre)	Location (Ward)	Mouza Name	JL No	Sheet No	Plot No
Urban	PSU-19	Public Service &Utility	Cinema Hall	0.34	3	KhepuPara	6	2	413,414
Urban	Open-35	Open Space & Green Space	Water Based Recreation	0.57	3	KhepuPara	6	2	423,424,425,597,842,419,421,422
Urban	Com_10	Commercial Use	ICT/Ecommerce Center	2.61	4	KhepuPara	6	3	830,831,832,829,849,1084
Urban	PSU-98	Public Services and Utilities	Graveyard	4	4	KhepuPara	6	3	850,852,865,866,867,868,869,870
Urban	PAdmin-26	Public Services and Utilities	Councilor's Office	0.04	4	KhepuPara	6	3	814,822,823,824
Urban	Com-07	Commercial Use	Neighbourhood Commercial, Cold Storage	8.04	5	KhepuPara	6	2	460,461,503,505,506,507,508,511,512,513,514,515
Urban	PSU-8	Public Services and Utilities	Public Library	3.27	5	KhepuPara	6	2	505,506,507,508,509,510,511,514,526,528,532,597
Urban, New Urban	PSU-13	Public Services and Utilities	Electric Sub Station	0.53	5	KhepuPara	6	2	502,503
Urban	Resi-18	Residential Use	Low Income Housing	18.16	5	KhepuPara	6	2	438,456,457,458,460,514,515,517,518,519,522,523,524,525,526,527,596
Urban	TrF-11	Transport facilities	Auto Truck Stand	0.62	5	KhepuPara	6	2	459,460,461,472,473
Urban	Hea-21	Health Facilities	Clinic	1.09	6,7,8	KhepuPara	6	3	986

SPZ Name	ID NO	Proposed Landuse	Proposal s Name	Area (Acre)	Locatio n (Ward)	Mouz a Name	JL N o	Shee t No	Plot No
Urban	Open-34	Open Space/green space	River Bank Recreation	1.48	6	Khepara	6	3	963,956,922,918,919,920,921,888,1189,1133,1129,1130,1132,1133,1125,1111,1091,1089
Urban	PAdmin-28	Public Administrative and Defence And Community Facilities	Councilor's Office	0.02	6	Khepara	6	3	961
Urban	PSU-20	Public Services and Utilities	Community Center	0.09	6	Khepara	6	3	958
Urban	PAdmin-29	Public Administrative and Defence And Community Facilities	Councilor's Office	0.016	7	Khepara	6	3	982,985
Urban	Hea-21	Health Facilities	Clinic	1.09	6,7,8	Khepara	6	3	986
Urban	PSU-23	Public Services and Utilities	Playground	1.41	7	Khepara	6	3	1011,1012
	PSU-15	Public Services and Utilities	Secondary transfer Station(S TS)	0.24	8	Khepara	6	3	942,943,1038,1040
Urban	PAdmin-30	Public Administrative and Defence And Community Facilities	Councilor's Office	0.01	8	Khepara	6	3	1023
Urban	Hea-21	Health Facilities	Clinic	1.09	6,7,8	Khepara	6	3	986
Urban Fringe	Open-38	Open Space/green space	Recreation	3.21	9	Badurtali	7	3	816,817,833,
Urban Fringe	PAdmin-31	Public Administrative and Defence And Community Facilities	Councilor's Office	0.07	9	Badur	7	3	653

SPZ Name	ID NO	Proposed Landuse	Proposals Name	Area (Acre)	Location (Ward)	Mouza Name	JL No	Sheet No	Plot No
		nd Defence And Community Facilities				tali			
Urban Fringe	PSU-06	Public Services and Utilities	Water Treatment Plant	8.7	9	Badur tali	7	3	672,673,713,714,715,716,717,718,719,720,813,993,814,816,833,840
Urban Fringe	PSU-37	Public Services and Utilities	Shishu Park	0.62	9	Badur tali	7	3	603,604,617
Urban	PSU-39	Public Services and Utilities	Stadium	3.45	9	Badur tali	7	3	676,682

CHAPTER- 6: WARD ACTION PLAN

6.1 Introduction

This chapter contains Ward Action Plan of each individual Ward. First, the issues prevailing in different Wards have been briefly described followed by description of Development Proposals in ward action plan for each Ward.

6.2 Background

The Ward Action Plans are prepared under the framework of Structure Plan and Urban Area Plan. The Ward Action Plans contain details of development proposals at Ward level including the problems and opportunities existing therein and also include the proposals made in the upper level plan that is in the Urban Area Plan. The Ward Action Plans have been formulated for execution within a period of 5 years.

Ward Action Plan is a vital part of the current plan package as far as Strategic development and development control is concerned. Absence of Ward Action Plan not only hampers undertaking of development projects by planning authority, but also leads to uncontrolled and unwanted Strategic development in the private sector. Land use zoning is also provided in the Ward Action Plan to enable detailed view of proposed land use and development.

6.3 Ward Action Plan for Ward No. 01

6.3.1 Demography

Ward No. 1 consists of the mouza named Khepupara (Sheet 1,3). It is situated on the WEST part of the Pourashava and Ward No. 3 and 2 is on the East.

Present population of the Ward is 4298 (2022) and it will 5192 in the year 2031 and 5892 in 2041. Density of population is 12 persons per acre and it will be 17 in the year 2041.

Table- 11: Population Statistics of Ward No. 01

Item	2011	2022	2031	2041
Area (acre)	349.15			
Population	3319	4292	5192	5892
Density	10	12	15	17

6.3.2 Review of Existing Land Use

Out of total 349.15 acres of land of this ward, more than 88.49 acres of land i.e. 25.34% is used as residential. The agricultural use with 114.24 acres, occupies 32.72% of total land, water bodies 25.19%, commercial use 0.69%, mixed use 1.19%, and transportation and circulation network 1.34%. Only 1.07% of land is used for education facilities.

Table- 12: Existing Landuse category in Ward-01

Existing Landuse	Area(Acre)	Percentage
Administrative/ Public Service	12.94	3.71
Agriculture	114.24	32.72
Commercial	2.42	0.69
Community Service	1.99	0.57
Education and Research	3.72	1.07
Health Service	1.88	0.54
Manufacturing and Processing	6.05	1.73
Mixed Use	4.14	1.19
Open Space and Recreational	0.09	0.03
Residential	88.49	25.34
Road	14.46	4.14
Service Activity	6.08	1.74
Transportation and Communication	4.68	1.34
Waterbody	87.96	25.19
Grand Total	349.15	100.00

6.3.3 Ward Action Plan Proposals

6.3.3.1 Proposed Land Use Zoning

The category wise proposals are presented here. Table 13 shows the amount of land uses in Ward no. 1. Map shows proposed land use of Ward 01.

Table- 13: Proposed Land Uses of Ward No. 01

Proposed Landuse	Area (Acre)	Percentage
Agriculture	56.76	16.25
Commercial & Residential	0.01	0.00
Commercial Use	3.27	0.94
Education and research	3.66	1.05
Industrial and manufacturing 1 (LM-1)	3.98	1.14
Open Space/green space	13.92	3.99
Public Administrative and Defense And Community Facilities	21.74	6.23
Public Services and Utilities	17.48	5.01
Residential & Commercial	0.09	0.03
Residential and Commercial	2.96	0.85
Residential Use	117.59	33.68
Transport facilities	2.04	0.59
Transportation and Communication	17.17	4.92
Waterbody	88.50	25.35
Total	349.17	100.00

6.3.3.2 Development Proposals for Ward No-1

The consultant proposes some urban facilities in Ward No-1. It includes Public Library, Park, clinic, Administrative Office, Bangabondhu River View, Bus terminal, Community

Commercial, Auto Rickshaw Stand, Helipad etc. The details of the proposal are given in the table below.

Table- 14: Development Proposals for ward 01 (Mouza Wise)

SPZ Name	ID NO	Proposed Landuse	Proposal s Name	Area (Acre)	Locatio n (Ward)	Mouza Name	JL N o	Shee t No	Plot No
Urban Fringe	Hea-04	Health Facilities	Clinic	2	1	Khepu para	6	1	136,132
Urban Fringe	PSU-04	Public Services and Utilities	Park	3.10	1	Khepu para	6	1	136,297,149,135,134,289,133132
Urban Fringe	Com-03	Commercial Use	Communit y Commerci al	3.77	1	Khepu para	6	1	137,145,132,136
Urban Fringe	PSU-04	Public Services and Utilities	Public Library	1.5	1	Khepu para	6	1	136
Urban Fringe	P-Admin24	Public Services and Utilities	Councilor' s Office	.33	1	Khepu para	6	1	185
Urban Fringe	Open_32	Open Space/green space	Bangabon dhu River View	6.1	1	Khepu para	6	1	236,238,240,243,245,251,250,252,247,251,254
Urban	Trf-41	Transport facilities	Auto/Ricks haw Stand	0.19	1	Khepu para	6	3	612,613,605
Urban	Trf-221,2	Transport facilities	Helipad	2.11	1,2	Khepu para	6	3	614,624,627
Urban	Tr_f12	Transport facilities	Bus Terminal	1.47	1	Khepu para	6	2	329,332,333,334,335,337

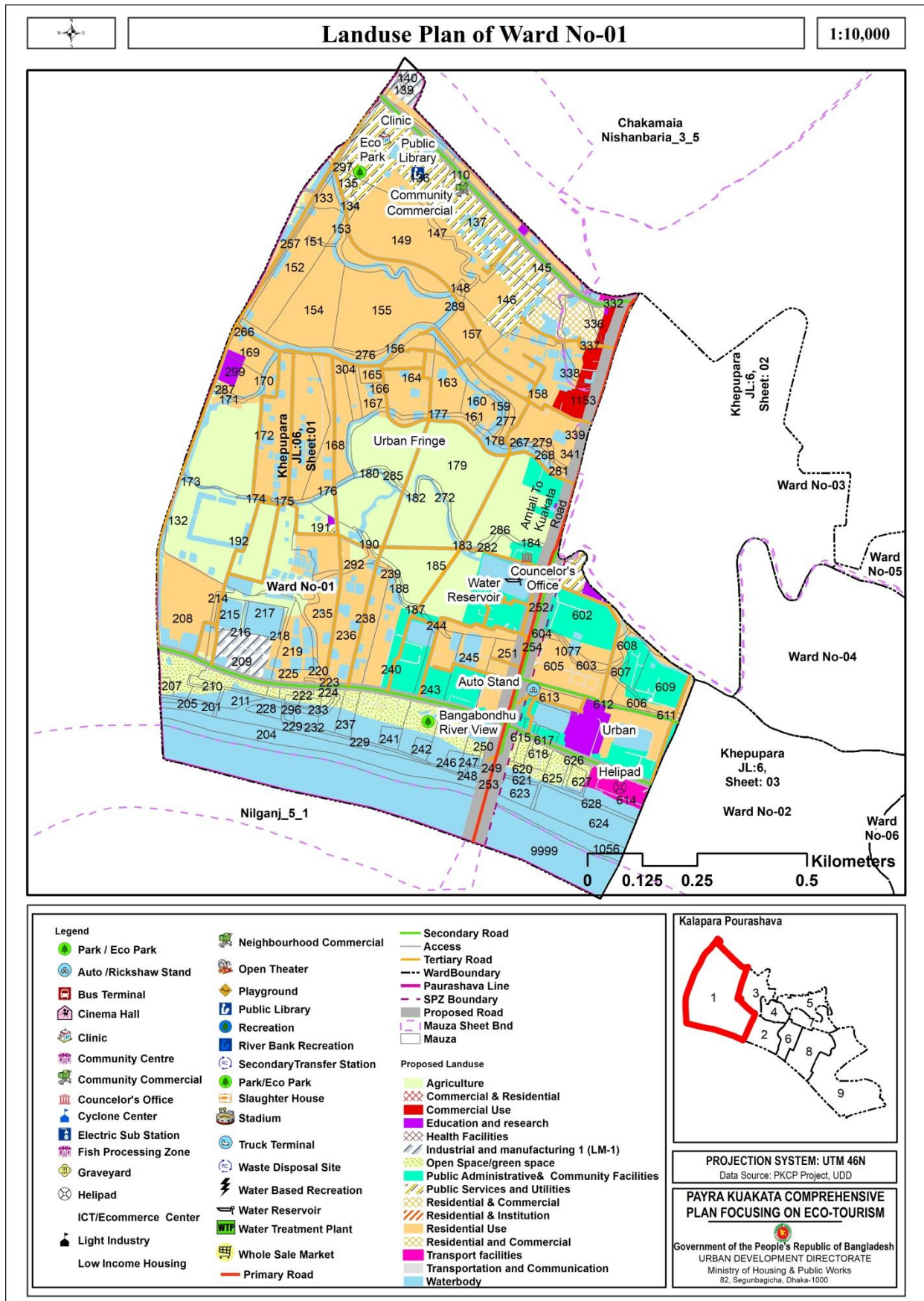


Figure 15: Ward Action Plan for Ward No-1

6.4 Ward Action Plan for Ward No. 02

6.4.1 Demography

Ward No. 2 consists of the mouza named Khepupara (JL:06, Sheet:03). It is situated on the southern part of the Pourashava and Ward No. 1 is on west, ward 4 is on the north, and ward 06 on the east.

Present population of the Ward is 1408 (2022) and it will be 1329 in the year 2031 and 1271 in 2041. Density of population is 18 persons per acre and it will be 16 in the year 2031.

Table- 15: Population Statistics of Ward No. 02

Item	2011	2022	2031	2041
Area (acre)	77.41			
Population	1501	1408	1329	1271
Density	19	18	17	16

6.4.2 Review of Existing Land Use

Out of total 77.41 acres of land of this ward, more than 11.19 acres of land i.e. 14.46% is used for residential. The agricultural use with 1.64 acres, occupies 2.11% of total land, water bodies 50.21%, commercial use 3.07%, mixed use 8.68% and Transportation and Communication 0.96%. Only 0.11% of land is used as health facilities.

Table- 16: Existing Landuse category in Ward-02

Existing Landuse	Area(Acre)	Percentage
Administrative/ Public Service	8.27	10.68
Agriculture	1.64	2.11
Commercial	2.38	3.07
Community Service	1.44	1.86
Education and Research	1.26	1.62
Health Service	0.08	0.11
Manufacturing and Processing	0.44	0.56
Mixed Use	6.72	8.68
Residential	11.19	14.46
Road	3.87	5.00
Service Activity	0.50	0.65
Transportation and Communication	0.75	0.96
Waterbody	38.87	50.21
Grand Total	77.41	100.00

6.4.3 Ward Action Plan Proposals

6.4.3.1 Proposed Land Use Zoning

The category wise proposals are presented here. Table 18 shows the amount of land uses in Ward no 2. Map shows proposed land use of Ward 02.

Table- 17: Proposed Land Uses of Ward No. 02

Proposed Landuse	Area (Acre)	Percentage
Commercial & Residential	0.41	0.53
Commercial Use	7.23	9.35
Education and research	1.66	2.15
Industrial and manufacturing 1 (LM-1)	0.00	0.00
Open Space/green space	7.37	9.52
Public Administrative and Defence And Community Facility	8.49	10.97
Public Services and Utilities	2.62	3.38
Residential & Institution	0.40	0.52
Residential Use	5.74	7.41
Transport facilities	0.12	0.15
Transportation and Communication	4.50	5.82
Waterbody	38.87	50.21
Total	77.41	100.00

6.4.3.2 Development Proposals for Ward No-2

The consultant proposes some urban facilities in Ward No-2. It includes Helipad (Partial), Park, Fish Processing Zone, River view Park etc. The details of the proposal are given in the table below.

Table- 18: Development Proposals for ward 02 (Mouza Wise)

SPZ Name	ID NO	Proposed Landuse	Proposal s Name	Area (Acre)	Locatio n (Ward)	Mouz a Name	JL N o	Shee t No	Plot No
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Urban	Trf-221,2	Transport facilities	Helipad	2.11	1,2	Khepu para	6	3	614,624,627
Urban	P-Admin-27	Public Services and Utilities	Councilor's Office	0.04	2	Khepu para	6	3	612
Urban	Com_36	Commercial Use	Fish Processing Zone	0.08	2	Khepu para	6	3	653,654
Open_33	Open_33	Open Space/green space	River Bank Recreation	1.58	2	Khepu para	6	3	664,667,674,675,676,677,678,684,685,686,687,688,689,690,713,714,715,716,724

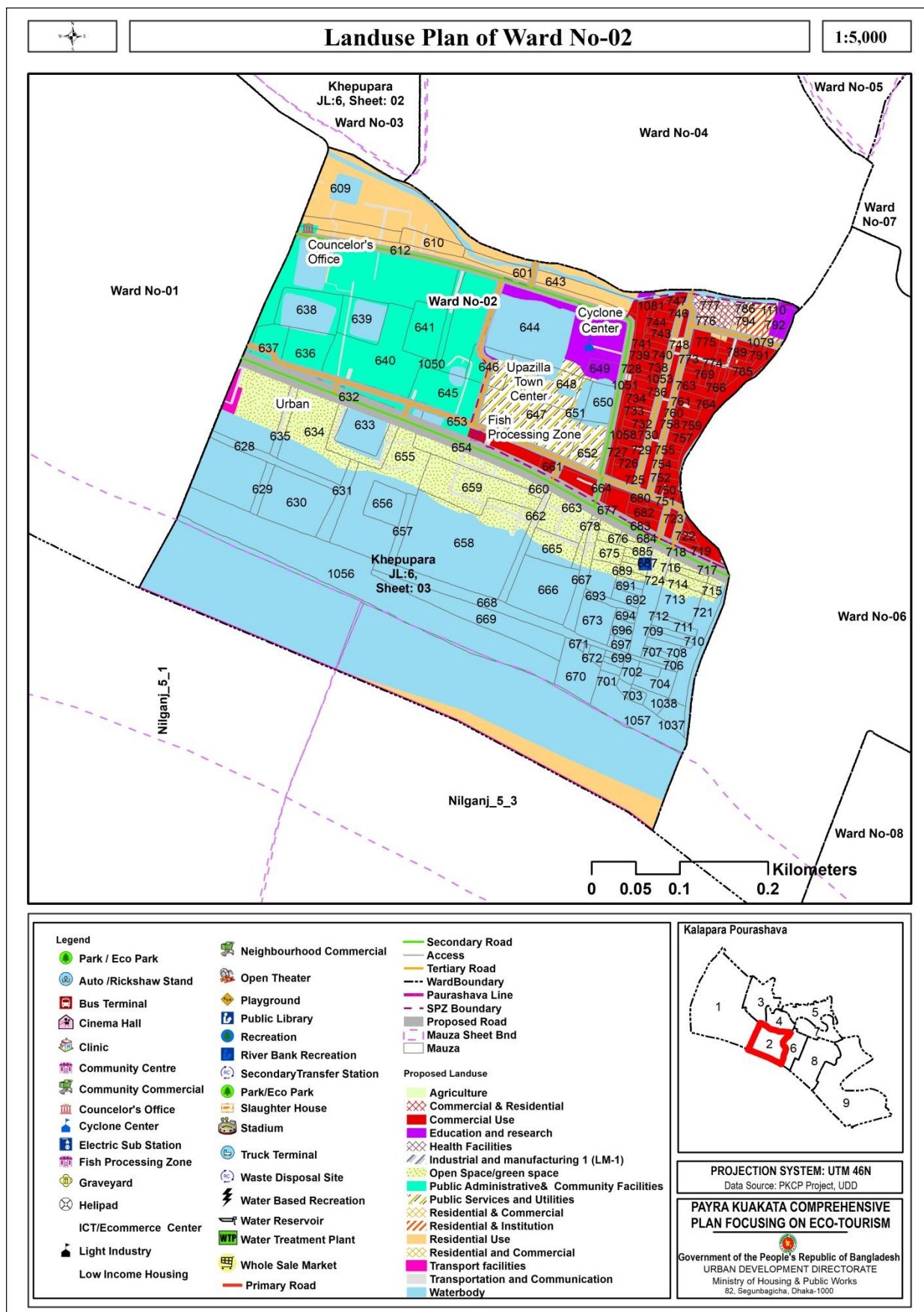


Figure 16: Ward Action Plan for Ward No-2

6.5 Ward Action Plan for Ward No. 03

6.5.1 Demography

Ward No. 3 consists of the mouza named Kalapara. It is situated on the southwestern part of the Pourashava. Ward No. 4 is on the north, and Ward No. 1 and 2 on the east.

Present population of the Ward is 2941 (2022) and it will 4866 in the year 2031 and 7197 in 2041. Density of population is 34 persons per acre and it will be 57 in the year 2031 and 84 in 2041.

Table- 19: Population Statistics of Ward No. 03

Item	2011	2022	2031	2041
Area (acre)	85.88			
Population	1681	2941	4866	7197
Density	20	34	57	84

6.5.2 Review of Existing Land Use

Out of total 85.88 acres of land of this ward, more than 52.28 acres of land i.e. 60.88% is used as residential. The agricultural use with 9.21 acres, occupies 10.72% of total land, water bodies 13.83%, commercial use 0.33%, mixed use 2.38% and Transportation and Communication 0.38%. Only 0.86% of land is used as health facilities.

Table- 20: Existing Landuse category in Ward-03

Existing Landuse	Area (Acre)	Percentage
Administrative/ Public Service	0.43	0.50
Agriculture	9.21	10.72
Commercial	0.28	0.33
Community Service	0.61	0.71
Education and Research	1.34	1.56
Health Service	0.74	0.86
Manufacturing and Processing	0.03	0.03
Mixed Use	2.04	2.38
Residential	52.28	60.88
Road	4.51	5.26
Service Activity	2.20	2.56
Transportation and Communication	0.33	0.38
Waterbody	11.88	13.83
Grand Total	85.88	100.00

6.5.3 Ward Action Plan Proposals

6.5.3.1 Proposed Land Use Zoning

The category wise proposals are presented here. Table 22 shows the amount of land uses in Ward no 3. Map shows proposed land use of Ward 03.

Table- 21: Proposed Land Uses of Ward No. 03

Proposed Landuse	Area (Acre)	Percentage
Agriculture	6.07	7.07
Commercial & Residential	0.82	0.95
Commercial Use	0.51	0.59
Education and research	1.34	1.56
Open Space/green space	0.37	0.43
Public Administrativeand Defence And Community Facility	0.08	0.09
Public Services and Utilities	8.58	9.99
Residential & Commercial	4.19	4.88
Residential Use	47.60	55.41
Transportation and Communication	4.52	5.26
Waterbody	11.83	13.77
Grand Total	85.90	100.00

6.5.3.2 Development Proposals for Ward No-3

The consultant proposes some urban facilities in Ward No-3. It includes Truck Terminal, Wholesale Market, Secondary Transfer Station,Cinema Hall, Administrative Office, Waste Transfer Station etc. The details of the proposal are given in the table below.

Table- 22: Development Proposals for ward 03 (Mouza Wise)

SPZ Name	ID NO	Proposed Landuse	Proposal s Name	Area (Acre)	Locatio n (Ward)	Mouz a Name	JL N o	Shee t No	Plot No
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Urban	PSU-40	Transport Facility	Truck Terminal	0.72	3	KhepuPara	6	2	339,377,361,362,539,377,537
Urban	Com-17	Commercial Use	Wholesale Market	0.20	3	KhepuPara	6	2	361,362,539
Urban	PSU-16	Public Service &Utility	Secondary Transfer Station	0.58	3	KhepuPara	6	2	364,377,403,404
Urban	PSU-19	Public Service &Utility	Cinema Hall	0.34	3	KhepuPara	6	2	413,414
	Open-35	Open Space & Green Space	Water Based Recreation	0.57	3	KhepuPara	6	2	423,424,425,597,842,419,421,422

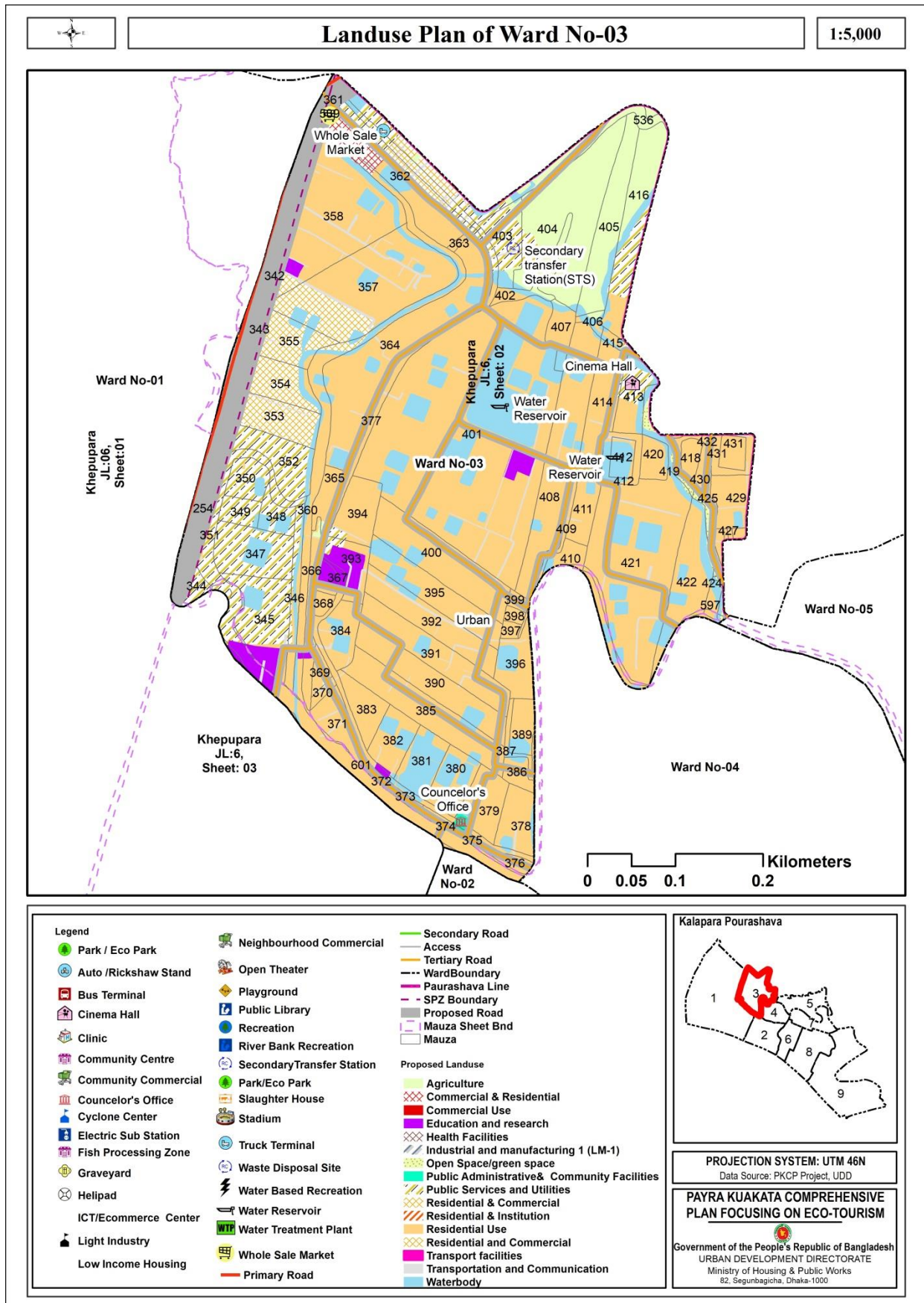


Figure 17: Ward Action Plan for Ward No-3

6.6 Ward Action Plan for Ward No. 04

6.6.1 Demography

Ward No. 4 consists of the mouza named Khepupara (JL: 06, Sheet: 03). It is situated on the middle part of the Pourashava. Ward No. 5 is on the north, Ward No.3 on the south, Ward No.78 on the east and Ward No. 1 on the west.

Present population of the Ward is 1739 (2022) and it will 2212 in the year 2031 and 2667 in 2041. Density of population is 41 persons per acre and it will be 63 in the year 2041.

Table- 23: Population Statistics of Ward No. 04

Item	2011	2022	2031	2041
Area (acre)	42.10			
Population	1331	1739	2212	2667
Density	32	41	53	63

6.6.2 Review of Existing Land Use

Out of total 42 acres of land of this ward, more than 25.87 acres of land i.e. 61.45% is used in residential. The agricultural use with 0.01 acres, occupies 0.03% of total land, water bodies 13.57%, mixed use 1.14% and Transportation and Communication 5.51%. Only 7.68% of land is used as education facilities.

Table- 24: Existing Landuse category in Ward-04

Existing Landuse	Area (Acre)	Percentage
Administrative/ Public Service	0.71	1.69
Agriculture	0.01	0.03
Community Service	3.69	8.77
Education and Research	3.23	7.68
Health Service	0.02	0.04
Mixed Use	0.48	1.14
Residential	25.87	61.45
Transportation and Communication	2.32	5.51
Service Activity	0.05	0.12
Waterbody	5.71	13.57
Grand Total	42.10	100

6.6.3 Ward Action Plan Proposals

6.6.3.1 Proposed Land Use Zoning

The category wise proposals are presented here. Table 26 shows the amount of land uses in Ward no 4. Map shows proposed land use of Ward 04.

Table- 25: Proposed Land Uses of Ward No. 04

Proposed Landuse	Area (Acre)	Percentage
Education and research	3.23	7.68
Public Administrative and Defence And Community Facility	0.05	0.11
Public Services and Utilities	6.00	14.24
Residential Use	24.74	58.77
Transportation and Communication	2.32	5.51
Waterbody	5.76	13.68
Total	42.10	100.00

6.6.3.2 Development Proposals for Ward No-4

The consultant proposes some urban facilities in Ward No-4. It includes Graveyard, ICT/Ecommerce Center, Administrative Office, Playground etc. The details of the proposal are given in the table below.

Table- 26: Development Proposals for ward 04 (Mouza Wise)

SPZ Name	ID NO	Proposed Landuse	Proposals Name	Area (Acre)	Location (Ward)	Mouza Name	JL No	Sheet No	Plot No
Urban	Com_10	Commercial Use	ICT/Ecommerce Center	2.61	4	Khepupara	6	3	830,831,832,829,849,1084
Urban	PSU-98	Public Services and Utilities	Graveyard	4	4	Khepupara	6	3	850,852,865,866,867,868,869,870
Urban	PAdmin-26	Public Services and Utilities	Councilor's Office	0.04	4	Khepupara	6	3	814,822,823,824

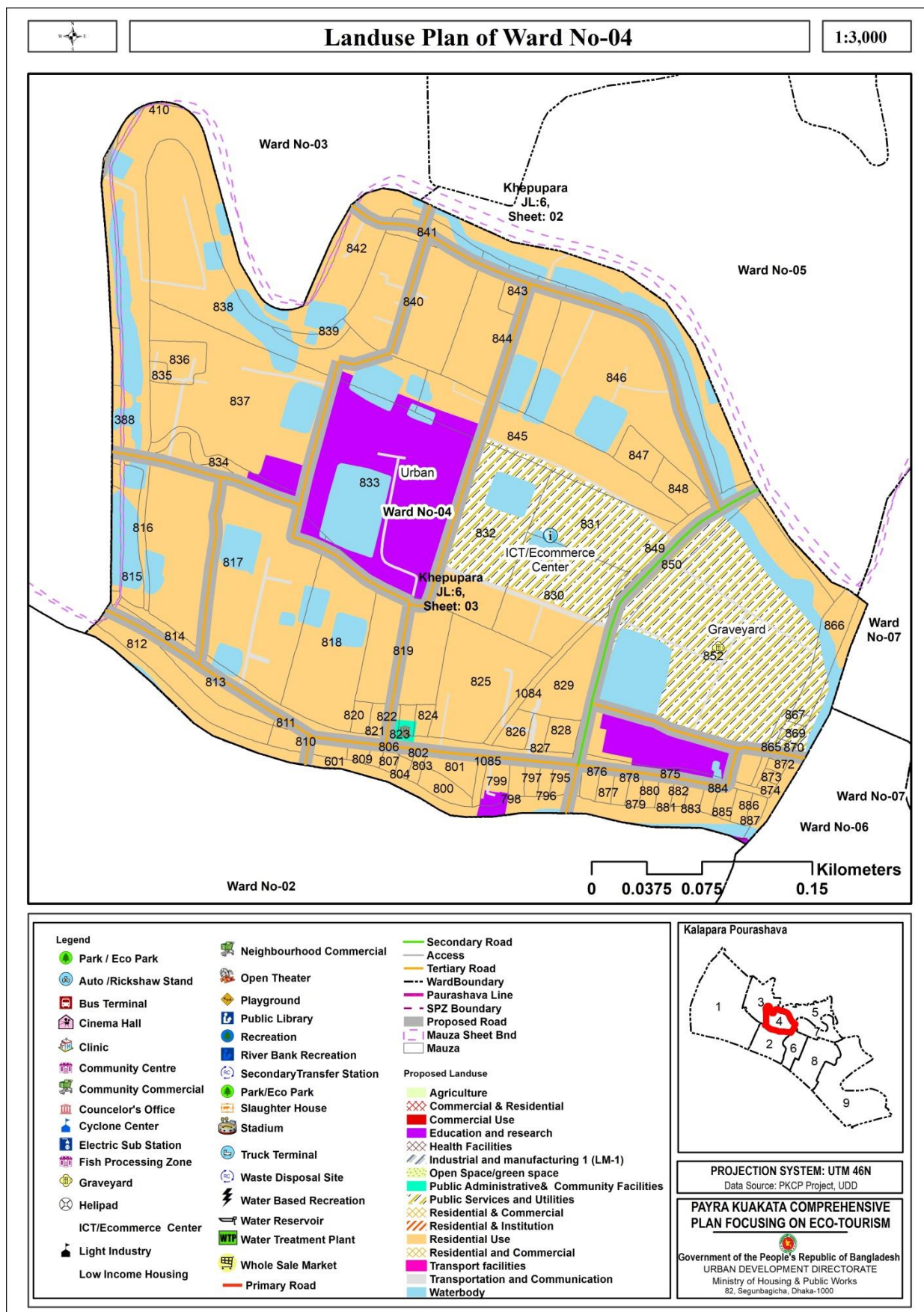


Figure 18: Ward Action Plan for Ward No-4

6.7 Ward Action Plan for Ward No. 05

6.7.1 Demography

Ward No. 5 consists of the mouza named Khepupara (JL:05, Sheet: 02). It is situated on the northpart of the Pourashava and Ward No. 4 and 7 is on the South, Upazila area on the North and west. Present population of the Ward is 1595 (2022) and it will 2071 in the year 2031 and 2538 in 2041. Density of population is 23 persons per acre and it will be 29 in the year 2031 and 36 in 2041.

Table- 27: Population Statistics of Ward No. 05

Item	2011	2022	2031	2041
Area (acre)	70.81			
Population	1193	1595	2071	2538
Density	17	23	29	36

6.7.2 Review of Existing Land Use

Out of total 70.81 acres of land of this ward, more than 38.33 acres of land i.e. 54.13% is used as residential. The agricultural use with 17.95 acres, occupies 25.36% of total land, water bodies 15.31%, commercial use 0.04%, mixed use 0.31% and Transportation and Communication 3.36%. Only 0.34% of land is used as education facilities.

Table- 28: Existing Landuse category in Ward-05

Existing Landuse	Area (Acre)	Percentage
Administrative/ Public Service	0.01	0.01
Agriculture	17.95	25.36
Commercial	0.03	0.04
Community Service	0.64	0.90
Education and Research	0.24	0.34
Health Service	0.03	0.04
Manufacturing and Processing	0.06	0.09
Mixed Use	0.22	0.31
Residential	38.33	54.13
Transportation and Communication	2.38	3.36
Service Activity	0.08	0.11
Waterbody	10.84	15.31
Grand Total	70.81	100.00

6.7.3 Ward Action Plan Proposals

6.7.3.1 Proposed Land Use Zoning

The category wise proposals are presented here. Table 30 shows the amount of land uses in Ward no 5. Map shows proposed land use of Ward 05.

Table- 29: Proposed Land Uses of Ward No. 05

Proposed Landuse	Area (Acre)	Percentage
Agriculture	0.06	0.08
Education and research	0.15	0.21
Open Space/green space	2.79	3.94
Public Administrative and Defence And Community Facility	0.01	0.01
Public Services and Utilities	9.80	13.84
Residential & Commercial	1.63	2.30
Residential and Commercial	9.59	13.55
Residential Use	33.20	46.89
Transport facilities	0.55	0.77
Transportation and Communication	2.25	3.18
Waterbody	10.79	15.23
Total	70.81	100.00

6.7.3.2 Development Proposals for Ward No-5

The consultant proposes some urban facilities in Ward No-5. It includes Neighbourhood Commercial, Public Library, Electric Sub Station, Auto Truck Stand, Low Income Housing and Administrative Office etc. The details of the proposal are given in the table below.

Table- 30: Development Proposals for ward 05 (Mouza Wise)

SPZ Name	ID NO	Proposed Landuse	Proposal s Name	Area (Acre)	Locatio n (Ward)	Mouz a Name	JL N o	Shee t No	Plot No
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Urban	Com-07	Commercial Use	Neighbourhood Commercial, Cold Storage	8.04	5	Khep upara	6	2	460,461,503,505,506,507,508,511,512,513,514,515
Urban	PSU-8	Public Services and Utilities	Public Library	3.27	5	Khep upara	6	2	505,506,507,508,509,510,511,514,526,528,532,597
Urban, New Urban	PSU-13	Public Services and Utilities	Electric Sub Station	0.53	5	Khep upara	6	2	502,503
Urban,	Resi-18	Residential Use	Low Income Housing	18.16	5	Khep upara	6	2	438,456,457,458,460,514,515,517,518,519,522,523,524,525,526,527,596
	TrF-11	Transport facilities	Auto Truck Stand	0.62	5	Khep upara	6	2	459,460,461,472,473

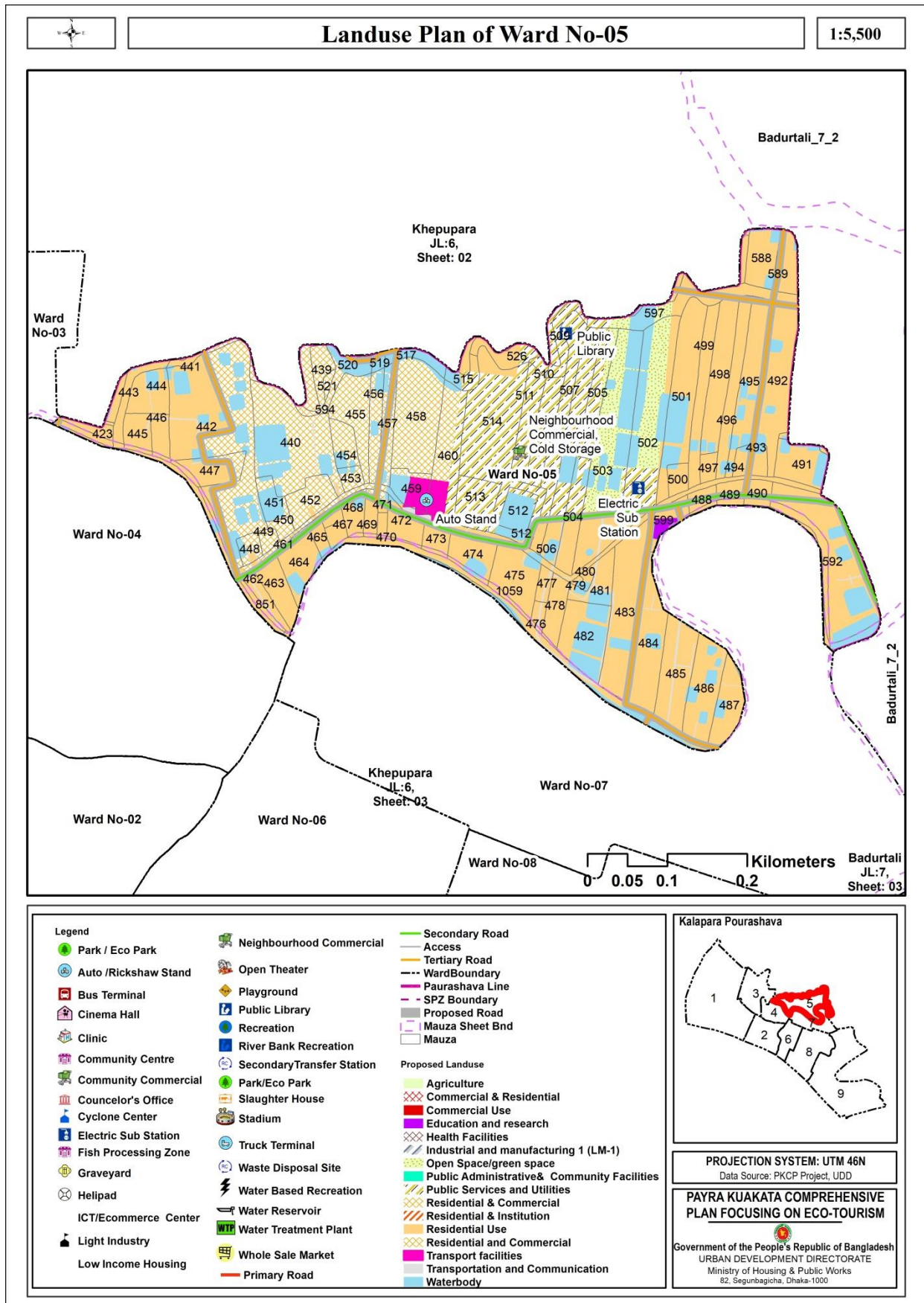


Figure 19: Ward Action Plan for Ward No-5

6.8 Ward Action Plan for Ward No. 06

6.8.1 Demography

Ward No. 6 consists of the mouza named Khepupara (JL:06, Sheet:03). It is situated on the middle and southern part of the Pourashava and Upazila area is on the north, Ward No. 7 on the North and Ward No. 2 and 8 on the east.

Present population of the Ward is 1892 (2022) and it will 2126 in the year 2031 and 2328 in 2041. Density of population is 39 persons per acre and it will be 44 in the year 2031 and 48 in 2041.

Table- 31: Population Statistics of Ward No. 06

Item	2011	2022	2031	2041
Area (acre)	48.69			
Population	1662	1892	2126	2328
Density	34	39	44	48

6.8.2 Review of Existing Land Use

Out of a total of 48.69 acres of land of this ward, more than 22.60 acres of land i.e. 46.41% is used as residential. The agricultural use with 2.37 acres, occupies 4.86% of total land, water bodies 13.91%, commercial use 2.09%, mixed use 4.73% and Transportation and Communication 0.48%. Only 0.92% of land is used as education facilities.

Table- 32: Existing Landuse category in Ward-06

Existing Landuse	Area (Acre)	Percentage
Agriculture	2.37	4.86
Commercial	1.02	2.09
Community Service	0.83	1.71
Education and Research	0.45	0.92
Health Service	0.42	0.86
Manufacturing and Processing	1.42	2.92
Mixed Use	2.31	4.73
Residential	22.60	46.41
Road	2.67	5.49
Service Activity	0.47	0.96
Transportation and Communication	0.23	0.48
Waterbody	13.91	28.57
Grand Total	48.69	100.00

6.8.3 Ward Action Plan Proposals

6.8.3.1 Proposed Land Use Zoning

The category wise proposals are presented here. Table 33 shows the amount of land uses in Ward no 6. Map shows proposed land use of Ward 06.

Table- 33: Proposed Land Uses of Ward No. 06

Proposed Landuse	Area (Acre)	Percentage
Commercial & Residential	3.70	7.60
Commercial Use	0.76	1.56
Education and research	0.45	0.92
Health Facilities	0.47	0.96
Industrial and manufacturing 1 (LM-1)	1.41	2.89
Open Space/green space	4.09	8.40
Public Administrative and Defence And Community Facility	0.24	0.49
Public Services and Utilities	0.41	0.84
Residential & Commercial	6.87	14.11
Residential & Institution	0.02	0.01
Residential Use	13.36	27.43
Transportation and Communication	2.99	6.14
Waterbody	13.91	28.56
Grand Total	48.69	100.00

6.8.3.2 Development Proposals for Ward No-6

The consultant proposes some urban facilities in Ward No-6. It includes Clinic, River Based Park, Community Center and Administrative Office etc. The details of the proposal are given in the table below.

Table- 34: Development Proposals for ward 06 (Mouza Wise)

SPZ Name	ID NO	Proposed Landuse	Proposals Name	Area (Acre)	Location (Ward)	Mouza Name	JL No	Sheet No	Plot No
Urban	Hea-21	Health Facilities	Clinic	1.09	6,7,8	Khepu para	6	3	986
Urban	Open-34	Open Space/green space	River Bank Recreation	1.48	6	Khepu para	6	3	963,956,922,918,919,920,921,888,1189,1133,1129,1130,1132,1133,1125,1111,1091,1089
Urban	PAdm in-28	Public Administrative	Councilor's Office	0.02	6	Khepu	6	3	961

		veand Defence And Community Facilities				para			
Urban	PSU- 20	Public Services and Utilities	Communit y Center	0.09	6	Khepu para	6	3	958

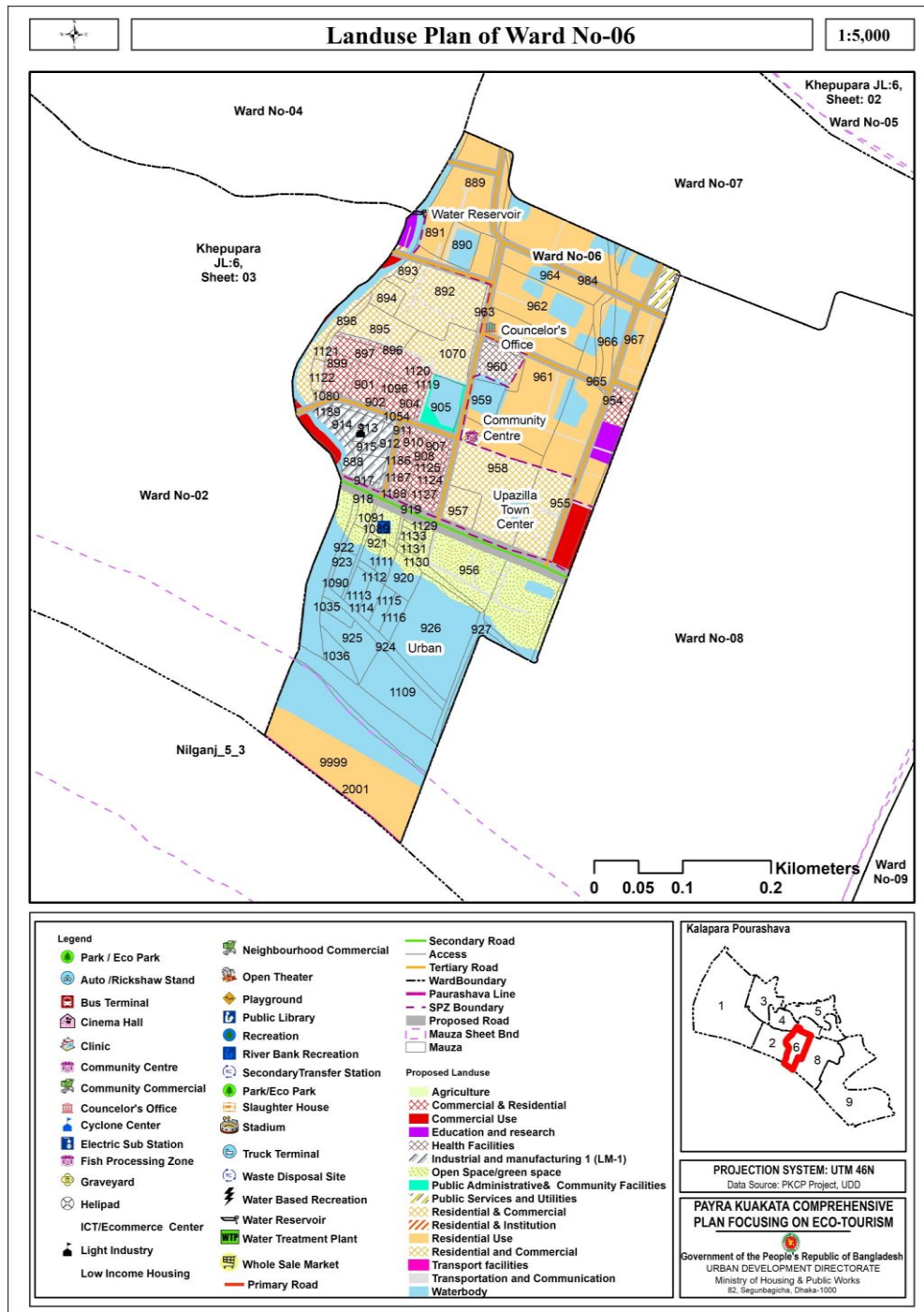


Figure 20: Ward Action Plan for Ward No-6

6.9 Ward Action Plan for Ward No. 07

6.9.1 Demography

Ward No. 7 consists of the mouza named Khepupara (Jl:06, Sheet:03). It is situated on the north part of the Pourashava and Ward No.6 & 8 is on the South, Ward No. 5 on the North. Present population of the Ward is 1814 (2022) and it will be 2371 in the year 2031 and 2921 in 2041. Density of population is 32 persons per acre and it will be 52 in the year 2041.

Table- 35: Population Statistics of Ward No. 07

Item	2011	2022	2031	2041
Area (acre)	56.18			
Population	1347	1814	2371	2921
Density	24	32	42	52

6.9.2 Review of Existing Land Use

Out of total 56.19 acres of land of this ward, more than 28.04 acres of land i.e. 49.92% is used as residential. The agricultural use with 1.44 acres, occupies 2.56% of total land, water bodies 18.65%, commercial use 0.39%, mixed use 1.57% and Transportation and Communication 5.10%. Only 0.52% of land is used as education facilities.

Table- 36: Existing Landuse category in Ward-07

Existing Landuse	Area (Acre)	Percentage
Administrative/ Public Service	11.60	20.65
Agriculture	1.44	2.56
Commercial	0.22	0.39
Community Service	0.22	0.39
Education and Research	0.29	0.52
Manufacturing and Processing	0.13	0.24
Mixed Use	0.88	1.57
Residential	28.04	49.92
Transportation and Communication	2.86	5.10
Waterbody	10.48	18.65
Grand Total	56.19	100.00

6.9.3 Ward Action Plan Proposals

6.9.3.1 Proposed Land Use Zoning

The category wise proposals are presented here. Table 38 shows the amount of land uses in Ward no 7. Map shows proposed land use of Ward 07.

Table- 37: Proposed Land Uses of Ward No. 07

Proposed Landuse	Area (Acre)	Percentage
Education and research	0.29	0.52
Public Administrative and Defence And Community Facility	11.27	20.05
Public Services and Utilities	1.83	3.25
Residential & Commercial	0.27	0.48
Residential Use	29.21	51.98
Transportation and Communication	2.86	5.10
Waterbody	10.46	18.61
Grand Total	56.19	100.00

6.9.3.2 Development Proposals for Ward No-7

The consultant proposes some urban facilities in Ward No-7. It includes Clinic ,Water Reservoir, Playground and Administrative Office etc. The details of the proposal are given in the table below.

Table- 38: Development Proposals for ward 07 (Mouza Wise)

SPZ Name	ID NO	Proposed Landuse	Proposal s Name	Area (Acre)	Locatio n (Ward)	Mouz a Name	JL N o	Shee t No	Plot No
Urban	PAdmin-29	Public Administrative and Defence And Community Facilities	Council or's Office	0.016	7	Khepara	6	3	982,985
Urban	Hea-21	Health Facilities	Clinic	1.09	6,7,8	Khepara	6	3	986
Urban	PSU-23	Public Services and Utilities	Playground	1.41	7	Khepara	6	3	1011,1012

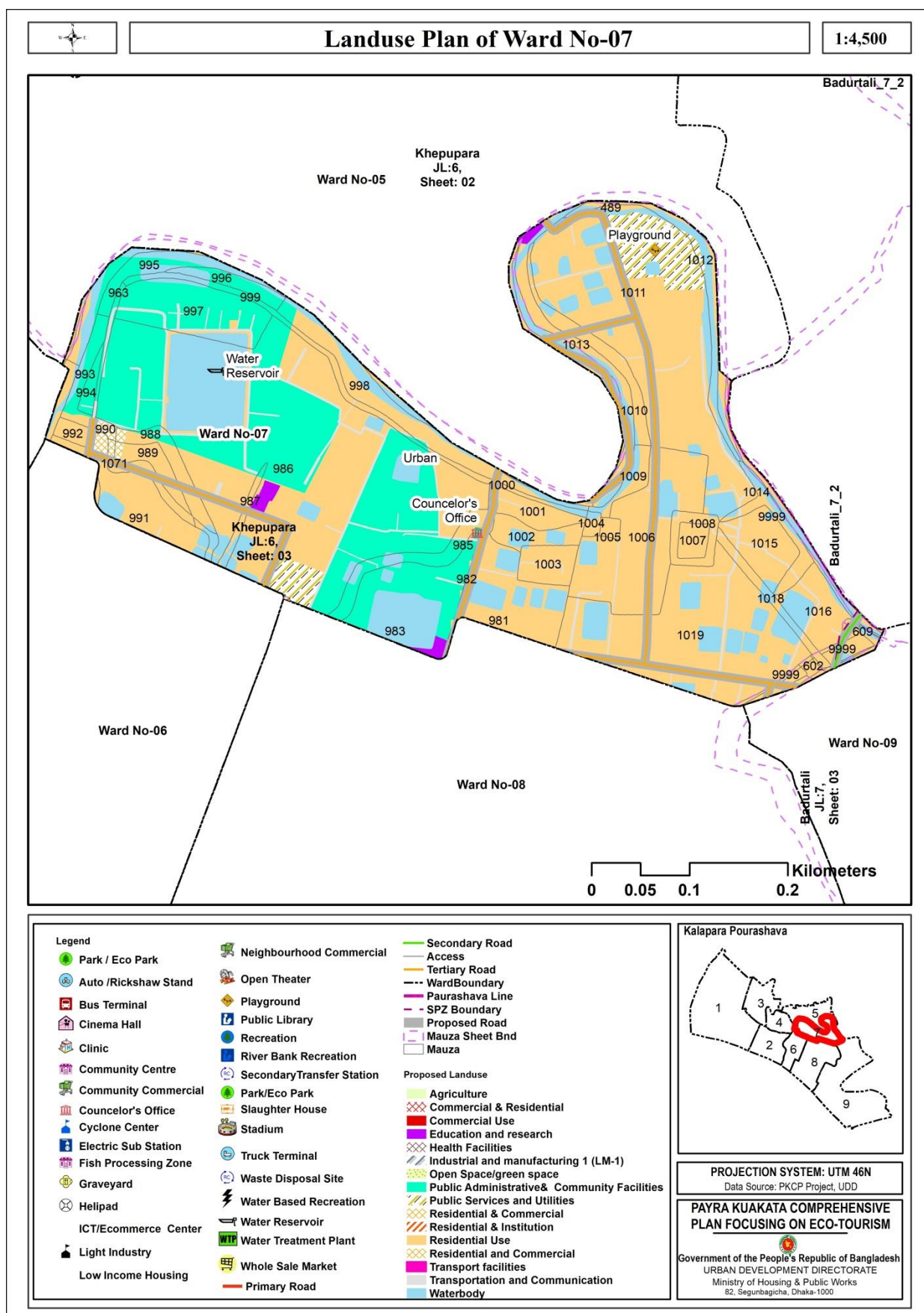


Figure 21: Ward Action Plan for Ward No-7

6.10 Ward Action Plan for Ward No. 08

6.10.1 Demography

Ward No. 8 consists of the mouza named Khepupara (JL: 06, Sheet 03). It is situated on the southern part of the Pourashava and Ward No. 7 is on the north and Ward No. 6 on the west. Present population of the Ward is 2501 (2022) and it will 3323 in the year 2031 and 4144 in 2041. Density of population is 16 persons per acre and it will be 29 in the year 2041.

Table- 39: Population Statistics of Ward No. 08

Item	2011	2022	2031	2041
Area (acre)	115.43			
Population	1824	2501	3323	4144
Density	12	16	22	29

6.10.2 Review of Existing Land Use

Out of total 115.43 acres of land of this ward, more than 47.55 acres of land i.e. 41.19% is used in residential. The agricultural use with 12.44 acres, occupies 10.78% of total land, water bodies 39.85%, commercial use 0.09%, mixed use 2.33% and Transportation and Communication 0.43%. Only 2.11% of land is used as education facilities.

Table- 40: Existing Landuse category in Ward-08

Existing Landuse	Area (Acre)	Percentage
Administrative/ Public Service	0.65	0.56
Agriculture	12.44	10.78
Commercial	0.11	0.09
Community Service	0.74	0.64
Education and Research	2.43	2.11
Health Service	0.04	0.03
Manufacturing and Processing	2.92	2.53
Mixed Use	2.69	2.33
Residential	47.55	41.19
Road	4.19	3.63
Service Activity	1.32	1.14
Transportation and Communication	0.50	0.43
Waterbody	39.85	34.52
Grand Total	115.43	100.00

6.10.3 Ward Action Plan Proposals

6.10.3.1 Proposed Land Use Zoning

The category wise proposals are presented here. Table 42 shows the amount of land uses in Ward no 8. Map shows proposed land use of Ward 08.

Table- 41: Proposed Land Uses of Ward No. 08

Proposed Landuse	Area (Acre)	Percentage
Agriculture	0.16	0.14
Commercial & Residential	0.45	0.39
Commercial Use	1.25	1.08
Education and research	2.87	2.49
Open Space/green space	6.74	5.84
Public Administrative and Defence And Community Facilities	0.76	0.66
Public Services and Utilities	0.67	0.58
Residential & Commercial	4.98	4.32
Residential and Commercial	4.31	3.74
Residential Use	48.60	42.11
Transportation and Communication	4.77	4.13
Waterbody	39.85	34.52
Grand Total	115.43	100.00

6.10.3.2 Development Proposals for Ward No-8

The consultant proposes some urban facilities in Ward No-8. It includes Secondary transfer station, Clinic and Administrative Office etc. The details of the proposal are given in the table below.

Table- 42: Development Proposals for ward 08 (Mouza Wise)

SPZ Name	ID NO	Proposed Landuse	Proposals Name	Area (Acre)	Location (Ward)	Mouza Name	JL No	Sheet No	Plot No
	PSU-15	Public Services and Utilities	Secondary transfer Station(S TS)	0.24	8	Khepup ara	6	3	942,943,1038,1040
Urban	PAdmin-30	Public Administrative and Defence And Community Facilities	Councilor's Office	0.01	8	Khepup ara	6	3	1023

Urban	Hea-21	Health Facilities	Clinic	1.09	6,7,8	Khepupara	6	3	986
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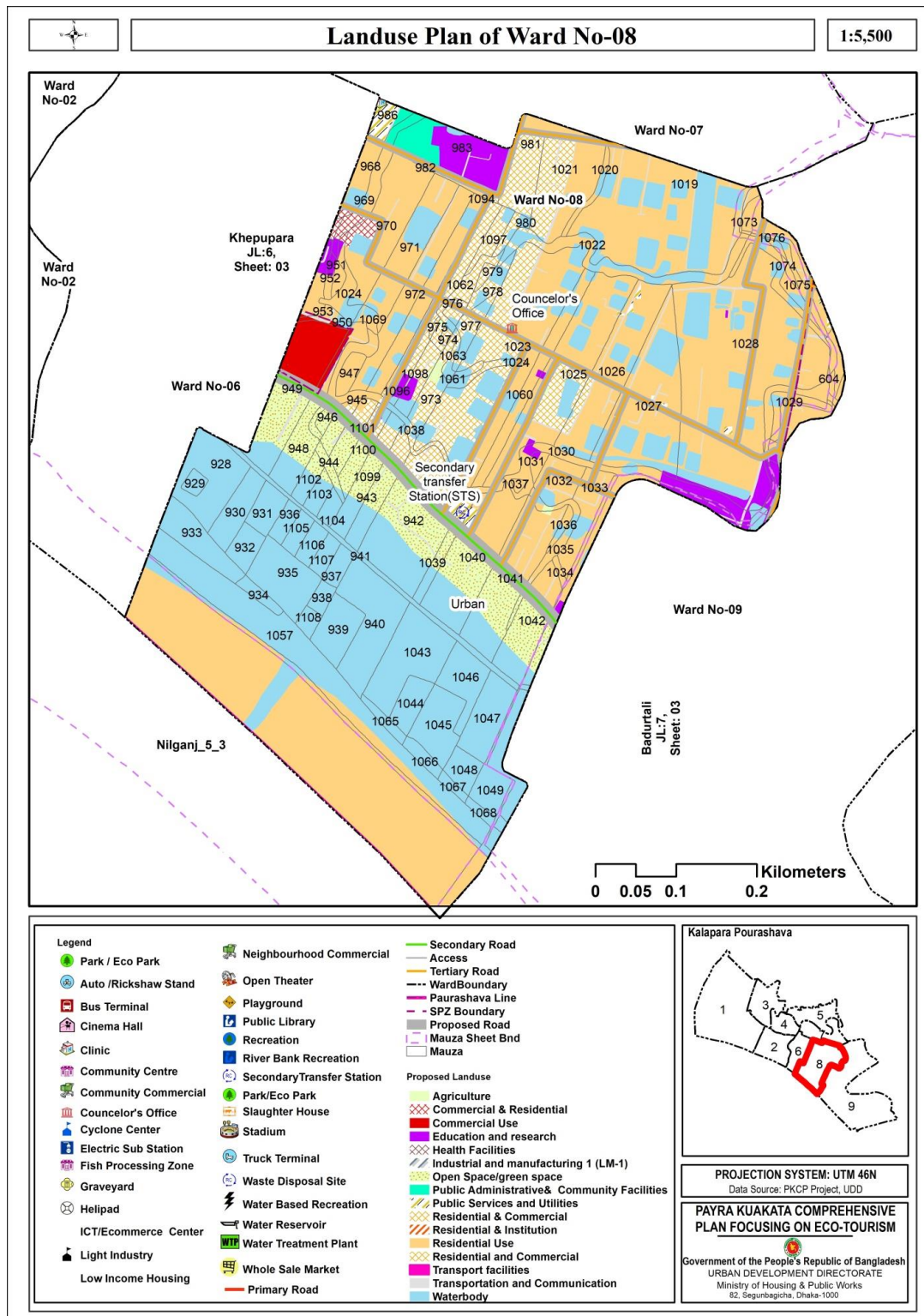


Figure 22: Ward Action Plan for Ward No-8

6.11 Ward Action Plan for Ward No. 09

6.11.1 Demography

Ward No. 9 consists of the mouza named Badurtali (JL:07 , Sheet 03). It is situated on the East part of the Pourashava, Arpangasia River on the south and Ward No. 8 on the west.

Present population of the Ward is 4157 (2022) and it will 4886 in the year 2031 and 5540 in 2041. Density of population is 15 persons per acre and it will be 20 in the year 2041.

Table- 43: Population Statistics of Ward No. 08

Item	2011	2022	2031	2041
Area (acre)	280.45			
Population	3474	4157	4886	5540
Density	12	15	17	20

6.11.2 Review of Existing Land Use

Out of total 280.45 acres of land of this ward, more than 120.55 acres of land i.e. 42.98% is used in residential. The agricultural use with 15.04 acres, occupies 5.35% of total land, water bodies 35.52%, commercial use 0.27%, mixed use 1.03% and Transportation and Communication 0.57%. 3.35% of land is used as education facilities.

Table- 44: Existing Landuse category in Ward-09

Existing Landuse	Area (Acre)	Percentage
Administrative/ Public Service	2.37	0.85
Agriculture	15.01	5.35
Commercial	0.76	0.27
Community Service	1.92	0.68
Education and Research	9.38	3.35
Health Service	0.07	0.02
Manufacturing and Processing	16.21	5.78
Mixed Use	2.89	1.03
Residential	120.55	42.98
Road	10.07	3.59
Service Activity	0.02	0.01
Transportation and Communication	1.60	0.57
Waterbody	99.61	35.52
Grand Total	280.45	100.00

6.11.3 Ward Action Plan Proposals

6.11.3.1 Proposed Land Use Zoning

The category wise proposals are presented here. Table 46 shows the amount of land uses in Ward no 9. Map shows proposed land use of Ward 09.

Table- 45: Proposed Land Uses of Ward No. 09

Proposed Landuse	Area (Acre)	Percentage
Agriculture	5.25	1.87
Education and research	7.32	2.61
Industrial and manufacturing 1 (LM-1)	2.60	0.93
Open Space/green space	23.31	8.31
Public Administrative and Defence And Community Facility	8.24	2.94
Public Services and Utilities	7.20	2.57
Residential Use	115.02	41.01
Transportation and Communication	11.89	4.24
Waterbody	99.61	35.52
Grand Total	280.45	100.00

6.11.3.2 Development Proposals for Ward No-9

The consultant proposes some urban facilities in Ward No-9. It includes Shishu Park, Stadium, Open pace, Water Treatment plant and Administrative Office etc. The details of the proposal are given in the table below.

Table- 46: Development Proposals for ward 09 (Mouza Wise)

SPZ Name	ID NO	Proposed Landuse	Proposal s Name	Area (Acre)	Locatio n (Ward)	Mouz a Name	JL N o	Shee t No	Plot No
Urban Fringe	Open-38	Open Space/green space	Recreati onal Park	3.21	9	Badur tali	7	3	816,817,833,
Urban Fringe	PAdmin-31	Public Administrative and Defence And Community Facilities	Council or's Office	0.07	9	Badur tali	7	3	653

Urban Fringe	PSU-06	Public Services and Utilities	Water Treatment Plant	8.7	9	Badur tali	7	3	672,673,713,714,715,716,717,718,719,720,813,993,814,816,833,840
Urban Fringe	PSU-37	Public Services and Utilities	Shishu Park	0.62	9	Badur tali	7	3	603,604,617
Urban	PSU-39	Public Services and Utilities	Stadium	3.45	9	Badur tali	7	3	676,682

PROJECT TEAM

Prepared by:

Md.Abu Saeed Azad

Junior GIS Expert

Payra Kuakata Comprehensive Plan Focusing on Eco-Tourism

Guided by:

Dr. Sarwar Jahan

Professor (Rtd), Department of Urban & Regional Planning and
Regional Planner

Payra Kuakata Comprehensive Plan Focusing on Eco-Tourism

Khandakar Masudur Rahman

Urban Planner

Payra Kuakata Comprehensive Plan Focusing on Eco-Tourism

Reviewed by:

Sharif Mohammed Tariquzzaman

Project Director, Senior Planner, UDD

Payra Kuakata Comprehensive Plan Focusing on Eco-Tourism

Md.Mahmud Hossain

Project Manager and Senior Planner, UDD

Payra Kuakata Comprehensive Plan Focusing on Eco-Tourism