



Biyagama Development Plan

2019–2030

Volume I



Ministry of Megapolis and Western Development
Urban Development Authority

Biyagama Development Plan 2019–2030 Volume I

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Biyagama Development Plan for the years 2019-2030 consists of a series of publications as the first and second volume and first volume has been divided into two parts as Part One & Part Two. Part One of Volume I describe the Background of the Development Plan, Preliminary Survey and Need of Development Plan. Second part consist with, The Planning Framework, Vision, Goals, Objectives, Concept Plan & the Strategic Plans. Volume II will be a separate document which contains the land & building development regulations, zoning & zoning regulations that validate for 2019 -2030 time period.

Development Plan for Biyagama has been prepared by the Gampaha District Office of the Western Province Division in consultation of the different divisions UDA and the support of responsible institutions and stakeholder organizations.

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Acknowledgment

It is our duty to recognize with duly respect of all institutions and sectors who provide their support directly and indirectly to prepare the Development Plan for Biyagama area for period of 2019 -2030 by identifying future development trends incorporating physical, economic, social and environment sectors in the Biyagama area.

We would like to give our sincere appreciations Mr. Ananda Ganepola, Chairman of the Biyagama Pradeshiya Sabha with other public representatives for giving their valuable contribution to success of this Development Plan and dedication for future development progress of the area.

Special thanks for the secretary and staff of the Biyagama Pradeshiya Sabha and Divisional Secretary, Assistant Secretary & Staff of Planning Division of Biyagama Divisional Secretariat Office for giving relevant data and information of the existing situation of the area for analysing current situation as initial background. Also, it should be specially noted Mr. A. K. Jayasinghe, Director of Biyagama EPZ, Board of Investment & the staff, Agrarian Research & Production Assistants in Biyagama of Biyagama Aggaraan Office.

Similarly, our appreciation and sincere thanks go to the top management of the Urban Development Authority Hon. Chairman, Director General, Additional Director General, Deputy Director General (Planning) and Development Planning Division, Research & Development Unit, Western Province Division, Geographic Information System Division, Environment & Landscape Division and all other divisions who supported for this. Furthermore, we remember with thanks at this moment, the Director, Deputy Director and all staff of the Gampaha District office of the UDA.

Hon. Minister's Foreword



In 1978, the Urban Development Authority initiated the implementation of integrated plans for the promotion the commonweal of urban areas, fulfilling its duties and responsibilities by achieving a towards a Planned, Sustained and Adored Urbanization. Thereby, The UDA's planning direction has been transformed into a strategic planning direction and has been successful in making development plans for urban areas with urgent need.

It is expected to achieve sustainable environmental goals by prepared development plans through strategic projects include potential stimulant enabled the country to gain social, economic benefits for the urban problems due to rapid urbanization of the Colombo metropolitan area and adjacent areas.

As the urban community living in the Fourth Industrial Revolution, the need for technology mixed industrial sector through innovation is emerging. Accordingly, Biyagama Development Plan prepared for the years 2019–2030 has been a priority in making the Sustainable Industrial City of the Western region with the values of the environmental system. This will create towards a Planned, Sustained and Adored Urbanization for the people living in the Biyagama urban Area.

Patali Champika Ranawaka,
Minister,
Ministry of Megapolis & Western Development

UDA Chairman's Foreword



Today, the Urban Development Authority (UDA) is the apex planning & plan implementation body in Sri Lanka that is responsible for managing the state of the urban environments of the nation. The authority was established in 1978 with the objective of introducing integrated planning & implementation in order to promote & regulate the developments for the common benefit of all inhabitants of the urban areas.

Under the Amendment Act. No. 04 of 1982; Part II - section 8 A (I) the Urban Development Authority has been mandated to prepare development plans for the Urban Development Areas, declared by the Minister-in-charge. Accordingly, by 2020, the UDA is planning to develop a comprehensive development plans covering all urban areas, with the objective of "Planned physical development in all urban areas".

For the implementation of these development plans, we are not forgotten that our path is not smooth as silk, but as gravel, full of challenges, filled with uncertainties, and fouled by vicious intents. Accordingly, the UDA focused on developing strategic plans through modern technologies, tools and strategies. As a result, the urgent need for a development plan for the Biyagama PS Area has been identified and the future direction of the Biyagama has been transformed into an exemplary sustainable industrial city in the Western region with the value of wetland ecosystems.

I extend my sincere gratitude to the Urban Development Authority (UDA) Planning Team and all those who have contributed to the success of this comprehensive planning work and look forward to similar support for the implementation of this Plan.

Dr. Jagath Munasinghe
Chairman,
Urban Development Authority

Pradeshiya Sabha Chairman's Foreword



The Urban Development Authority, which has been a pioneer in the development of Sri Lanka's urban development for four decades, joined hands with local authorities and aligned to create benevolent towns to live in all urban areas with a proper landuse pattern. More weight for quality & balance of development in the physical, economic, social and environmental sectors have been added to the Urban Development Authority due to the declaration of Biyagama Pradeshiya Sabha area in 2001 as an urban development area and belongs to the Core area of the Metro Colombo Development Region from 2017. The Pradeshiya Sabha also plays a significant role in this development process as administrative institution and completely accomplished their responsibilities for general welfare of the public.

Accordingly, Biyagama Urban Development Plan for the period of 2019 - 2030, has been prepared by the Gampaha District Office of the Urban Development Authority and further, development intensity of the area has been focus in to better direction under the legal framework. It targets the future residential community as well as the urban commuting population coming for their daily needs and integrates economic & social benefits through existing development potentials.

Moreover, the Public representatives of Biyagama Pradeshiya Sabha and myself have been dedicated to become Biyagama Pradeshiya Sabha as environment friendly industrial city in the Western Province and richest industrial economy through this Urban Development Plan. It is hoped to fulfil its responsibilities and duties in the pursuit of this ultimate goal.

Ananda Ganepola
Chairman,
Biyagama Pradeshiya Sabha

Preface

Biyagama urban development area declared by the Urban Development Authority under the Gazette Notification No. 1771/10 in 2001 as urban development area and recently area belongs to "Core area of the Metro Colombo Development Region". Accordingly, Biyagama Development Plan has been prepared for the time period of 2019 –2030 and that has published as two separate volumes; Volume I & II. Volume I consist with two parts; part 01 & part 02. Part 01 includes with three chapters; Background of the development plan, Preliminary Survey & Need of the development. Part 02 includes the chapters of Planning Framework, Detail SWOT Analysis & The Plan.

Chapter one, background of the development plan describes the introduction, stakeholders of the plan, scope of the development plan and the planning process. Second chapter of preliminary survey includes the study area, planning and situational context and the delineating the planning boundary. Chapter three describes the two main planning needs that proven scientific studies and logical base.

Part 02 of the development plan started from fourth chapter that describes the planning framework which giving the sustainable development direction through the vision, goals & objectives while promoting industrial development and protecting sensitive wetland environmental system to achieve the vision of 'Tranquilized Industrial City'. Chapter five includes the summarized & detailed SWOT analysis done based on the two main goals of the development plan.

Chapter six consist with the plan that strengthen the proposed future vision of the area and describes the concept plan, proposed land use plan and the strategic plans. In here social and physical infrastructure development, industrial economic and environmental management and conservation plans are three major strategic plans of the development plan and under that describes the proposed strategic projects and institutional setting.

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Part 01



01

Chapter



Background of the Development Plan

01 Chapter
Background of the
Development Plan

Introduction

Stakeholders of the Plan

1.1. Introduction

The UDA Act No. 41 of 1978 stipulates one of the core activities as promoting integrated planning in urban areas declared by the Minister in charge of the organization and preparation of development plans, regulations and enforcement are critical activities that need the highest priority in the organization. Thus, the authority has a regulatory power to prepare the integrated development plans for all urban declared areas under the urban development authority (amendment) Act. No. 04 of 1982 Part II - section 8 A (I).

Strategic plan of Urban Development Authority prepared for 2018–2022 focus the “Planned physical development in all urban areas” as the very first strategic goal. The objective under this strategic goal aims to cover all urban declared areas with comprehensive development plan preparation approach by 2020. UDA have been identified the urgent need for development plans, approximately 200 number in all areas declared as urban, the strategic plan 2018–2022 proposes to meet the target of preparing the urgently needed plans within next 4 years.

Biyagama PS area declared as an “Urban Development Area” on 2001.02.13 under the gazette notification no 1771/10 and current development practices pressured to identify Biyagama as an area for urgently needed planning intervention. There is no gazetted urban development plan for Biyagama PS area and from 2017, March onwards preparation of strategic development plan has been started and completed within two years. Biyagama development plan is a local level development plan that will be valid from 2019 –2030 time period and that expects to address critical issues and harnessing the recent potentials of Biyagama.

1.2. Stakeholders of the plan

Preparation of the Biyagama development plan makes a common platform for all government and private responsible authorities, relevant agencies, communities and their suggestions, proposals were included to the development plan preparation process.

Main Stakeholders

1. *Biyagama Pradeshiya Sabha*
2. *Biyagama Divisional Secretariat Office*

Main Consultancy Agencies

1. *Board of Investment*
2. *Biyagama Agrarian Services Office*
3. *Export Agriculture Department*
4. *Ceylon Petroleum Corporation*
5. *Central Environmental Authority*
6. *Land Use Policy Planning Department*

7. *National Housing Development Authority*
8. *National Water Supply & Drainage Board*
9. *Road & Passenger Transport Authority*
10. *Provincial Road Development Authority (WP)*
11. *Ceylon Electricity Board / LECO*
12. *Railway Department*
13. *Road Development Authority, Gampaha*
14. *Kachcheriya, Gampaha*
15. *Irrigation Department, Gampaha*
16. *Zonal Education Office, Kelaniya*
17. *Police Station - Biyagama / Meegahawatta*

Stakeholder Groups

1. *Trade unions - Delgoda/ Kadawatha / Mawaramandiya /Biyagama*
2. *Three Wheeler's Association - Makola / Kadawatha*
(Annexure Table 1. Stakeholder Participation - Group wise)

Urban Development Authority Planning Team

1. *Director, Western Province - Plnr. Y.A.G.K. Gunathilake*
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10. *Assistant Planning Officer - Harshani Jayawardhana*
11. *Assistant Planning Officer - P.M. Sumedha Jayamali*
12. *Computer Operator/ GIS - K.S.P. Meegahawaththa*

Top Management & Urban Development Authority Supportive Divisions

1. *Chairman, Urban Development Authority - Dr. Jagath Munasinghe*
2. *Director General, Urban Development Authority - Eng. S.S.P. Rathnayake*
3. *Former Additional Director General - Plnr. K.A.D. Chandradasa*
4. *Additional Director General - Plnr. D. M. B. Ranathunga*
5. *Deputy Director General (Planning) - Plnr. M. P. Ranathunga*
6. *Development Planning Division*
7. *Western Province Division*
8. *Research & Development Unit*
9. *Geographic Information Systems Division*
10. *Environment & Landscape Division*

01 Chapter
Background of the
Development Plan

Stakeholders of the Plan

Scope of the
Development Plan

1.3. Scope of the Development Plan

According to the Urban Development Authority Act No. 41 of 1978, has given legal provisions to promote integrated planning, preparation of Development Plans, preparation and implementation of regulations for urban areas declared by the Minister in charge of the Authority and Biyagama Pradeshiya Sabha area has been declared by the Authority under the gazette notification No. 1771/10 of 13.02.2002. Due to the development relationship with Colombo and the development intensity of the area, Biyagama Pradeshiya Sabha area included to the "Core Area of the Metro Colombo Development Region" under the gazette notification No. 2049/11 dated 11th of 2017. With this legal framework, it is expected to launch the Biyagama Urban Development Plan as a local area development plan incorporating the physical, economic, environmental and social sectors.

Strategic planning approach focused the urban development of Biyagama as model industrial city, that will be the idol for western region industrial development which giving the major concern for the sensitive wetland environment and cater variety of industrial needs. Also, expecting the sustainable development of the environment through physical, economic and social development and proper wetlands management. The proposed industrial economic plan and the social and physical infrastructure management plan envisages the upgrading and improvement of the lands, water, electricity, transportation and other physical infrastructure facilities to cater industrial development. The proposed service plan provides the needs of the urban community, creating small clusters with urban services. Environmental Conservation and Management Plan will also be developed to create an environmentally sensitive wetland system while controlling the flooding of the area in suitable manner and develop the Biyagama as an industrial city without a negative impact on the environment.

These separate sectoral plans letting to develop Biyagama PS area as an industrial city by targeting twelve years with a comprehensive land use management. In local level context, Biyagama development plan stipulates cluster development approach which promotes industrial and residential clusters that harmonize the green and brownfield developments. Strategic projects related to this industrial development will guide to meet the long-term vision as an industrial city with a sustainable urban form.

1.3. The Planning Process

Biyagama development plan was prepared under the strategic planning process with the following steps.



Figure 1. 1 Strategic Planning Process
Source: Gampaha District Planning Team, 2017

01 Chapter Background of the Development Plan

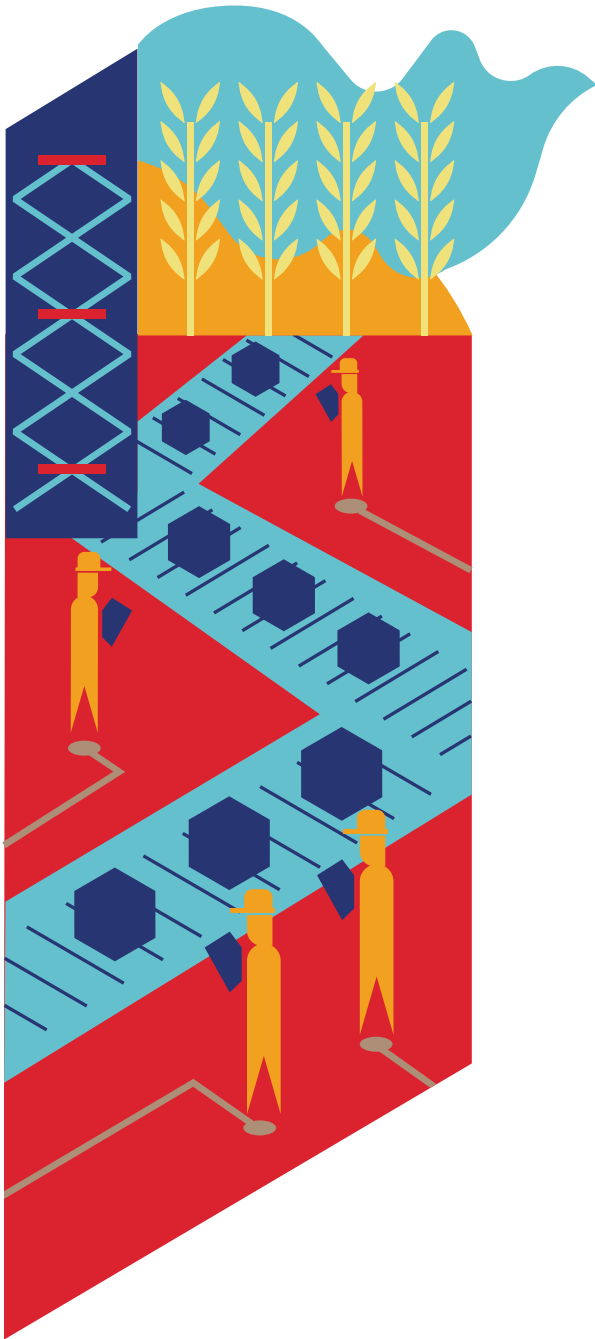
The Planning Process

Conducting background studies to cover the Biyagama development plan was carried out by covering various aspects. The primary - secondary data was collected on the basics of history of Biyagama, current demographic composition and growth factors, economic and environmental factors, previous planning attempts and proposed projects of the area. Also, field surveys, interviews, satellite images, google map and media reviews, resource profile prepared by Biyagama Divisional Secretariat, Gampaha District Statistical Handbook prepared by Department of Census and Statistics and research articles were used for this study.

Findings of the follow-up studies highlighted that, Biyagama area has been expanded with industrial development and the development has been enhanced by previous planning interventions and the promotion of further development with proposed projects. These findings are confirmed by the results of Development Pressure Index, Normalized Difference Vegetation Index (NDVI), Environmental Sensitivity Index and Critical wetland analysis that directed for two main planning needs. After that, planner's perspective of problem framing has been presented to the public stakeholders on 2017.11.23 and merged their proposals for identified problems.

Preparation of vision and goals of the Biyagama PS area was formulated under two main themes of industrial development and environmental management based on the ideas of public stakeholders by using NVIVO software and analytical findings of the planning team. Detail SWOT analysis was done base on two goals that includes the core ideas of industrial development and environment management. This will create opportunity for development in the area by using the strengths, opportunities of the Biyagama area and exploits weaknesses and threats.

Industrial economic, Environment management and Infrastructure development plans which include strategic projects developed through the objectives under the above goals-based SWOT analysis. The Biyagama Development Plan will be strengthened with the strategic projects of each plan and managed for a comprehensive land use plan for the period 2019-2030. After the preparation of density zoning plan & building regulations the plan presented to the general public, stakeholders, consultations & local authority consent for 60-day time period. With the comments, the updated final draft plan submitted to the Main Planning Committee of the UDA and got the approval for publish the development plan.



02

Chapter

**Preliminary
Survey**

02 Chapter
Preliminary Survey

The Study Area

2.1. The Study Area

Biyagama PS area is located in Eastern suburb of Western region, 21 km away from Colombo and 18 km from Gampaha. In term of access, Biyagama located in between a strategic location in the National and Regional Road Network, and located between the Colombo-Kandy and Low level - Avissawella Road which are two main road corridors out of seven main corridors in Sri Lanka.

Biyagama is one of the twenty sub basins of Kelani River and belongs to the wetland zone as per the geographical location. Biyagama recorded a temperature of 27 0C and 2500 mm of rainfall and having well connected tributaries and canal system with Kelani river, sensitive wetlands and paddy fields. Annexure 03 indicates the above wetlands distribution. Most spreaded soil type is Red-Yellow Podzolic soils with soft or hard laterite; rolling and undulating terrain and close to Kelani river spread with Alluvial soils of variable drainage and texture; flat terrain.

As per the Annexure 04, current land use composition in Biyagama PS area, it is comprised with 72% of area physically developed as residential, commercial & industrial, 19% with environmental characters such marshy lands, wetlands and paddy lands and 9% of developable lands.



Figure 2. 1 Location of Biyagama Urban Development Area
Source: OpenStreet Map/ Gampaha District Planning Team, 2017

2.2. Planning & Situational Context

The history of Biyagama is revealed through folk heritage and the war history of Sri Lanka and it is mentioned that the Biyagama area was a protected area for the Sinhala army and the military camp of the king Rajasingha - I was placed at Biyagama. Also recorded that the Royal Palace was built on Rakshapana rock plain. In the year 1587, when the Portuguese Army from Gove arrived in the country, the Sinhala army was afraid and retreating, then the Sinhala wording of "Baagama" was later called as Biyagama. Malwana fort was built by the Portuguese in right bank of the Kelani river flows from the Seethawaka kingdom and in 1590 shown by the following figure 2.2. Malwana had been selected for the home with headquarters of Captain Asawedu of the Portuguese Army at that time. In the Dutch era, it is said that the Malwana fort was used for protection of soldiers and the four large buildings were used as warehouses.

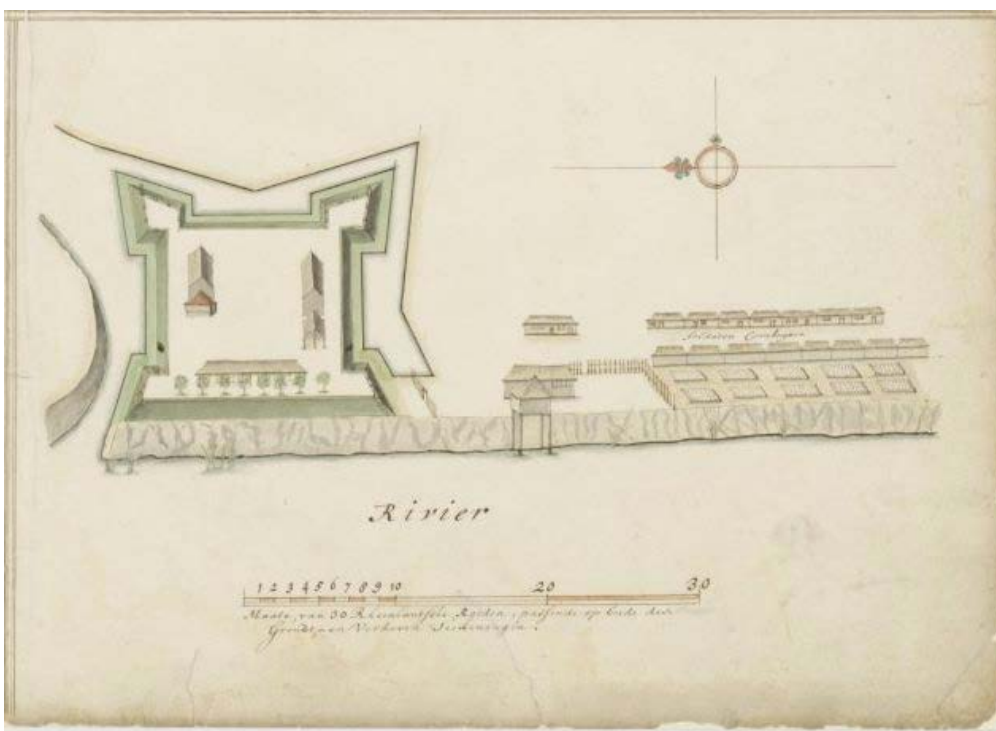


Figure 2.2 Malwana Fortress

Source: Amazing Lanka Webpage, 2017

Past information analysis confirmed that a number of traditional industries providing their primary products for the kingdoms from the history have been popular throughout the Biyagama area and even the names of the area have been conveying accordingly. It should be specially mentioned that some villages were popular for different aspects such as Daranagama for fire wood, Heiyanthuduwa for Gold & Silver, Yabaraluwa for weapons, Mabima & Pattiwila famous for the clay industry. Similarly, the ancestral community are living in the Biyagama, Mabima area for the Clay Industry and Sri Lankas' first Clay Museum and the Training centre are located in this area.

02 Chapter Preliminary Survey

Planning & Situational Context

After the colonial era, the socio-political and economic background of the country decided to locate state running manufacturing companies in Biyagama area. The first attempt was set up the Local Bottling Plant of Pure Beverages in 1955 at Thalwatta area. (Later Coca-cola Beverages Sri Lanka). In 1969, the Sapugaskanda Refinery was established as the first oil refinery in Sri Lanka, originally it was designed with capacity of 38,000 barrels per day, which then increased up to 50,000 barrels per day in 1979.

Construction of Kaduwela bridge in 1982, created a link between Biyagama - Colombo road and Low level road which made a new road corridor called "New Kandy corridor". That connects to Kandy Road (A 01) via Mudungoda at Balummahara Junction. As a result of this road, the present city development pressure at Kaduwela will be extended to the Biyagama - Bandarawatta junction and the Colombo- Biyagama road could be seen as a new commercial corridor. Samurdhi Mawatha which has been built by the Greater Colombo Economic Commission (GCEC-Later BOI) is the main port link road corridor lies through middle part of the area via Kiribathgoda. The construction of the Samurdhi Mawatha increased the attractiveness of industrial investment in the area and have a better access to many industrial areas and also the direct connection was built between the Sapugaskanda Oil Refinery Centre and the Biyagama Export Processing Zone. Annexure 05 displaying the main & internal road network of the Biyagama PS area.

With the open economy, the second Export Processing Zone was established in Biyagama in 1985 due to strengthen the private sector intervention for industrial sector and the CMRSP that guided free trade zone developments for balanced regional development. Small scale commercial sub town centers and junctions were spread out concentrating on the Export Processing Zone and value of land has been increased with the infrastructure development in the area. A major residential area, including temporary occupants, was added to the area due to the employment-based manufacturing industry expansion and community attracted by job opportunities.



Figure 2. 3 Biyagama Export Processing Zone
Source: Bloomberg - Getty images, 2015

The Biyagama Export Processing Zone shown by the figure 2.3 is considered as the second largest employment and employer's export processing zone in Sri Lanka, with 25661 local workers, 67 foreign workers and 1356 labourers. The Biyagama Export Processing Zone generated direct and indirect employment opportunities and from the 23% of the local economy linked with manufacturing sector employment and 12% contributes by supplying food & accommodations.

According to the Annexure 06 of CMRSP, Biyagama has been concerned as a peri-urban area which was significantly influenced by the increase of industrial establishments and attraction of employments. The plan identified Biyagama as one of the "Growth center" of Gampaha district. It has been planned to promote industrial land use by 40% and decrease the residential land use upto 15%. The plan estimated and expected 285,000 population by 2010.

But, according to the 2011 census conducted by the Department of Census and Statistics, the recorded population in the Biyagama Divisional Secretariat is 186,862 and by 2017 it has increased to 192,000. From this population, it represents 92% of the population are Sinhalese, 7% are Muslims, 1% are Sri Lankan Tamil and other nations. In Biyagama, the total number of families are 48,151 with 47,636 housing units. The housing density of Grama Niladhari Divisions of Sapugaskanda, Makola Ihala, Gonawala West, Pamunuwila and Mawaramandiya which are closer to the Colombo-Kandy main road recorded as high dense when compared with the other GN Divisions of the area. This has been shown by the Annexure 07, Population density according to the GN Divisions based on census 2011.

The current natural population growth rate is 1.4%, and if this growth rate continues further, the total residential population is expected to reach approximately 247,000 by 2030. Population growth rates recorded as 2.08% on the basis of industrial development trends that occurred in Biyagama during 1981-1999 period. According to the current population, the population density is 32 persons per hectare of and daily commuting populations of approximately 150,000 in the region due to direct impact of industrial establishments.



Figure 2. 4 Fonterra Manufacturing Plant
Source: Fonterra Story, Fonterra Website, 2017



Figure 2. 5 Dima Siyabalape - Utility Vehicle Workshop
Source: Dima Lanka Website, 2018

02 Chapter Preliminary Survey

Planning & Situational Context

In spatially, there are three distinctive industrial clusters in Biyagama namely, Biyagama EPZ, Sapugaskanda Lindel industrial estate, Dima and other industrial enterprises cluster. This has been shown in the Annexure 08 of the industrial distribution density. Establishment of Lindel Industrial Estate in 1995 agglomerated oil refinery supporting industries and Biyagama was preferred location for multi-national manufacturing companies. Figure 2.4 displays the Fonterra Brands Lanka Pvt Ltd- 1995, figure 2.5 displays the 1996- Dima commercial vehicle workshop and Lion Brewery etc.

Along with the industrial development intensity of the area, in 2004 the CESMA Plan identified Biyagama as industrial development area and included to inner ring township. Annexure 09 indicates this plan. Due to modern changes of the transport sector, the current industrial sector has gained more value from the Outer Circular Highway which lying through the Biyagama area as well as Kaduwela and Kadawatha two interchanges. As per the figure 2.7, The Kelani river right bank water treatment plant at Pattiwila in the Biyagama area, fulfil the water requirement of Colombo North, has also contributed to the increase in the value of the infrastructure facilities including the road network.



Figure 2. 6 Outer Circular Highway
Source: Trip to Sri Lanka Website-2017



Figure 2. 7 Kelani River Right Bank Water Treatment Plant
Source: NWSDB -2018

Moreover, with the advent of technological advancements, there is a tendency to take place industrial parks with small business model around the area with new industrial infrastructure. Under these circumstances, industrial sector had a major impact on the social, economic and physical development of the Biyagama area over the past and that led a unique sequence of Biyagama industrial development and the development transformation process as follows.

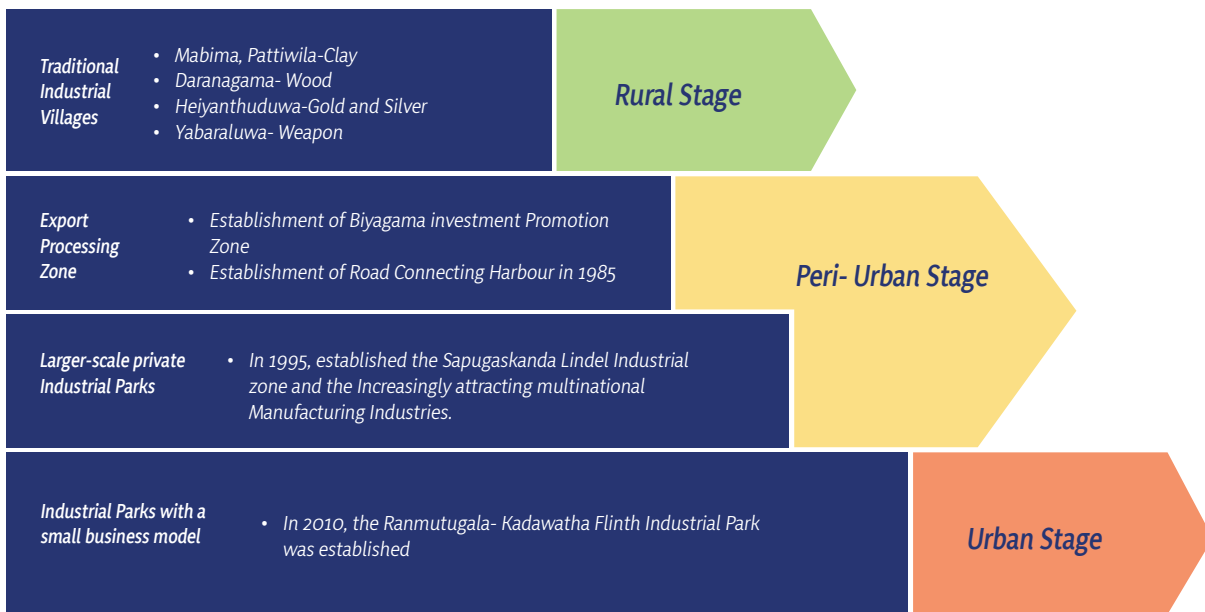


Figure 2. 8 Sequence of Industrial trends and Area transformation
 Source: Gampaha District Planning Team, 2017

2.3 Delineation of the Planning Boundary

Delineation of the planning boundary has varied into initial and detail planning areas with the findings of Biyagama and surroundings. Importance of the area due to second largest labour based free trade zone, preferred location of multi- national manufacturing plants, and the strategic location within inter - regional transport corridors influence to consider Biyagama with national and regional context. Therefore, initial study area was in broader terms with the data collection and comparison.

The hierarchical node-based development and no main town centre cause to define the detail study area which is beyond the natural and administrative boundaries of Biyagama PS. Three main town centres of Kaduwela, Kadawatha and Kiribathgoda which are locate at the edge of the Biyagama PS boundary was the main fact to identify the functional boundary.

Development pressure of outside town centres captured parts of Biyagama into their accounts by exceeding the administrative limits and therefore some parts of Biyagama include to threshold of outer town centres. Connectivity analysis, locations of industrial clusters and network of small junctions are other considering factors refine the detail study area with functional aspect.

02 Chapter Preliminary Survey

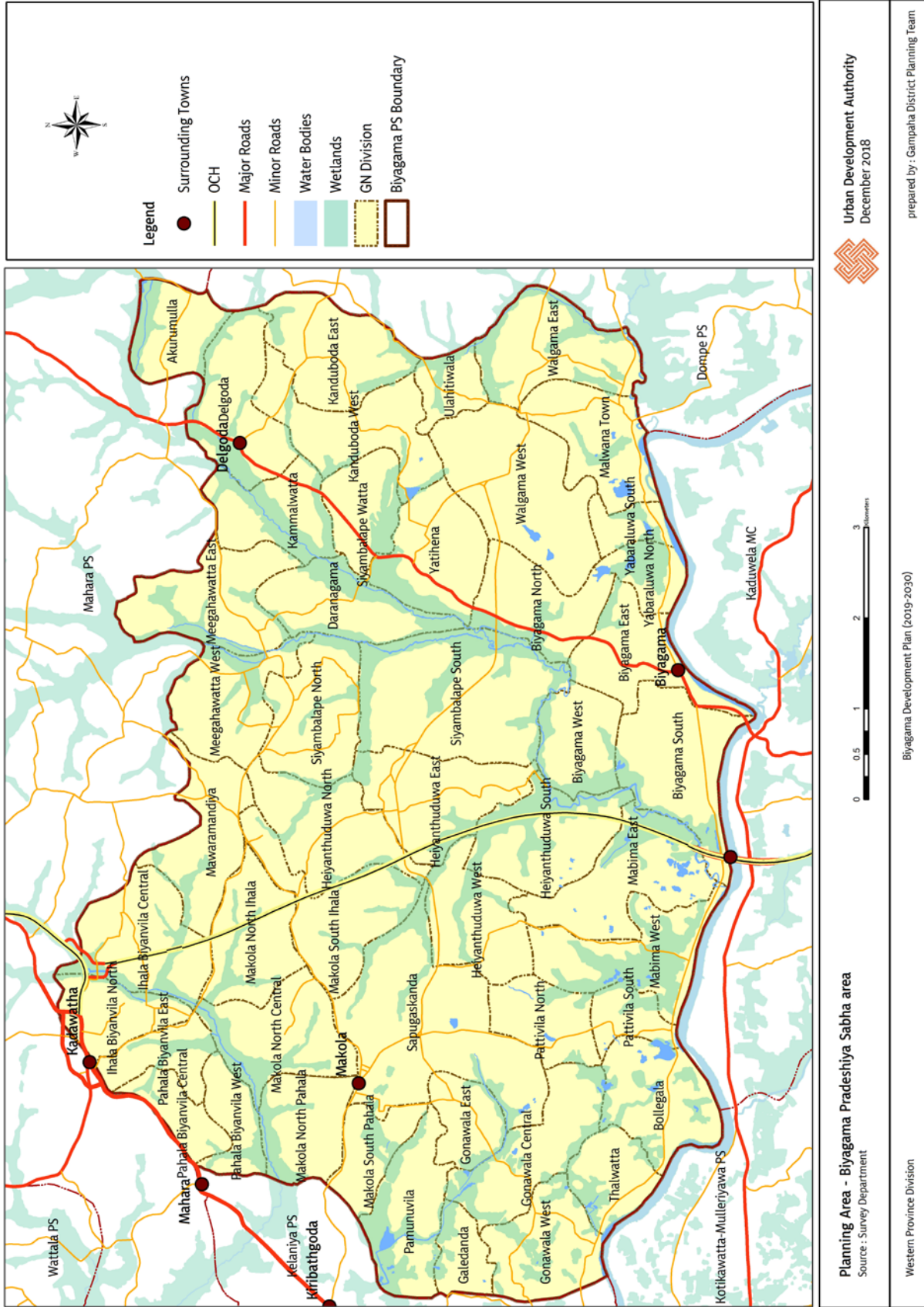
Delineation of the planning boundary

The existing south and east bounds of Biyagama PS area demarcated with natural geographical boundaries of waterway features: Kelani river and Malawana streams. Mahara and Kelaniya PS boundaries demarcate the northern and western boundaries respectively. Considering the evolution of administrative boundary, current Biyagama PS area was under the Kelaniya Divisional Secretariat until 1977 and later it was administrated by the Greater Colombo Economic Commission (Later BOI) due to the special reason regarding the establishment of Sri Lanka's second export processing zone in 1985.

Under the sections of 20, 21, 22 in Greater Colombo Economic Commission Law No. 04 of 1978 and the laws of schedule "C" cause to endued Biyagama PS area into Greater Colombo Economic Commission. After this power delegation all development activities done under the Municipal Council Ordinance except the sections I, II, III, IX, X, XI, & XIV. In 1995.04.02 under the gazette notification no 877/27, constituted Biyagama pradeshiya sabha within Biyagama divisional secretariat area. Therefore, from 1995.06.01 onwards all the powers and functions delegated to the Biyagama pradeshya sabha by BOI.

Biyagama PS area declared as an Urban Development Area on 2001.02.13 under the gazette notification No.1771/10 by considering the rapid physical and urban development. Not only, 2017.12.11 under the gazette notification No. 2049/11 Biyagama PS included to Core area of the Metro Colombo Development Region. At present 192,000 population lived within 60.2 (sq.km) land area of Biyagama PS and it is consisting with 49 GN divisions.

According to evolution of present administrative boundary delineation proves the specific reason of industrial development promotion within the area from 1977 onwards. Even though the functional boundary beyond the administrative limits in current context this specific administrative boundary delineation and its included reason can't be depreciated. Therefore, for the sake of administrative convenience and based on national, western regional level planning interventions, the Biyagama development plan prepared for 49 GN divisions of Biyagama PS area locality that covering total land extent as 60.2 sq.km.



Map 2.1 : The Planning Area



03

Chapter

**Need of the
Development Plan**

03 Chapter
Need of the
Development plan

Conflict between
environmental sensitivity
and current industrial
development

3.1. Conflict between environmental sensitivity and current industrial development

Landuse composition of Biyagama Urban Development Area blends with 13% productive agro wetlands and 6% of marsh and waterbodies. This has been clearly indicated by Annexure 04 of Landuse composition of Biyagama PS area.

According to the wetland classification of Sri Lanka Land Reclamation and Development Corporation for Biyagama Urban Development Area, 47% of wetlands belong to Wetland Nature Conservation Zone and 42% of wetlands include to Special Paddy Cultivation Zone. 8% of the wetlands coming under the Wetland Agricultural Zone. In this area, only 1% (Delgoda Paddy Field) has been identified as a Low-lying Potential Development Zone and this composition indicates that Biyagama PS area is inheriting a sensitive wetland environment.

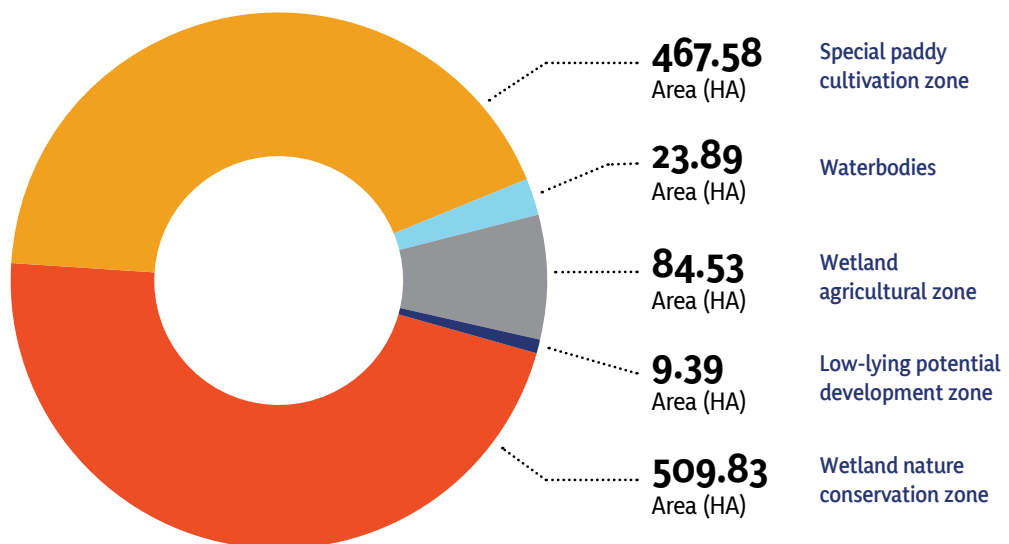


Figure 3.1 Wetland Composition - Categories based on SLLRDC
Source: Wetland -SLLRDC

With the rapid growth of industrial development, the demand for low-lying development has increased and this has caused to fill many low-lying areas in an unauthorized manner. As a result, many problems such as interruption of water flow, increase of abandoned paddy fields and flash flood situations was occurred.

03 Chapter Need of the Development plan

Conflict between
environmental sensitivity
and current industrial
development

According to the statistics of Agrarian Services Office of Biyagama, there are 455.91 ha. of abandoned paddy lands out of total extent of 965.81 ha. As a percentage it is 47% and 306.08 ha. of such abandoned paddy lands identified as potential lands for development promotion which cannot be used for any other productive agriculture. In the Annexure 10, this analysis has been displayed and confirms that the productive agricultural lands are decaying gradually.

Based on this situation, the analysis of the green cover density of the area has been done (Normalized Difference Vegetation Index - NDVI) and the analysis shows changed green patches in different periods of time and the transformation with area development.

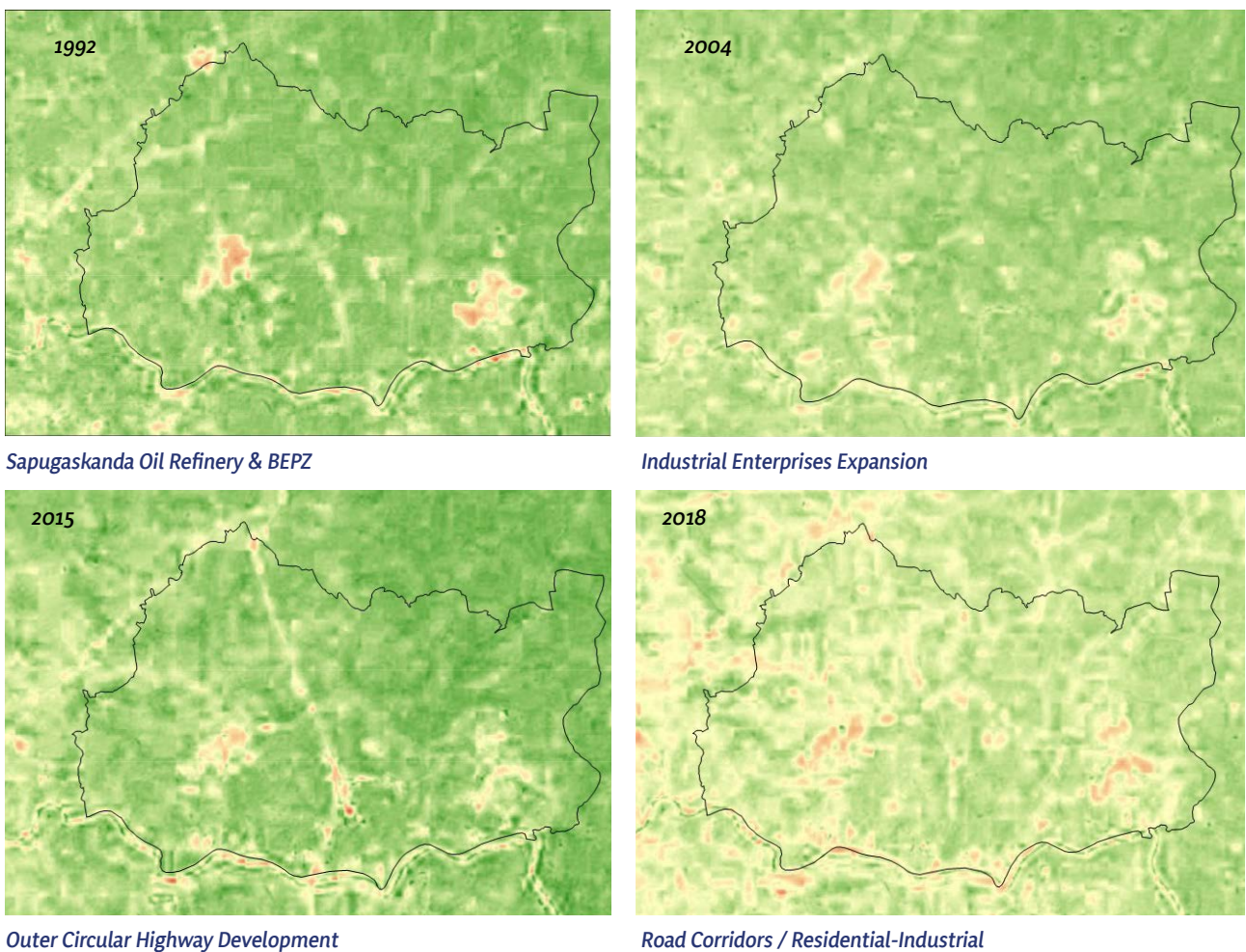


Figure 3.2 NDVI Analysis

Source: Landsat Images ,1992/2004/2015/2018

03 Chapter Need of the Development plan

Conflict between
environmental sensitivity
and current industrial
development

According to the figure 3.2, Lindel industrial estate including Sapugaskanda Oil Refinery centre and Biyagama Export Processing Zone have been identified as two main industrial clusters through the Normalized Difference Vegetation Index (NDVI). Later, the satellite images of 2004–2015–time period has illustrated that how those two clusters expanded with other industrial enterprises and OCH development in 2014 has been clearly indicated by NDVI. At present, road corridors like Kandy corridor, New Kandy corridor, Samurdi Mawatha and residential development in Makola and Malwana can be identified by the satellite images of 2018.

Further, it is identified that industries associated activities have been gathered in areas such as Mahena, Pattiwila, and Mabima through the consideration of analysis of the data, observations and recent trends. Sri Lanka Land Reclamation and Development Corporation has been identified that most of the wetlands in the surrounding area are coming under Natural Wetland Conservation Zone. Other important fact is that Raggahawatta canal which is tributary of Kelani River falls within this area. Industrial effluent discharge into Kelani river through Raggahawatta canal which is located upstream of water intakes of Ambathale and Kelani River Right Bank Water Treatment Plants.

"The worst, very poor ecological condition is reported from the sampling sites at Raggahawatte which flows contaminated industrial waste water. Most of parameters were exceeded the standard value during the total monitoring period which implies the industrial pollution.

Source: Central Environmental Authority, 2014

Issues related to water pollution were raised from the public stakeholder meeting which is held to get suggestions and ideas for the development plan preparation through participatory planning approach. From the environmental side, it was mentioned that incidence of fish deaths in the Raggawatta canal and it was led to question the water quality in Kelani River. Waste water discharge in to river has been increased due to rapidly growing of industries around in the Kelani river. It is emphasized that more attention should be required regarding the future water consumption of people in the North Colombo as well as the environmental values.

According to the results of the various environmental researches carried out for the Kelani river basin and the Environmental Sensitivity Index emphasized that strategic direction should be focused on better management for current industrial development trends and environmental sensitivity. Various environmental factors and recent flood data have been used to identify critical environmental sensitive areas in the Biyagama area. Annexure 11 indicates those results. Results of the Environmental Sensitivity Index (ESI) displayed the southern part of the area has high sensitivity wetlands when compared with the northern part. At the same time, the current industrial trends and expansion are also concentrated on same direction. Hence, there have been many sub issues, such as industrial pollution, reclamation of wetlands, flash floods, canal depletion, disposal of waste water into paddy fields, impact for ground water catchments. Future water consumption of the Western region as well as in the Biyagama has become decisive situation due to these reasons.

These closely interconnected environment related problems directed to the need of preventive actions, emergency responses in planning intervention of Biyagama PS area. It is further emphasised through the studies carried out and emphasized the balance of the industrial development and environmental management of the area in future planning attempts.

3.2 Socio-economic impact due to Kelani river flood

The other main problem faced by the Biyagama PS area is the socio - economic impact of the annual flood in the Kelani River. With the high level of precipitation to up-streams, Kelani river fills with water beyond its capacity and let the surplus water overflows the banks and runs into adjoining low-lying lands through Ragghawatta, Malwana tributaries. Adjoining low- lying lands are paddy lands that indicates 13% from the landuse composition and this situation can be clearly identify by the Annexure 12 of elevation and the flood inundation area of 2016 flood event.

When compared with the past and recent flood situations of the area, the impact of the affected population is increasing mainly due to unauthorised construction within the river reservation as well as filling wetlands. According to data and statistics indicates by the following figure 3.3, it is proved that, Malwana, Yabaraluwa, Bollegala and Mabima areas were strongly influenced by 2016 flood event when compared with other GN divisions.

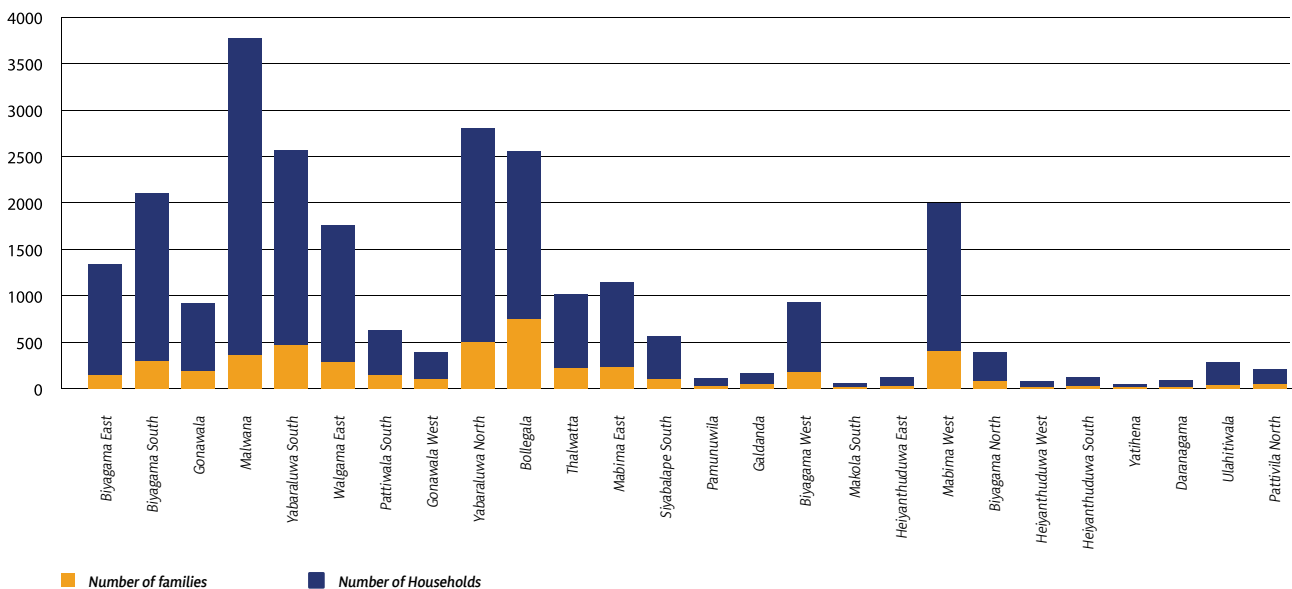


Figure 3.3 2016 Flood Affected Households - GN Division wise
Source: Biyagama Divisional Secretariat, 2016

03 Chapter Need of the Development plan

Socio-economic impact
due to Kelani river flood



Figure 3.4 Mabima & Biyagama South Area - Impacts to the Industrial Sector & Livelihood
Source: DailyMirror NEWS Paper, 2016



Figure 3.5 Bandarawatta Junction, Flood Inundation caused to block the road network
Source: Dailynews Website, 2018/05/23

The floods that occurred in May of 2016 were around 4–7 days and affected areas were changed day by day. The satellite images of Disaster Management Centre have confirmed that 9 sq. km of flooded area has been reported on 16th May and it is increased up to 12 sq.km by 19th May and later it was gradually decreased. This fact has been further described as a weakness of the area in Chapter 06 of Detail SWOT analysis.

According to the data records of Biyagama Divisional Secretariat, about 1100 families have constructed unauthorized constructions along Kelani river reservations. Unauthorized land filling, absence of drainage system, covering by boundary walls will caused to increase the flood impacts. Some areas including Malwana experiences flash floods even in a slight rain. In the 2016 flood situation, the main junctions connecting New Kandy Road, Malwana - Dekatana Road was obstructed and this has been indicated by Annexure 13.

The obstructions due to the flood situation in the area is directly affecting the industrial sector as well as the livelihood of the people. This situation affects the employees in factories as well as many labourers from outside. Also, industrial economy has been disrupted and directly affected due to break down of transportation system of industrial production and raw material.

Biyagama Divisional Secretariat Division	Damages (SL Rs. Mn)			Loss (SL Rs. Mn)		
	Industry & Commerce	Trade	Service	Industry & Commerce	Trade	Service
	19.65	33.23	30.62	14.73	24.92	5.51

Figure 3.1 Lost & Damage Analysis for Informal Business & Service Sector

Source: "Flood and landslide hazard of Sri Lanka, May 2016 - Assessment of Post Disaster Needs Assessment

The above mentioned economic loss has been confirmed by "Flood and landslide hazard of Sri Lanka, May 2016 - Assessment of Post Disaster Needs Assessment" prepared based on flood situation in May 2016. According to the report, Gampaha district falls within the six main disaster-prone districts and analysis of the damages and losses of three main sectors namely, Industry, Commerce, Trade and Services. The damage caused by informal businesses and service lines in three main areas in the Biyagama Divisional Secretariat in the year 2016 is as follows:

"The field visit of PDNA team in the end of July 2016 to Biyagama revealed that a number of companies continued to be closed due to severe damage to the infrastructure, storage and production inputs. Even though a full account of employment losses are not yet available, initial fact finding missions anticipate significant losses in the formal sector too."

Moreover, the river reservation and most of its nearest occupant are object for liberation of their lands and resettlement process because their livelihood is interconnected with the indirect employment opportunities and advantages of the industrial economy.

03 Chapter Need of the Development plan

SOCIO - Economic impact
due to Kelani river flood

"The Mabima East GN Division, Pattiwila South GN Division, Malwana GN division, Udamapitigama GN Division have all expressed the need to reconstruct on their own land with better flood protection measures. These are households, who are either engaged in horticulture or working in the Biyagama free trade zone and therefore understandably unwilling to relocate from the livelihood opportunities linked to the land."

Source - "Flood and landslide hazard of Sri Lanka, May 2016 – Assessment of Post Disaster Needs Assessment

The above assessment report also pointed that the loss of investment opportunities in the industry due to the annual flood situation. According to the information regarding payment claims after the floods that occurred in May 2016, 61% of them are in the manufacturing sector. Most of these industries are from the Colombo and Gampaha districts.

The enterprises which reported that they were affected by floods in Colombo (Kolonnawa and Kaduwela) and in Gampaha District (Biyagama) were located in low-lying areas and insurance coverage of the industries may be higher."

Source - "Flood and landslide hazard of Sri Lanka, May 2016 – Assessment of Post Disaster Needs Assessment

Based on the above data and analysis, Biyagama urban development area requires a planning intervention with a proper environmental management to overcome the negative impacts in terms of economic and social aspects due to the annual floods in Kelani River.

The identified two main planning needs are presented in detail at the stakeholder meeting on 23/11/2017 with the public and private institutions, stakeholders who are responsible for the Biyagama Development Plan. Report on Word Cloud Analysis using NVIVO software are outlined in the Annexure 14 and also that proven the above two planning needs in detail manner. Even the outputs of this report guide to the future planning direction of Biyagama PS area.



Part 02



**APPROVAL OF THE DEVELOPMENT PLAN FOR THE BIYAGAMA PRADESHIYA
SABHA AREA**

I, Patali Champika Ranawaka, Minister of Megapolis and Western Development do hereby approve the Development Plan for the Biyagama Pradeshiya Sabha area, having considered the recommendation made by the Board of Management of the Urban Development Authority on 09th July, 2019 by virtue of the powers vested in me under Section 8F of the Urban Development Authority Law, No. 41 of 1978 as amended by the Act, No. 4 of 1982.


.....
Patali Champika Ranawaka,
Minister of Megapolis and Western Development.

Ministry of Megapolis and Western Development,
17th and 18th Floors,
"Suhurupaya",
Sri Subhuthipura Road,
Battaramulla.

Date: 01st August, 2019.



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The Gazette of the Democratic Socialist Republic of Sri Lanka

EXTRAORDINARY

අංක 2135/26 - 2019 අගෝස්තු මස 06 වැනි අඟහරුවාදා - 2019.08.06

No. 2135/26 - TUESDAY, AUGUST 06, 2019

(Published by Authority)

PART I : SECTION (I) — GENERAL

Government Notifications

NOTICE OF APPROVAL OF THE DEVELOPMENT PLAN FOR THE BIYAGAMA PRADESHIYA SABHA AREA

NOTICE is given to the General Public of the Democratic Socialist Republic of Sri Lanka under Section 8G of the Urban Development Authority Law, No. 41 of 1978 as amended from time to time that I, Patali Champika Ranawaka, the Minister in charge of the subject of Megapolis & Western Development, by virtue of the powers vested in me under Section 8F of the said Law, have approved the Development Plan for Biyagama Pradeshiya Sabha area on the 01st day of August, 2019.

PATALI CHAMPIKA RANAWAKA,
Minister of Megapolis and Western Development.

Ministry of Megapolis and Western Development,
17th and 18th Floors,
“Suhurupaya”,
Subhuthipura Road,
Battaramulla.
Date: 01st August, 2019.



2A I කොටස : (I) ඡේදය - ශ්‍රී ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජයේ අති විශේෂ ගැසට් පත්‍රය - 2019.08.06
PART I : SEC. (I) - GAZETTE EXTRAORDINARY OF THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA 06.08.2019

APPROVAL OF THE DEVELOPMENT PLAN FOR THE BIYAGAMA PRADESHIYA SABHA AREA

PUBLIC are hereby informed that the Development Plan prepared under Section 8A of the Urban Development Authority Law, No. 41 of 1978 as amended by the Act, No. 4 of 1982, for the Biyagama Pradeshiya Sabha area has been approved on 01st August 2019, by Hon. Patali Champika Ranawaka, Minister of Megapolis and Western Development, by virtue of powers vested on him under Section 8F of the said amended Law.

DR. JAGATH MUNASINGHE,
Chairman,
Urban Development Authority.

Date: 01st August, 2019.

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04

Chapter

The Planning Framework



04 Chapter
The Planning
Framework

The Vision

The Vision Statement

4.1. The Vision



“The Tranquilized Industrial City”

A Greenscape Industrial City Idol of Western arena by hosting an interaction space to cater a variety of industrial needs

4.2 The Vision Statement

The vision developed for the future development direction of the Biyagama consists with the two main themes of Environmental and Industrial Economic Development as well as the key issues studied in the area. The word Tranquilized refers the management of magnificent landscape with sensitive green wetlands and waterways of Biyagama. Through this wording, it hopes to create an Industrial City, where harmonize the future brownfield developments with its greenery wetlands. And that will lead industrial city idol for the Western region to minimize negative scenarios through the contemporary sustainable development practices with integrated layers of compatible land uses.

As a preferred location for industrial investments due to the availability of factors of production, Biyagama will be an Industrial City idol which guidance to all industrial cities of Sri Lanka that caters variety of industrial needs and expected to contribute to uplifting the country's economy as well as the socio-economic environment of the country, under the sustainability approach and eco principles, practices.

The core idea of “Tranquilized Industrial City” means the attempt for enhancing the resilience of socio-ecological systems through a creation of industrial city idol. Through this, future Biyagama will be experience the balanced eco industrial interaction spaces with contemporary industrial economic growth and managing the green landscape.

4.3 Goals

Goal

01

Create multifaceted clusters while promoting unified industrial economic needs.

Goals

Above first goal aims to create clusters of different industrial services that fulfil the needs and requirements of the industrial sector and attract industrial investments with basic productive factors in the area. In order to develop Biyagama PS Area as an industrial city based on the vision, meaning of multi-sectoral clusters are based on different industrial services which are available in those industrial clusters. It aims to promote industrial development through the development of physical infrastructure and establish urban service clusters with the target of commuting and residential population.

Goal

02

Control the emergence of shocking city with negative environment and social scenarios.

Biyagama Urban Area as the Tranquilized Industrial City, it is expected to create close-knit of greenery wetlands network and sustained brownfield development. This is closely link with promotion of sustainable industrial development with this sensitive environment of Biyagama. Control of the emergence of Shocking city means, the urban development with sustainable eco-social strategies that controls the irregular and informal urban development.

04 Chapter
The Planning
Framework

Objectives

4.4 Objectives

Goal

01

Create multifaceted clusters while promoting unified industrial economic needs.

1. To open up 13% from the total land area through collector road pattern for industrial investments by 2030.
2. To promote industrial oriented business zone around central investment corridor by 2025.
3. To facilitate 30% of manufacturing sector employment contribution by the end of 2030
4. To facilitate 3 multi- nodal neighborhood clusters by 2030.

Goal

02

Control the emergence of shocking city with negative environment and social scenarios

1. To conserve 100% of critical wetlands that tolerate the surplus flood water of the area by 2030.
2. To introduce wetland stewardships for 130 ha of abandoned agro wetlands with CER by 2030.
3. To minimize the flood impact by restorative flood protective and treatment areas by the end of 2025.



05

Chapter

**SWOT
Analysis**

5.1. Summarized Swot Analysis

Goal **01** Create multifaceted clusters while promoting unified industrial economic needs

S

- Having the basic production factors such as land, capital, labour and entrepreneurship. (Refer Table 5.1)
- Industrial Suitability Index displayed the 84% from the total land extent as high and moderate suitability level for industrial investment promotions.
- Sub towns and nodes based spatial setting of the area.
- Recorded 69% of rapid commercial development.



W

- 98% of the land area of Biyagama EPZ reached to its maximum carrying capacity
- 70% of the roads in the area are narrow local roads.
- Kelani river seasonal flooding blocked 07 major transport nodes.
- Absence of industrial oriented business and financial area.
- Not allocated spaces for service line maintenance.
- Inadequate health facilities in relation to the residential and commuting population.
- 7% from the housing categories indicates the improper and informal line houses.
- Maintain a solid waste sorting centre in prime location which could be used for urban service and utilities in Delgoda Town.



O

- National & Regional level planning direction
- CMRSP & CESMA plans stressed the industrial development
- Upcoming flood mitigation projects of CRIP –DBIP
- 3K Area project proposed to develop Delgoda & Malwana town centers
- Trend of establishing small scale multi-tenant business model industrial parks
- Manufacturing sector investment opportunities from the structured proposed projects by BOI
- Up - coming transport development projects (Biyagama – Kosgama Railway Project/Kadawatha - Light Railway Project)
- Megapolis directives for logistic corridor / Science & Tech City Development



T

- Main port access roads discouraging freight transportation
 - Traffic congestion in Kiribathgoda town centre
 - Peliyagoda 4th Mile's post railway bridge restricts vehicles more than 3.5 m height.
- Proposed Millawa industrial estate with 780 acres in Kaluthara district



Goal **02** Control the emergence of shocking city with negative environment and social scenarios

S

- 6% of the land use composition belongs to environmental features (365 Ha -Marsh/ Water bodies /Scrubs)
- 13% of productive agro-wetlands act as natural buffer zones and water retention areas
- Availability of public and private open spaces of 11.7 ha.
- Availability of 08 minor flood protection structures



W

- Present industrial establishments distributed close to sensitive wetlands
- Biyagama sub basin recorded 73 of industries from the A, B, & C types
- of pollution potentials of respectively 14, 58 and 1.
- 47% of abandoned paddy lands out of total paddy lands distributed in southern part of the area.
- 1100 families recorded as encroached the Kelani river reservation and canal banks encroachments
- Approximately 20,000 people affect to flood annually & inundation time period varies into 4 -7 days



O

- WRSP-2030 identified an eco-conservation zone of 100m buffer along Kelani river
- Upcoming flood mitigation projects of CRIP –DBIP
- Regulations related environment protection
- Current Industrial Policy & Sustainable Approach



T

- 2842 industries are recorded with different pollution potentials in Kelani river basin



05 Chapter
SWOT Analysis

5.2. Detailed SWOT Analysis

Detailed SWOT Analysis

Goal 01

Create multifaceted clusters while promoting unified industrial economic needs



STRENGTHS | Goal 01

1- Having the basic production factors such as land, capital, labour and entrepreneurship.

<i>land</i>	<i>Capital</i>	<i>Entrepreneur</i>	<i>Labour</i>
<ul style="list-style-type: none"> • Availability 9% of developable and suitable land for industrial investment. • Low land value varying from Rs. 100,000 to Rs. 400,000 per perch when compared with Colombo and adjacent areas. 	<ul style="list-style-type: none"> • Strategic location close to sea port and airport to reach within 1 hour • OCH lying through the area and having 2 interchanges (Kadawatha /Kaduwela) • Located in between 2 major inter - regional transport corridors • Well placed at the heart of national oil energy and gas - Sapugaskanda • Availability of 3.3% of import cargo and 2.8% of export cargo facilities • Kelani River Right Bank Water Treatment Plant with the capacity of 360,000m3 per day • Biyagama(220kv) & Sapugaskanda (132kv) grid substations • Multi-purpose gamma irradiator (MGIF) facility at Biyagama EPZ 	<ul style="list-style-type: none"> • Present industrial establishments and growth • Present multi - national network of industrial investments • Hereditary Industrial base and village based modern small scale industrial trends 	<ul style="list-style-type: none"> • Recorded remarkable growth of labour force after 1985 • 23% from the employment sectors directly contribute to manufacturing industries • 12% from the employment sectors directly contribute to accommodation and food catering • 66% of working age population from the total population • Recorded 150,000 commuting population and identified as an employment generation centre

Table 5.1 : Detailed facts for factors of production
Source : Gampaha District Planning Team

First goal aims to promote unified industrial economic needs with cluster development approach. The following discussed facts and figures strengthened the potentials of industrial development under the factors of production which are shortlisted in the above table 5.1.

Land is the basic factor of production, from the landuse composition 72% of the lands identified as built-up lands and excluding environmental features 9% of developable lands area available within Biyagama. According to the Annexure 15, Land values of Biyagama area displayed comparatively very low variation that having positive impact for attraction of industrial investments.

Capital includes the all man-made resources, therefore present infrastructure facilities included to capital factor. Under the transport and mobility, sea port and airport accessibility are basic needs of industrial development of a country. Therefore, located in between the Kandy and Low level inter regional transport corridors and current expressway development maximize the strategic location of Biyagama. New Kandy Road and Colombo - Kandy Road (A 01) giving the accessibility as most connected corridor to all over the country. Outer Circular Highway (OCH) is lying through the area and both Kaduwela & Kadawatha expressway interchanges are located within Biyagama PS Area. This OCH links to Southern expressway network from Kottawa which connects southern part of the country within 1 hour. The proposed third phase of the OCH towards Kerawalapitiya which link with Katunayake expressway giving the Katunayake international airport accessibility within 15-30 minutes.

Sapugaskanda oil refinery which is one and only oil refinery in Sri Lanka located near Colombo and with the capacity to refine around 2.12 million metric tons per year (or 52,500 barrels per day - bpd). That implies the well placed at the heart of national oil energy and gas. Availability of 3.3% of import cargo and 2.8% of export cargo facilities implies the present logistic facilities due to the industrial agglomeration of Biyagama. 360,000 m³ designed Kelani River Right Bank Pattiwila water treatment plant fulfilled the water demand of northern part of western province. That covers 1 million consumers of Biyagama, Kelaniya, Kiribathgoda, Kadawatha, Ragama, Wattala, Kandana, Ja-Ela, Seeduwa and Ganemulla areas and present production is (m³/d) 175,000.

According to the Electricity supply, Biyagama having 220 kV Grid sub station and 132 kV Grid sub station at Sapugaskanda. Also Biyagama PS area having two power generating plants at Lindel Industrial Estate - Lakdhanavi Ltd (21MW) and Asia Power Pvt Ltd (51MW) with 220 Kv transmission network. Biyagama EPZ consisted with the facility of Multi-Purpose Gamma Irradiator (MGIF) which support for the pharmaceutical, chemical and food manufacturing plants. This proves the industrial sector-oriented infrastructure facilities proves that Biyagama as a city of having industrial economic needs.

05 Chapter SWOT Analysis

Detailed SWOT Analysis

Under the labour factor, Biyagama recorded remarkable growth due to the highest industrial labour agglomeration after the introduction of Biyagama EPZ. From 1981-2001-time period 2.08% population growth rate was recorded due to the employment attraction of BEPZ. This fact has been proved by DSD wise comparison of industrial establishments and labour in Annexure 17. According to the economic sector wise employments in Annexure 18, 23% of the employment sector directly contributes to manufacturing industries of Biyagama and 12% directly contributes to accommodation and food catering. As following figure 5.1, Biyagama PS area is consists with 66% of working age population from the total population and recorded 150,000 commuting population per day and identified as an employment generation centre.

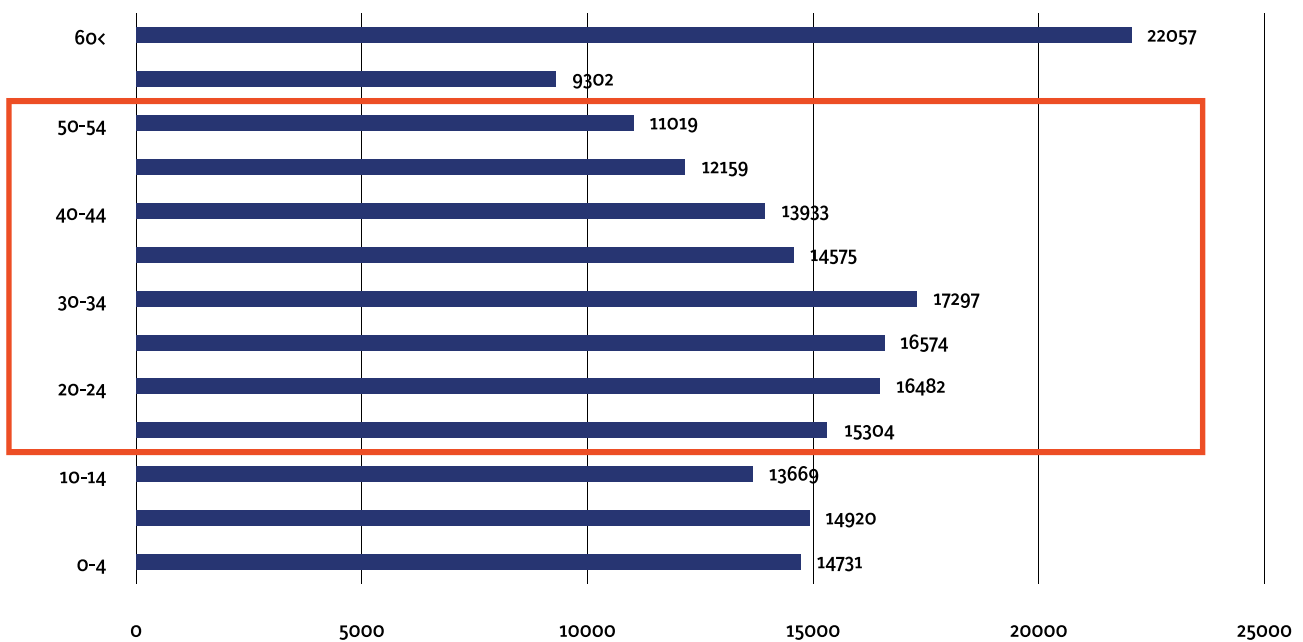


Figure 5.1 Age Composition of Biyagama PS - 2017
Source: Gampaha District Statistical Handbook, 2017

Last factor of production as entrepreneur discussed with the present industrial establishments, growth of the industrial sector and homebased industries with a hereditary industrial base. As well as Biyagama having strong and prestigious international linkages due to the multi-national industrial establishments network. As examples, Anchor - Fonterra Brands Lanka, Lion brewery Ceylon PLC and Coca-Cola Beverages Sri Lanka Ltd.

Three industrial clusters could be identified in the area according to the spatial distribution pattern of the industrial establishments and that has been displayed through the Annexure 08. Biyagama EPZ, Sapugaskanda Lindel industrial Estate and Dimo utility vehicles workshop and the surrounded industries are the identified major clusters.

In 1995, establishment of Lindel industrial estate at Sapugaskanda in 125 acres was first Sri Lankan privately owned industrial park and it was the significant change of the Sri Lankan industrial development. The industrial trend was changed into the joint ventures with leasable land and buildings and out of the 100 acres of leasable land, about 90 acres are already occupied by well-known industries of which five of them are joint ventures with fortune 500 companies. Lindel is a private company with BOI status. 49% of its shares are held by the DFCC Bank, 2% by Lanka Ventures Limited and the remainder by the Treasury of Sri Lanka.

This second wave of liberalization resulted to attract multi - national manufacturing companies namely, in 1995 Fonterra Brands Lanka (Pvt) Limited, in 1996 Lion Brewery Ceylon PLC and DIMO Siyambalape - commercial vehicle workshop. This industrial development intensity of Biyagama could be further expected and confirmed through records of preliminary planning clearances as approximately 50 per year. At present there is a tendency of constructing private ware houses and lending can be seen along Mahena road and Mabima road for logistic facilities.

Comparison of Industrial growth 2016 -2017 with industrial categories

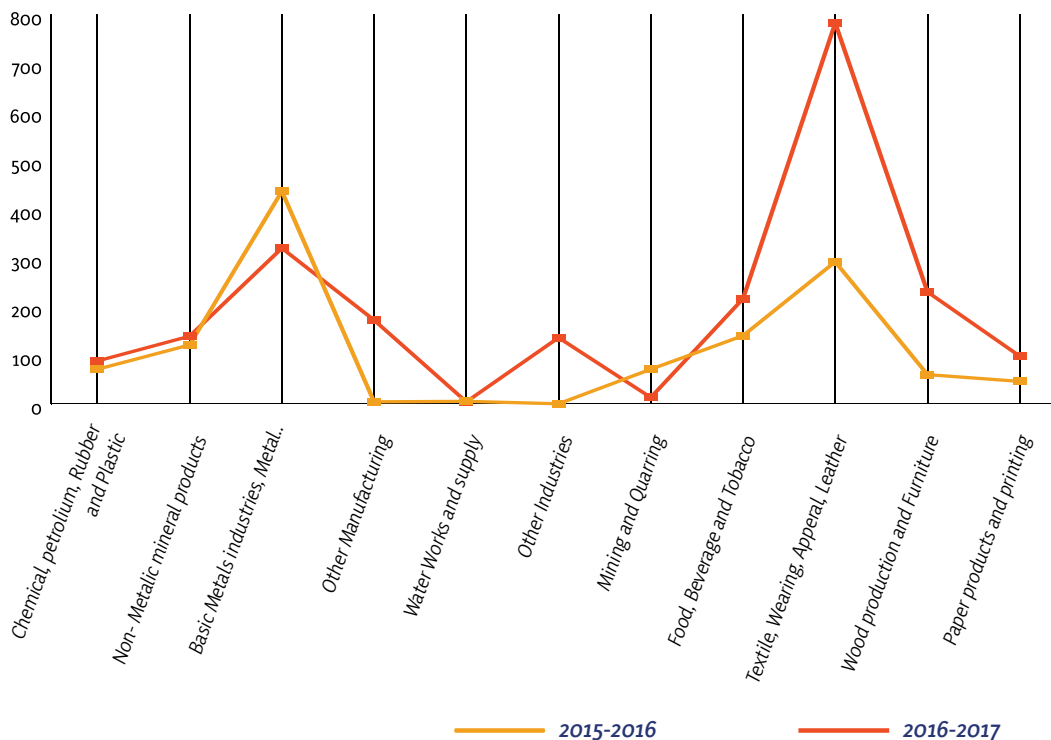


Figure 5.2 Comparison of Industrial growth 2016 -2017 with industrial categories
Source: Gampaha District Statistical Handbook, 2017

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Statistics comparison of the industrial categories by year wise, it shows rapid increase of basic metal industries, other manufacturing and textile, apparel and leather sector industries within Biyagama PS. Textile and apparel sector are the highest contribution to the country's foreign direct investments and Biyagama PS area having a rapid increment of textile and apparel sector.

According to the historic evidences, Biyagama is not a newer to industrial development activities and there were hereditary industrial villages in past. As historical industrial base, clay industry is mostly spread the areas where very closer to the Kelani river like Mabima, Pattiwila, Bollegala, and Yabaraluwa, Gold and Silver works spread in Biyanvila, Mawaramandiya, Meegahawatta, Siyambalape and Heiyanthuduwa areas. Makola for Brassware and Kanduboda, Yabaraluwa and Heiyanthuduwa are famous for granite works.

At present the area has developed with the homebased industries that mixed with new technology. As examples, Pamunuwila area is famous for fireworks industries, Biyanwila area for rubber mix coir industry while Makola, Kammalwatte and Heiyanthuduwa for aluminum works and Siyambalape North for printing industry. Meegahawatta and Delgoda areas are well known for the interior works and the cushioning works for the vehicles.

2- Industrial Suitability Index displayed the 84% from the total land extent as high and moderate suitability level for industrial investment promotions.

The analysis of industrial suitable areas has been carried out using data from the physical, environmental and social factors to identify the most suitable environment for future investments. Analytical results indicate that Samurdhi Mawatha, Dimo Junction, Heiyanthuduwa, Walgama and Malwana are the most suitable areas and this has been indicated in Annexure 18.

3- Sub towns and nodes based spatial setting of the area.

Biyagama having a node based spatial setting that merge with the different industrial clusters of the area. As per the figure 5.3, using Gephi-network analysis software this sub cluster composition identified through modularity class tool. Through this output Biyagama PS area has been divided into six clusters based on the linkages and confirmed that it has been divided over specialized land use and includes three industrial clusters and three urban service clusters. According to that planning area having hierarchical order of sub towns and nodes, that can be prove by the Annexure 19 of most connected nodes of the area.

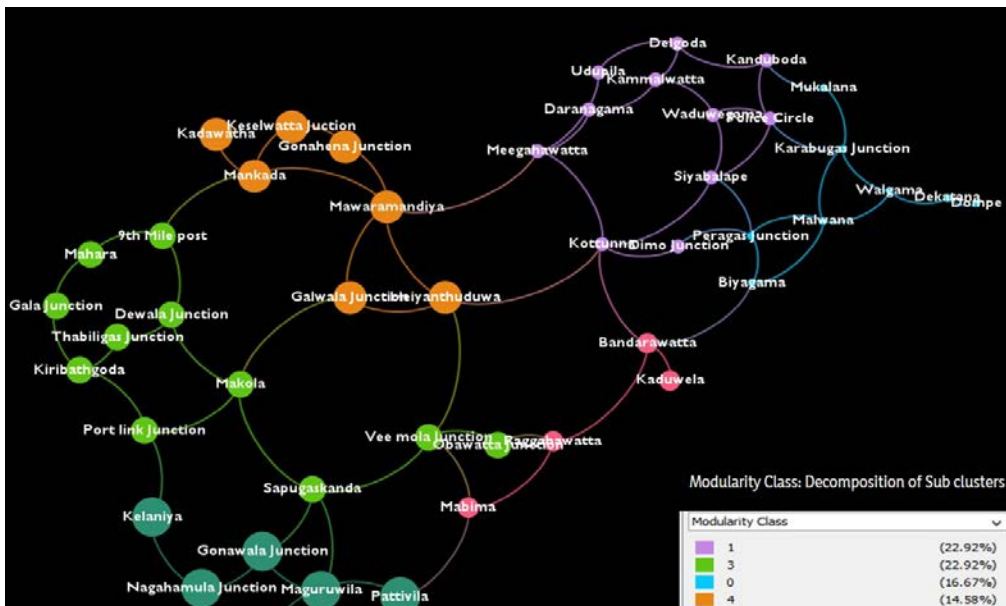


Figure 5.3 Gephi Network Analysis of Sub Clusters
Source: Gampaha District Planning Team, 2017

4- Recorded 69% of rapid commercial development.

Industrial and institutional development simultaneously influence to increase the commercial spaces and lead to develop commercial nodes around the industrial cluster entrances. As per the annexure 20, series of satellite images from 2004 to 2017 of Siyambalape junction proved that scenario.

In annexure 21, Development pressure index also proved this situation and Kadawatha, Makola, Malwana, Gonahena and Mawaramandiya areas identified as high pressure of development. According to the records of commercial spaces registrations in Gampaha district statistical handbook, year 2017 recorded rapid registration of commercial spaces in relation to year 2016. The following figure 5.4 displays that variation.

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Comparison of Registered Commercial Spaces of Biyagama PS Area 2016-2017

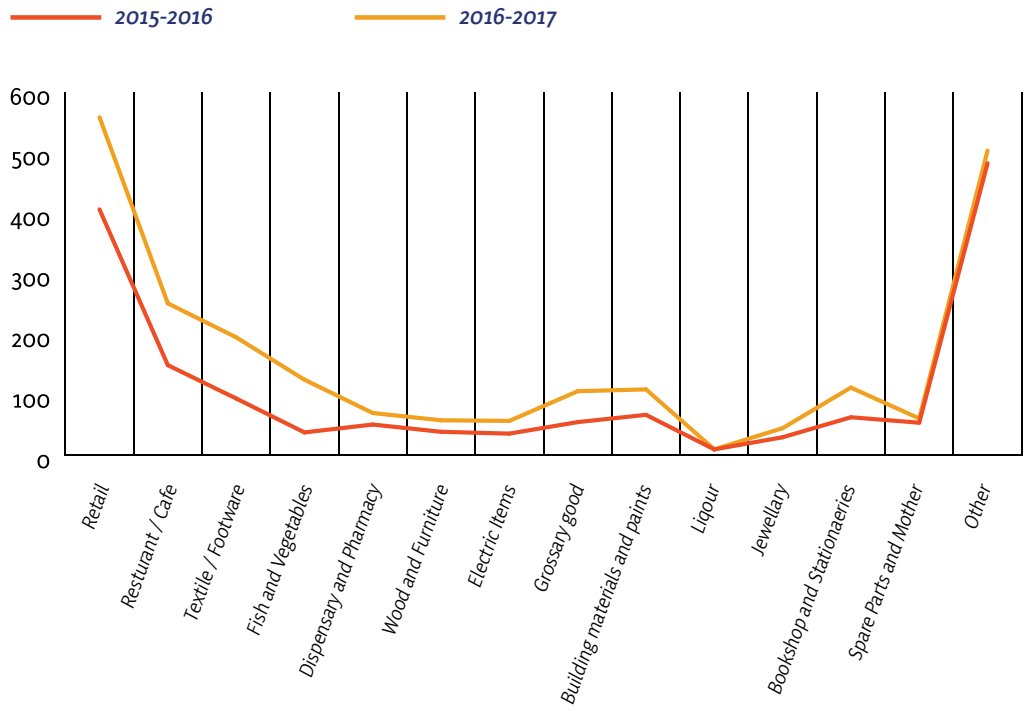


Figure 5.4 Comparison of Registered Commercial Spaces of Biyagama PS Area 2016-2017
 Source: Gampaha District Statistical Handbook, 2017



1- 98% of the land area of Biyagama EPZ reached to its maximum carrying capacity.

57 factories are currently operation at the Biyagama Export Processing Zone, which are spread over 180 acres of land. Industrial and Commerce team of the stakeholder meeting has mentioned that there are no spaces for new factories in the Biyagama EPZ and that has reach to its maximum carrying capacity. As per the following figure 5.5, there are 25 manufacturing industries operating under the BOI – Biyagama EPZ have been established outside of the zone but within the Biyagama Divisional Secretariat limits.

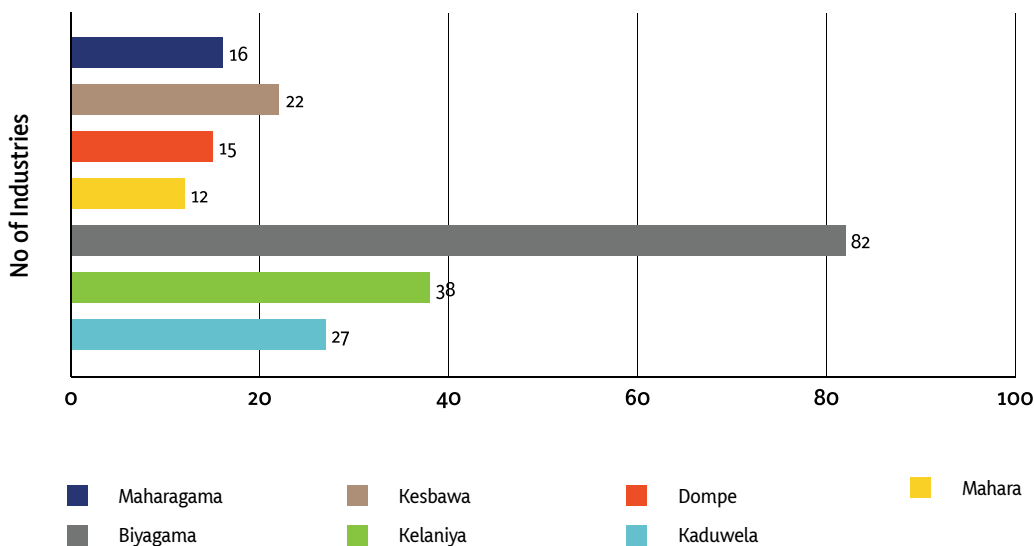


Figure 5.5 Comparison of BOI based Industrial establishments DSD wise
Source: HR Division - Biyagama EPZ, Board of Investment, 2018

2- 70% of the roads in the area are narrow local roads.

Width of the internal roads that connect main arteries of Colombo-Kandy Road, New Kandy Road & Samurdhi Mawatha are less than 9m and road bends discouraging the freight transportation. According to the Annexure 22, less road widths of the internal road network of Biyagama negatively impact to the newer industrial investments and rejecting approvals. This context has been studied through the space syntax – spatial integration analysis and that have indicated as Annexure 23.

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3- Kelani river seasonal flooding blocked 07 major transport nodes.

When flood occurred and its duration time period cause to make the disturbance to transportation system of the area and major junctions of New Kandy road, Colombo-Biyagama Road, and Malwana Dekatana road blocked with flood.

Bandarawatta Junction, Nagahamulla Junction, Siyabalape Junction, Malwana, Pattiwila & Mabima Junctions are affected in every flood event it is displayed through the Annexure 13. This flood scenario caused to disturb passengers who used following bus routes - Panadura-Kandy (17), Karabugas Junction -Fort bus route (356), Dekatana-Fort (226), Pugoda-Colombo (224), Malwana-Colombo (225), Gampaha-Kaduvela (228) and Kiribathgoda-Pettah (230).



Figure 5.6 Flood Inundation- 2018 Gonawala
Source: Captured by Udari Hettiarachchi, 2018.05.26



Figure 5.7 Flood Inundation-2018 Pattiwila
Source: Captured by Udari Hettiarachchi, 2018.05.26

4- Absence of industrial oriented business and financial area.

Even though the southern part of the Biyagama planning boundary represent as an industrial employment centre, there is no separate area or a centre for financial and banking purposes. To fulfil the needs & wants of the people related to the banking and financial activities, people have to travel sub urban centres and these sub towns also not agglomerate the type of commercial banks.

5- Not allocated spaces for service line maintenance.

At the meeting of the stakeholders, a major problem relating infrastructure was the lack of space for the services on both sides of the road. As a result, it was highlighted that the road network has become dilapidated by various institutions to break down the roads on several occasions.

6- Inadequate health facilities in relation to the residential and commuting population.

Biyagama PS area having a Type C - divisional hospital. But as an area of labour agglomeration due to the industrial establishments and the location of second largest EPZ in terms of the labour participation, highlighted the need of improved health facilities. According to the international standards of four hospital beds per 1000 people, that proves it can't be account with the Biyagama PS area threshold population and following data table describes comparison with surrounding hospitals.

Hospital /Type	No of Beds	Population _DSD wise
Biyagama, Type C - Divisional Hospital	33	192,000
Kiribathgoda, Type B - Base Hospital	100	112,797
Dompe, Type A - Divisional Hospital	104	158,493
Udupila, Type C - Divisional Hospital	24	213,837

Table 5. 2 Comparison of Hospital types & Beds - Biyagama & Surroundings
Source: Gampaha District Statistical Handbook, 2017

7- 7% from the housing categories indicates the improper and informal line houses.

Provision of accommodation facilities for the employees of the Biyagama zone is one of main income source of local community. According to the recorded housing data from census of 2011, most of the accommodation in Malwana, Walgama, Yabaraluwa, Siyambalape, Yatihena area are located as improper and informal line houses. Biyagama North and Walgama East GN divisions recorded highest line houses distribution of 718 and 731 respectively. The line houses density of the area is displayed as Annexure 24.



Table 5. 8 Line houses around Biyagama EPZ Area
Source: Sundaytimes Newspaper, 2009

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8- Maintain a solid waste sorting centre in prime location which could be used for urban service and utilities in Delgoda Town.

Solid waste sorting site of the Biyagama PS area is located in a land that having high commercial value adjoins to the existing Delgoda bus terminal. This bus terminal is not connected to Delgoda junction directly and the solid waste sorting site close to this bus terminal cause to decrease the optimum use of urban lands and impact to the highest and best use. At present this bus terminal used only for bus parking and the commercial spaces of the building are not functioning.



Figure 5.9 Solid Waste Sorting Site- Delgoda
Source: Captured by Udari Hettiarchchi, 2018.01.08



Figure 5.10 Delgoda Bus Terminal with vacant commercial spaces
Source: Captured by Udari Hettiarchchi, 2018.01.08



1. National and Regional Level Planning Direction

As per the following figure 5.11, the National Physical Plan 2050, Biyagama PS area is located in East-West Economic Corridor which proposed to increase 20 - 25% population. Planning direction from the national level already guided and stressed the economic development. Therefore, Biyagama can contribute to the national economy via industrial sector as a part of the East-West Economic Corridor. Also, Biyagama EPZ is a significant contributor to the national economy with an export value estimated at Rs. 134 billion (\$ 849 million) and importing Rs. 58 billion (\$ 368 million) worth of raw materials in 2017.

Following figure 5.12, Western Region Structure Plan - 2030 identified Biyagama area as the industrial potential area and regional level planning direction emphasized the industrial development. According to these recent national and regional planning decisions will be main opportunity for future industrial development of the area.

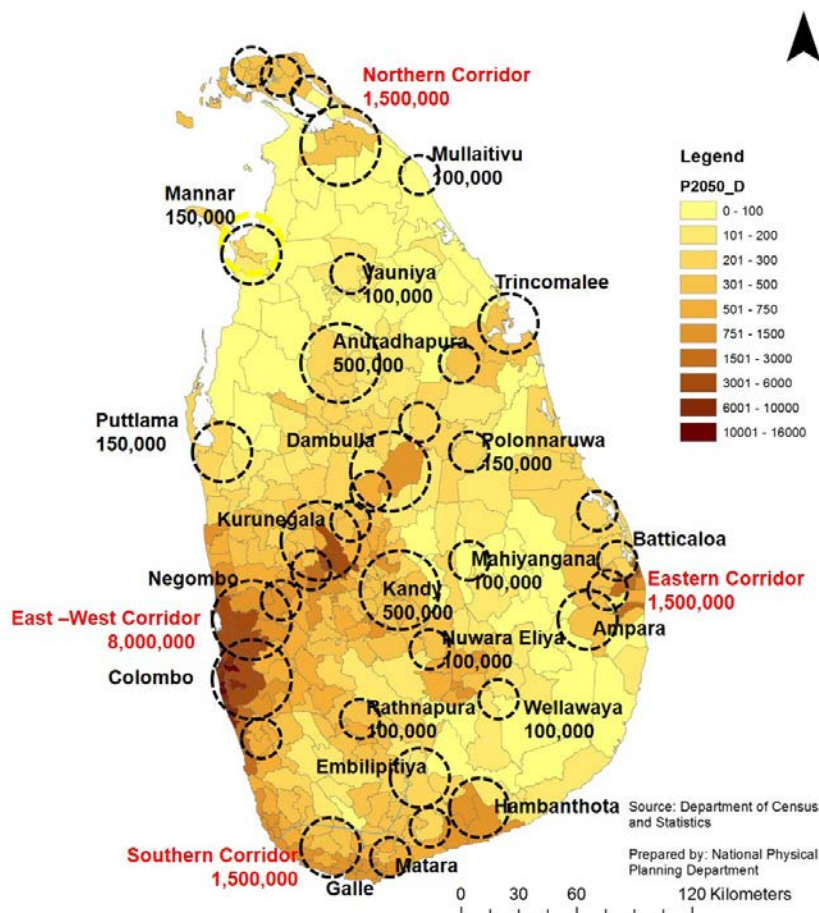


Figure 5.11 NPP Proposed Economic Corridors
Source: National Physical Planning Department, 2017

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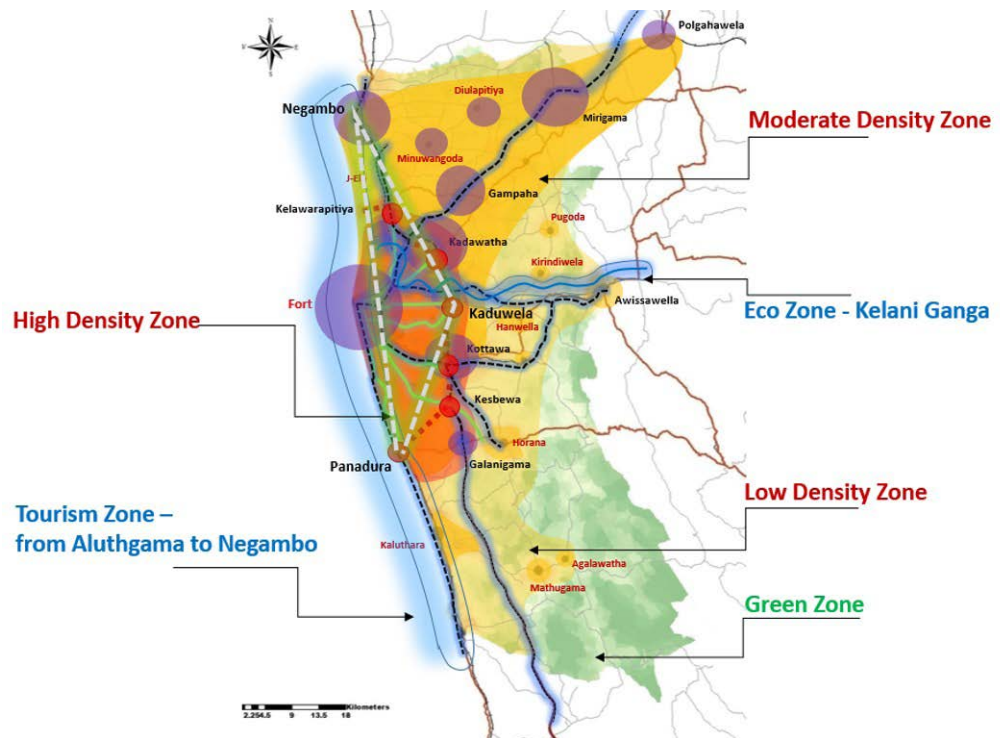


Figure 5.12 Draft Western Region Structure Plan-2030
Source: Western Province Division, Urban Development Authority, 2017

2. **CMRSP & CESMA plans stressed the industrial development**

CMRSP in 1998 identified Biyagama as one of the “Growth center” in Gampaha district. It has been planned to promote industrial land use by 40% and decrease the residential land use upto 15%. The plan estimated and expected 285,000 population by 2010 and that has displayed through the Annexure 06. CESMA Plan in 2004, identified Biyagama as an industrial development areas and included to inner ring township of the Western region.

3. **Upcoming flood mitigation projects of CRIP-DBIP**

Climate Resilient Improvement Project by the Department of Irrigation will be introduced for flood mitigation wall from Kelani river mouth up to Hanwella. With this wall flood impact from the Kelani river will be mitigate and that will be added opportunity for physical developments of the area.

4. **3K Area project for Delgoda & Malwana urban redevelopment**

From the 3K Area Project (Kottawa, Kaduwela & Kadawatha), Biyagama PS area belongs to the Kaduwela and Kadawatha Zones. 3K Project area is displayed in Annexure 25 and project proposed to redevelop Delgoda and Malwana as minor urban centres.

5. **Trend of establishing small scale multi - tenant business model industrial parks**

The recent trend of industrial development is establishment of small-scale business model industrial parks which cater to diverse requirements of different organizations. As one central multi-tenant server set up that meets the requirements of all tenants and improved security, high level of service availability reduce the impact of disruptions to their missions, critical production processes and to ensure business continuity. Also, high technology usage able to reduce their carbon footprint which is an important criterion for their business model. In addition, it creates a simplified platform that can enhance the efficiency and effectiveness of servers used by tenant companies of the park. Through this demand for high quality labour will be increased and this is boost for the country's talent pool.



Figure 5.13 Flinth Industrial Park -Ranmuthugala Estate, Kadawatha
Source: Cablesoul Web site, 2010

The present example for this kind of business model is Ranmuthugala estate - Flinth industrial park at Kadawatha as per the following figure 5.13. The park extent upto 10 acres and 8 companies which are primarily involved in production and in exporting to various parts of the world such as Aero Sense, Cable Solutions, Harness Solutions, Prime Packaging, Quality Floors, CaviTool, Swedlanka and Metal Component Services.

6. **Manufacturing sector investment opportunities from the structured proposed projects by BOI**

According to the BOI- Project proposals of 2017, it has been identified manufacturing sector projects: Healthcare supplements/Cosmetic products/Value added rubber industry, Textile accessories/Woven fabric manufacturing plant cluster. These identifications are important for the attraction investment opportunities for the Biyagama PS area lands.

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7. **Up - coming transport development projects**

The proposed Biyagama-Kosgama Railway Project, LRT Developments and Kadawatha LRT Station, OCH Phase III Development with Kerawalapitiya Interchange, Central Expressway Development and Kadawatha Interchange becoming a gateway to Kandy are up- coming transport development projects that added value for the area in terms of accessibility. According to the Annexure 26 of future expressway development in Sri Lanka shows the importance of the Outer Circular Highway and its connections regarding the industrial sector promotions in near future.

8. **Megapolis directives for logistic corridor / Science & Tech City Development**

Western Region Megapolis Structure Plan proposed a logistic corridor from Peliyagoda up to Katunayake. This will be an added advantage for logistic facilities for industries and following figure 5.14 indicates the proposed corridor. Science and Tech city development also indirect opportunity for skilled labour for the manufacturing industrial sector and following figure 5.15 shows the Megapolis directives with planning area divisions.

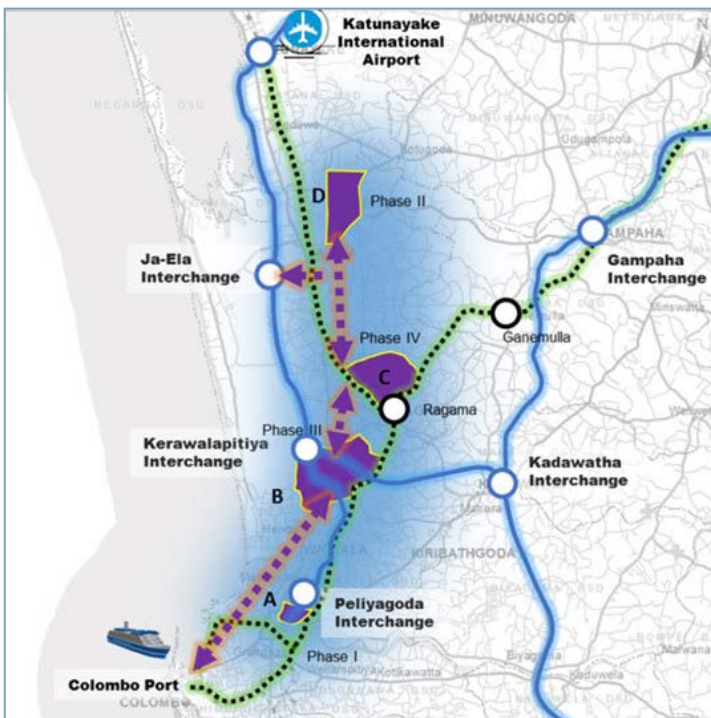


Figure 5.14 Proposed Logistic Corridor- WRMP



Figure 5.15 Western Region Megapolis Directives

Source: Peliyagoda Draft Development Plan, 2017 / Western Region Megapolis Plan, 2016



1. **Main port access roads discouraging freight transportation (Traffic congestion in Kiribathgoda town centre/ Peliyagoda 4th mile's post railway bridge restricts vehicles more than 3.5 m in height)**

Samurdhi Mawatha and Colombo-Biyagama roads are main port access road corridors of the area. Port links with the average distance and time are major concern of locating and investing industries. But these two main port access corridors discourage the freight transportation due to the traffic and height restriction. Samurdhi mawatha via Kiribathgoda is the minimum distance road to the port, but Kiribathgoda town centre located within main inter-regional transport corridor that often occur huge traffic congestion. As per the following figure 5.16, around peak hours' average travel speed of the Kiribathgoda area is 10-15 km/h around peak hours.

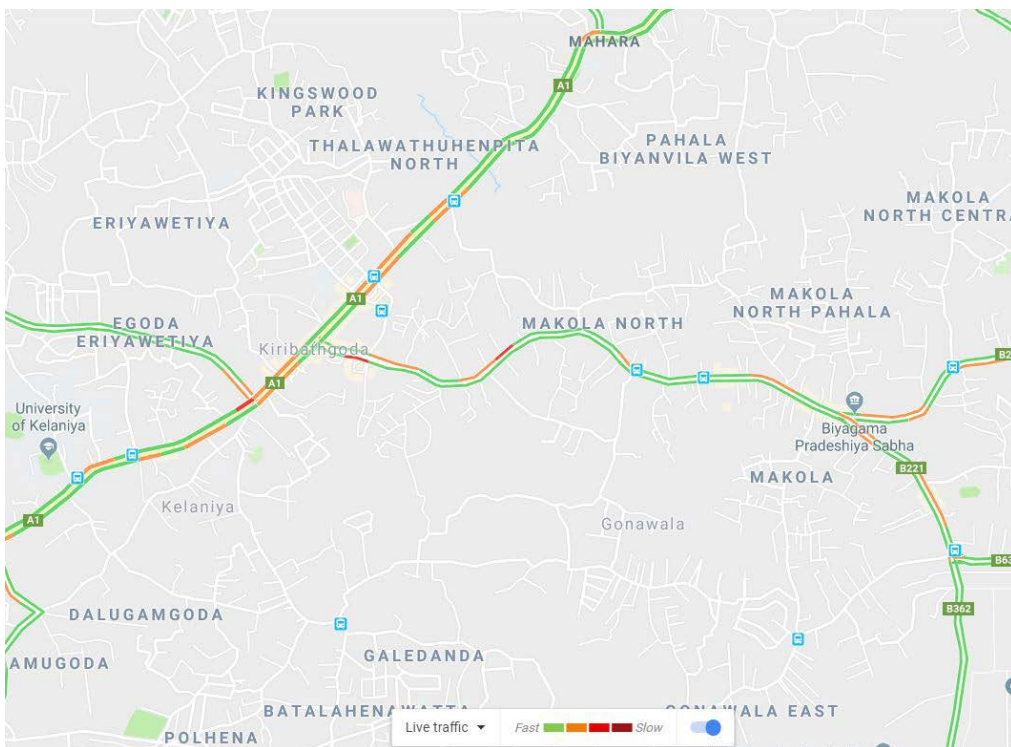


Figure 5.16 Traffic Congestion-Kiribathgoda
Source: Google Maps, 2017

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Figure 5.17 Height Restriction Area- 4th Mile's Post
Source: Google Street View, 2017

Biyagama - Colombo road (B 214) is traffic free road corridor when compare to the Kandy corridor. But, the road where link to the Kandy corridor (4th mile's post) having a height restriction barrier due to the Kelani valley railway bridge as per the above figure 5.17. Container freight transportation restrict from that location. Therefore, should take turns to Waragoda road and Station road for link Kandy corridor to access the port.

2. Proposed Millawa industrial estate with 780 acres in Kaluthara district

At present, infrastructure facilities development in proposed Millawa industrial estate with 780 acres in Horana, Kaluthara district is supervising by the Urban Development Authority. This newer industrial estate can be identified as a threat to attract large scale industrial investments to the Biyagama PS area due to the large land extents for proposed industrial investments and under the goal 01 related to the industrial economic needs.

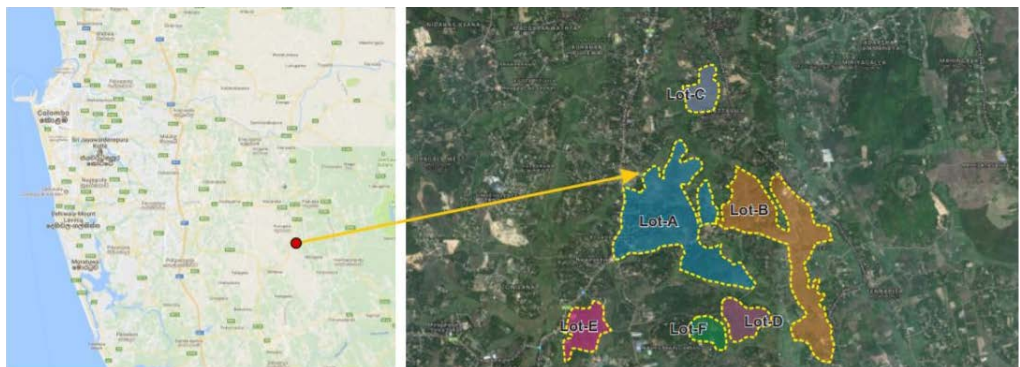


Figure 5.18 Lands for industrial investments in Millawa Industrial estate
Source: Urban Development Authority - Investment Potentials Summit, 2017

Goal 02

Control the emergence of shocking city with negative environment and social scenarios

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STRENGTHS | Goal 02

1. 6% of the landuse composition belongs to environmental features of Marsh/ Water bodies /Scrubs. (365 Ha)
2. 13% of productive agro-wetlands act as natural buffer zones and water retention areas.

Southern part of the Biyagama PS boundary consists with most environmental sensitive wetlands and tributaries that closely connected with Kelani river. The water retention capacity of these environmental features support to storm water management. Raggahawatta, Malwana – Sambawela, Pattiwila and Pahuru oya can be identified as tributaries and canals of the planning area, Kanduboda – Yatihena, Kottunna and Heladeniya tanks are water resources of the area. Existing environmental and agricultural features can be listed as follows according to the landuse composition. Green and Blue environmental features of the planning area display from the Annexure 04.

Main Category	Sub Category	Area (Ha)	%
Environmental Features	Marsh / Water Bodies / Scrub	365.75	6
Agricultural Lands	Paddy	811.63	13
	Commercial crops (Coconut/Rubber)	265.38	4
	Other Plantation	295.35	5
Developed Lands	Residential	3470.29	58
	Industrial	385.84	7
	Commercial	87.41	2
	Public Utilities	113.71	2
	Road & Transport	224.88	3
	Total	6020.24	100%

Table 5.3 Green & Blue Spaces from Landuse Composition
Source: Gampaha District Planning Team, 2017

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13% of the landuse indicates the 811.63 hectares of paddy lands and 523.4 hectares paddy lands are continuously cultivated as per the Agrarian statistics of Biyagama. These productive paddy lands support to environmental balance of the area and these agro wetlands make natural buffers for the residential neighbourhoods and reduce conflict with industrial landuses.



Figure 5.19 Yatihena Tank and surrounding paddy lands
Source: Captured by - Udari Hettiarachchi, 2017/12/30

3. Availability of public and private open spaces of 11.7 ha.

Biyagama PS area having public and private open spaces that blends with the natural and built environment. According to the statistics, there are 18 playgrounds, 6 volley ball courts and two public parks of Siyabalape walking path, Al Mubarak children park at Malwana. There are two privately owned leisure parks: Water world and Rainbow paradise. Locations of public and private open spaces are displayed from the Annexure 27.

4. Availability of 08 minor flood protection structures.

Due to the connected waterways of the major water body of Kelani river there are minor flood protection structures that obtained by the Department of Irrigation and locations of those structures displayed in Annexure 28. As per the following table 5.4, availability of the minor flood protection structures reduces the flood vulnerability of the area.

Location	Gate Type	Protected Area (Ha)
Yabaraluwa	Flap Gate	80.2
Kakulawala	Lifting Gate	75.3
Raggahawatta	Flap Gate	22.1
Pattiwila	Flap Gate/ Lifting Gate	111.4
Bollegala - Pelawatta	Flap Gate	8.5
Seethawala	Flap Gate	-

Table 5.4 Minor Flood Protection Structures of Biyagama PS Area
Source: JICA Planning Team, 2009



1. Present industrial establishments distributed close to sensitive wetlands.

Southern part of the Biyagama PS area consists with environmental sensitive wetlands and industrial clusters where most environment related problems occurs such as low-lying lands filling, industrial solid waste dumping, waste water discharging. This context is displayed from the Annexure 29 and Annexure 30 displayed the result of analysis regarding the identification of critical wetlands within the planning area.

2. Biyagama sub basin recorded 73 of industries from the A, B, & C types of pollution potentials of respectively 14, 58 and 1.

According to the inventory of industries by Environmental Pollution Control Division and Research and Development Unit of the Central Environment Authority identified 4520 of total industries in Gampaha district that involved to the process of Environmental Protection Licences and 10% or 418 of industries belongs to Biyagama PS area. Categorization of those industries under the A, B & C types of pollution potentials recorded as 113, 119 & 176 respectively.

Further, Natural resource profile of Kelani River, Biyagama sub basin recorded 73 of total of A, B, and C categories which contains 14, 58, and 1 pollution potentials respectively. As per their study, the sampling site at Raggahawatta receives contaminated industrial waste water from Biyagama Industrial Zone. The parameters frequently exceeded during the last three years are COD (36% times), BOD (7% times), Dissolved Oxygen (27% times) and Heavy metals (7% times).

This situations and incidents can be accepted due to the following research findings by different responsible institutions. The international journal of "Analysis of Variation of Water Quality in Kelani River, Sri Lanka" focused only seven sampling sites belong to Biyagama PS at a stretch of 8 km along the Kelani River. These 07 samples tested with six parameters using the data measure the water quality index through mathematical model and concluded as below table 5.5.

The highest WQI (72.90) was reported near the Water Treatment Plant in Biyagama, while the lowest WQI (62.98) was achieved near the Water board pump in Ambathale. Water quality of five of the samples were in good quality range and the other two samples were in medium quality range.

Parameter	Sample Site Locations						
	1 Close to Hela Clothing Factory	2 Close to Ambatale Water Treatment Plant	3 Pattiwila Area	4 Close to Kelani River Right Bank (BWTP)	5 Close to Kaduwela Highway Interchange	6 Close to Lion Brewery Factory	7 Malwana Area
Dissolved Oxygen (% sat)	19.63	19.91	34.47	41.45	36.61	27.47	29.77
pH Value	5.95	6.07	6.34	6.52	6.68	6.62	6.52
Turbidity -NTU	8.13	4.54	9.27	9.41	6.16	11.84	9.31
Temperature (°C)	28.32	28.28	28.44	28.36	26.14	27.96	26.66
Total Phosphate-mg/L	0.09	0.36	0.08	0.17	0.46	0.14	0.09
Nitrate(mg/L)	0.7	1.28	0.58	0.6	0.46	0.34	0.56
Water Quality Index	65.24	62.98	70.4	72.9	70.22	70.03	70.37

Table 5.5 Water Quality Index

Source: Analysis of Variation of Water Quality in Kelani River, Sri Lanka – N.M.D.A. Abeysinghe, M.B Samarakoon, 2017

3. **47% of abandoned paddy lands from the total paddy extent distributed southern part of the area.**

Most of paddy lands are abandoned which are distributed within the southern part of the Biyagama PS area. According to the statistics of the Biyagama Agrarian office, 455.91 ha of abandoned paddy lands from the total of 965.81 ha of total paddy extent and as a percentage it is 47%. From that abandoned paddy 306.08 ha lands (32% from the total paddy lands) identified as potential development promotion lands which can't use for any other productive agriculture. Therefore, it seems with the time productive agro - wetlands are reducing and this situation displaying from the Annexure 31.

4. **1100 families recorded as encroachers of the Kelani river bank reservation and canal banks encroachments**

According to the statistics of resource profile prepared by the Biyagama Divisional Secretariat recorded 1100 families within 15 m river reservation. Also 6.5m tributary reservations also encroached and these illegal constructions let to worst the flood impact. River reservation and canal banks encroachments mostly spread in Mabima, Bollegala, and Malwana areas.



Figure 5.20 Sambawela Canal Reservations Encroachments
Source: Captured by Udari Hettiarachchi, 2018/06/21



Figure 5.21 Kelani River Reservation Encroachments - Malwana
Source: Captured by Udari Hettiarachchi, 2018/06/21

5. Approximately 20,000 people affect to flood annually & inundation time period vary into 4 -7 days.

According to the statistics of flood affected population in year 2016 from field officer of Disasters in Biyagama Divisional Secretariat, recorded high impact for Malwana, Yabaraluwa, Bollegala, and Mabima compare to other GN divisions. In the 2016 flood event, inundation period varies into 4-7 days and day by day the affected area was changed. Kelani river seasonal flood caused to impact 20,000 of the livelihoods of the people and that impact to the industrial related activities also.

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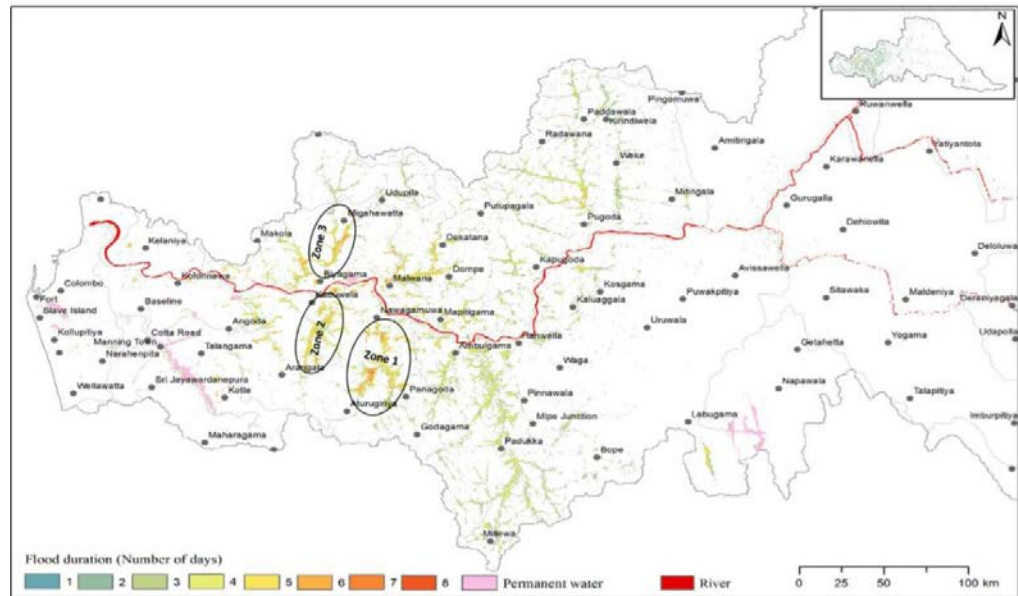


Figure 5.22 Flood duration (NUmber of days)
Source: Disaster Management Centre, 2016



OPPORTUNITIES | Goal 02

1. **Western Regional Structure Plan of 2030 identified an eco-conservation zone of 100m buffer along Kelani river**

Proposed eco-conservation zone of 100m buffer which has been identified in the Western Region Structure Plan-2030 could be an opportunity for environment sense to the area. This qualitative development will help to reduce the adverse impacts on the Kelani river as well as a good opportunity to reduce the flood impacts. Kelani river considered as the administrative boundary of the Gampaha & Colombo districts and this project will be a great opportunity for creating water front related public open spaces and investments for special development projects.

2. **Upcoming flood mitigation projects of CRIP –DBIP**

Climate Resilient Improvement Project under the World Bank funds by the Irrigation Department proposed flood mitigation wall from Kelani river mouth upto Hanwella. With this wall, flood impact from the Kelani river will be mitigate and that will be an added opportunity for physical developments of the area. As well as this project considered the tributaries of Kelani river, Malwana and Raggahawatta canals also included to that.

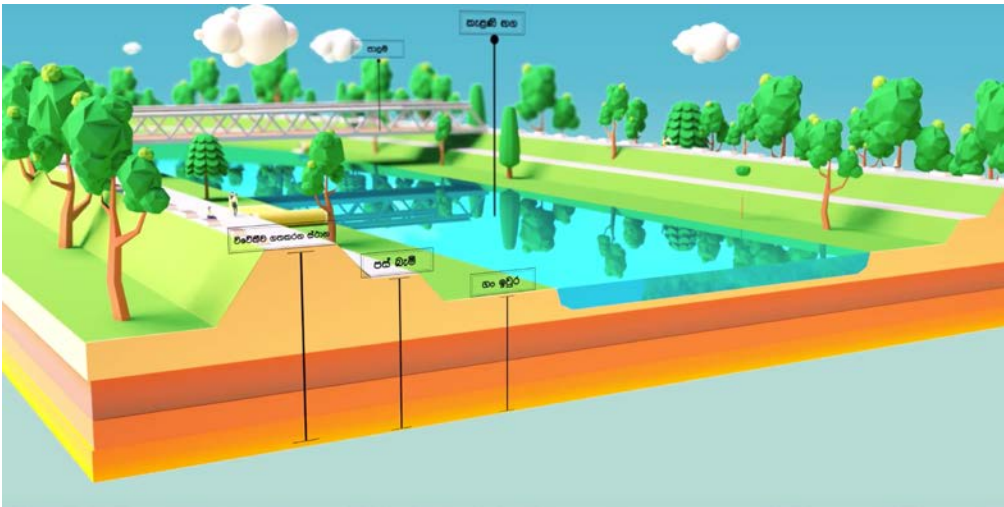


Figure 5.23 Proposed Cross Section of Flood Mitigation Wall
Source: Protection of Kelani River Basin from Flood- Video Clip - CRIP, 2018

3. Regulations related environment protection

Land Reclamation & Development (No 1662/17 -2010 July 14 -Part I: Section I)
Sri Lanka Land Reclamation & Development Corporation act, no 15 of 1968, As amended
by act No.27 of 1976, No 52 of 1982 & Sri Lanka Land Reclamation & Development
Corporation (amended) act, No.35 of 2006.

"Surface width of the canal & reservations from the canal banks are declared under this
act & any sort of building or filling shall not be done according to the law."

Kelani River -15m Reservation / Raggahawatta & Malwana Streams - 6.5 m Reservations

- 1979 No 58 Agrarian Services Act
- Under the No 62 Sentence - Not be allowed filling paddy lands without
permission from the Agrarian Services Commissioner
- Under No 12.4 Sentence - Can be stopped development activities performed
on paddy lands if regulations are violated according the zoning plan.

4. Current Industrial Policy & Sustainable Approach

BOI industrial enterprises lead in establishing green factories with sustainable approach.
By this approach BOI creating a new image for industrial productions will be harmonize
the environment. From each of the BOI zones a land area had been allocated to tree
planting with the idea of creating a forest within the zone. This will be an opportunity
to minimize the negative scenarios to environment through industrial development.

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THREATS | Goal 02

Detailed SWOT Analysis

1. **2842 industries are recorded with different pollution potentials in Kelani river basin**

According to the Natural Resource Profile of Kelani River, about 2,842 industries are recorded in the CEA database with different pollution potentials (Type A, B and C). The 2,842 industries are divided into 862 (30%); 1,220 (43%); and 760 (27%). Also the research of Industrial pollution and the management of river water quality: A Model of Kelani River, Sri Lanka has also identified the spatial distribution of point sources of daily wastewater discharge and pollution loads. With these findings, there will be a threat to control the emergence of shocking city.

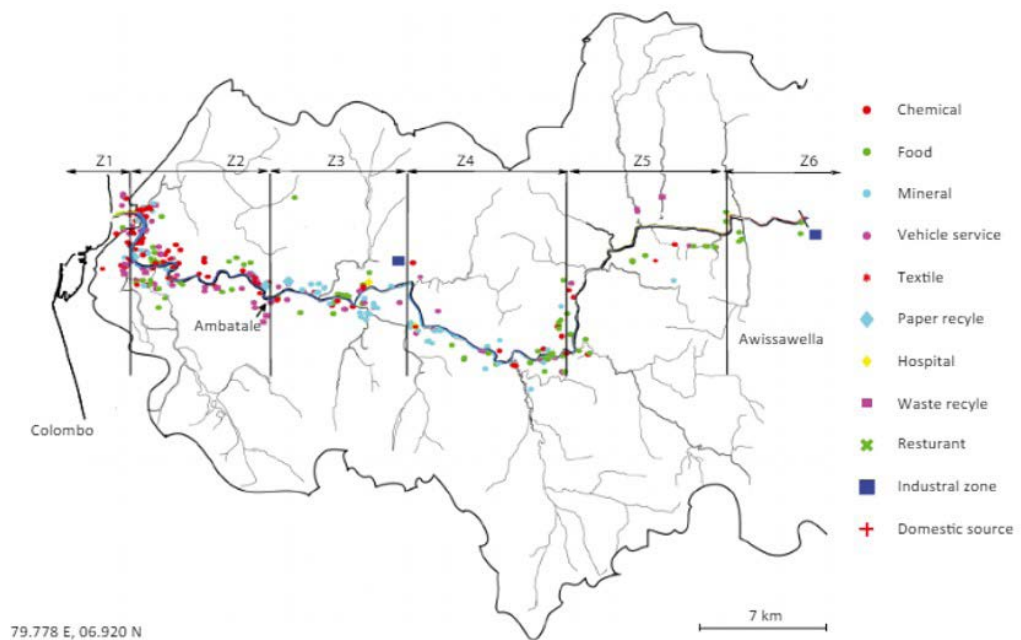


Figure 5.24 Spatial Distribution of Point sources and demarcation of zones - Kelani River Basin
Source: Asha Gunawardena & Research Team, 2017



06

Chapter

The Plan

The northern part of the area promoting mixed residential development with four major zones and facilitate for nodal development projects including urban services. High dense residential promotion areas and the high development pressure areas will be protected through the promotion of open wetland parks where having the major consideration of the sensitive wetland network.

As per the conceptual plan, there will be sub town centres that provide urban and industrial services and commonly the upper part of the planning area will be promote the residential mixed commercial development. The lower part of the planning boundary will be guided to the sustainable industrial development with handing hand the protection of sensitive green wetland network and this will lead to achieve the future vision of Biyagama, The Tranquilized Industrial City.

6.2. Proposed Landuse Plan

Proposed Landuse plan displayed the composite image of future Tranquilized Industrial City with the proposed strategic projects under the different sectoral plans of industrial economic, environmental and infrastructure development strategies.

The entire landuse plan is divided into two main parts: industrial and mixed residential. Southern part of the planning boundary promotes the horizontal development with two industrial zones that integrating the unique green wetland network of the area. Under this Samurdhi Mawatha & Gonawala road will be the Central Investment Corridor which agglomerate the industrial related utilities and services. This will greatly enhance the utilization of industrial lands of the southern part of Biyagama PS area. Nagahamula and Karabugas junctions will be the main industrial nodes of the area and improved internal road network let the open lands for industrial investments.



Figure 6.2 Proposed Urban Structure - Cross Section I
Source: Gampaha District Planning Team, 2017

Since most of the lands in the planning area are interconnected with roads as well as highly sensitive wetland ecosystem, with this context it is expected to promote the area for industrial development in a sustainable manner in accordance to the future vision via Proposed Landuse Plan. Further it is expected a vertical development in Central Investment Corridor with commercial spaces that cater for industrial sector. In addition, it is proposed to develop the areas beyond the industrial zone and wetland areas as a moderate dense residential zones and above figure 6.2 displayed the cross section of the proposed urban structure.

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Proposed Landuse Plan

Proposed Landuse Plan expected to promote three major urban centres, from high dense to moderate dense within the mix residential promotion tracts. Kadawatha, Mawaramandiya and Delgoda respectively will be highlighted as the main urban service centres of the mix residential tracts of the area.

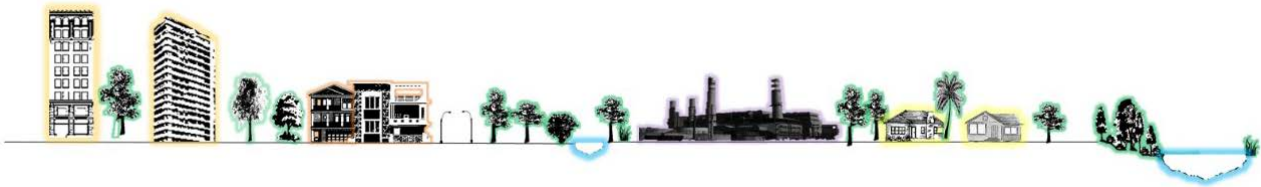
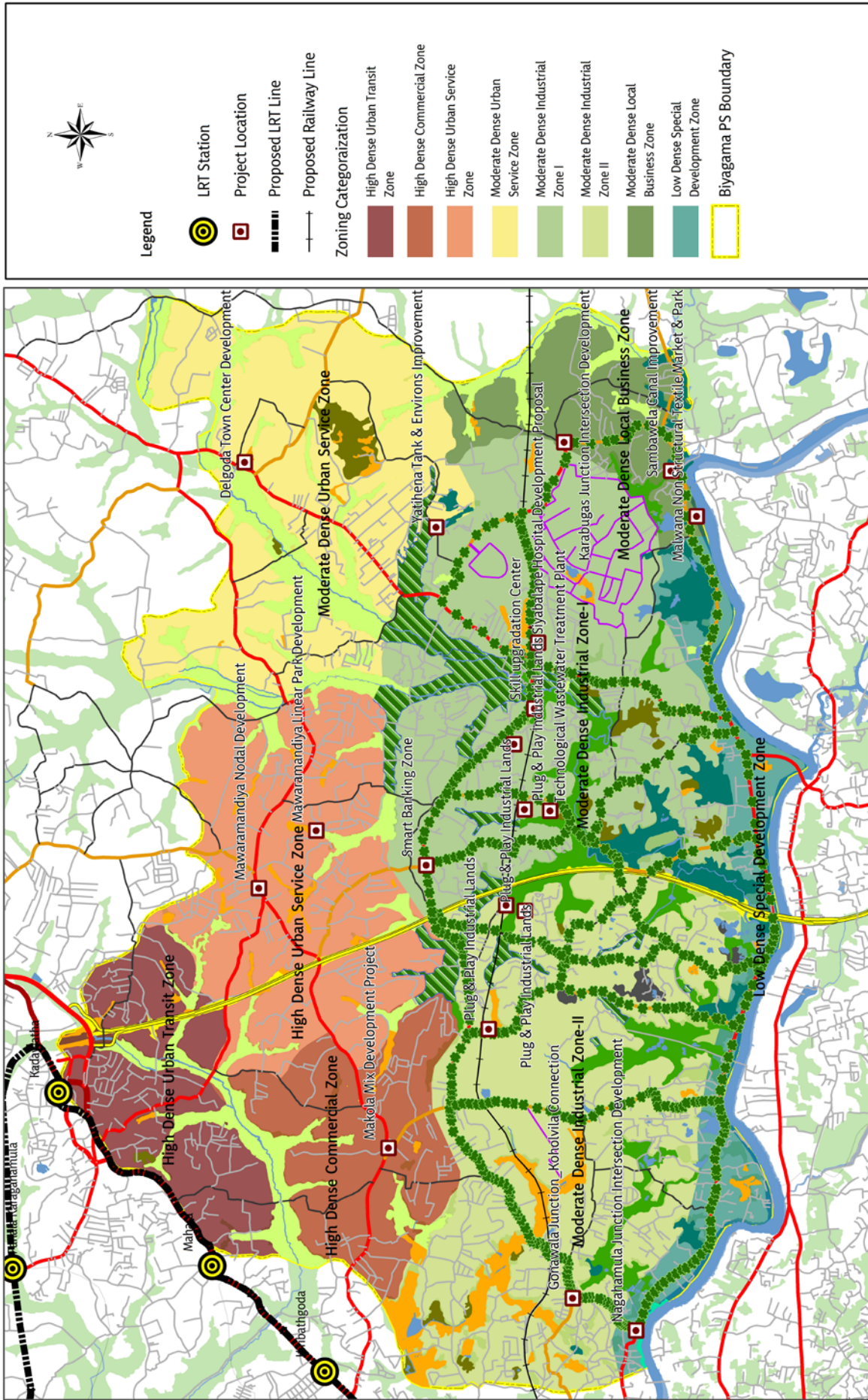


Figure 6.3 Proposed Urban Structure – Cross Section II
Source: Gampaha District Planning Team, 2017

Mankada road which starts from Kadawatha town center and Makola Road which starts from Kiribathgoda town center act as a main commercial corridor which bring development pressure to the area. Makola junction is the main urban centre that promotes the commercial development of the area while Mawaramandiya and Delgoda urban centres provide urban services for the residents as well as the commuting population of the area.

It is expected to attract the population that migrate to the area due to future transport facilities like proposed light railway for Colombo-Kandy Road and Outer Circular Highway which connects to Kadawatha-Kerawalapitiya. With this context, it will be attract high residential community for High Dense Urban Transit Zone and the High Dense Urban Services Zones and above mentioned urban form of Figure 6.3 will automatically originate for that areas.



Proposed Landuse Plan - Biyagama Pradeshniya Sabha Area
 Source: Gampaha District Planning Team

Urban Development Authority
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Western Province Division

Biyagama Development Plan (2019-2030)

Prepared by Gampaha District Office

Map 6.1 Proposed Landuse Plan

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6.3. Infrastructure Development Strategies

6.3.1. Service Management Plan

Under the Service Plan, it is discussed about the availability and proposed social and physical infrastructure and relevant analysis that have done for the social infrastructure such as housing, service centres, education, health services, public market service and public recreational activities. Under the physical infrastructure, it is discussed the transport, water supply, electricity supply, road development, sewerage & drainage systems, solid waste management and other facilities.

6.3.1.1. Proposed Housing Density & Distribution Plan

Population forecast for the year 2030 has been carried out in three main ways. The expected future vision as well as the tendency of population increase in Biyagama PS Area in terms of national, regional and local levels has been identified. According to the National Physical Plan, the Biyagama PS area belongs to the East-West Economic Corridor and that expected to increase the population by 20% - 25% in 2050. Under this, the expected population density of Biyagama PS area will be 3001-6000 persons per sq. km. According to the National Physical Plan, if population increase at a highest density as 6000 persons per sq.km., the forecasted population by 2050 will be 360,000.

The proposed Western Region Structure Plan - 2030, Biyagama PS area is coming under the Core area of Metro Colombo Region and that region identified as high-density development promotional area. As per the Urban Development Plan, Biyagama is expected to developed as an industrial city and thereby the area will attract the residential and commuting population will be increase due to employment opportunities.

Under these scenarios, the forecasted population and housing density and distribution of the area will be changed according to the zones as well as the promotional uses stipulate for such zones.

6.3.1.1. Part A – Forecasted Population & Population Density

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Assumptions of Population Growth	Growth Rate	2011	2017	2030	Proposed Population Density Range by NPP (Sq.km per Person)	Forecasted Population Density under the Assumed Growth Rates (Sq. km per Person)
Natural Growth Rate	1.4%	186,585	203,669	246,243	3000-6000	4090
Average Growth Rate	1.6%			254,589		4129
Growth rate according to Clusters				251,504		4178
Residential Clusters	1.8%					
Industrial Clusters	1.3%					
Population distribution based on the proposed zoning plan	Growth rate assumed according to the promotional use of the zone			246,137		4088

Table 6.1 Forecasted Population & Population Density

Source: Gampaha District Planning Team, 2017

As per the above table 6.1, the predicted population and its associated housing density distributed according to the density zones mainly based on the future vision of the development plan, results of environmental analysis and the developmental perceptions. The population growth rates have been considered based on the assumptions of the promotional use of proposed density zones. Annexure 32 describes the distribution of forecasted population by GN division and density zone wise with the related assumptions.

Based on these calculations, the expected residential population of the Biyagama PS area is 246,137. Considering the standard of minimum number of householders in a family, the housing distribution and housing density are calculated according to the zone wise and following table 6.2 describes the same. And the Annexure 33 displays the proposed population density by GN wise.

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6.3.1.1. Zone Wise Population, Population Density & Housing units

<i>Zone</i>	<i>Proposed Name</i>	<i>Extent (Ha)</i>	<i>Forecast Population -2030</i>	<i>Proposed Population Density – 2030 (Persons per Ha)</i>	<i>Proposed Housing Units</i>
<i>Zone I</i>	<i>High Dense Urban Transit Zone</i>	<i>419.12</i>	<i>23940</i>	<i>57</i>	<i>5985</i>
<i>Zone II</i>	<i>High Dense Commercial Zone</i>	<i>455.69</i>	<i>25145</i>	<i>55</i>	<i>6286</i>
<i>Zone III</i>	<i>High Dense Urban Service Zone</i>	<i>805.05</i>	<i>38766</i>	<i>48</i>	<i>9692</i>
<i>Zone IV</i>	<i>Moderate Dense Industrial Zone -I</i>	<i>1378.69</i>	<i>52908</i>	<i>29</i>	<i>13227</i>
<i>Zone V</i>	<i>Moderate Dense Industrial Zone -II</i>	<i>1309.52</i>	<i>38495</i>	<i>38</i>	<i>9624</i>
<i>Zone VI</i>	<i>Moderate Dense Urban Service Zone</i>	<i>946.82</i>	<i>29489</i>	<i>31</i>	<i>7372</i>
<i>Zone VII</i>	<i>Moderate Dense Local Business Zone</i>	<i>318.55</i>	<i>17567</i>	<i>55</i>	<i>4392</i>
<i>Zone VIII</i>	<i>Low Dense Special Development Zone</i>	<i>398.31</i>	<i>19827</i>	<i>28</i>	<i>4957</i>
			<i>246,137</i>		<i>61,535</i>

Table 6.2 Zone Wise Population, Population Density & Housing units
Source: Gampaha District Planning Team, 2017

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6.3.1.1. Part C - Proposed Hostel Facility for Temporary Occupants

In addition to the residential population, it is expected to provide accommodation facilities for temporary occupants who will attract to the area based on the industries will also be discussed under the housing plan. For this, a research hypothesis based on the employees of the Biyagama Export Processing Zone has been used.

According to the research report, 25% of those employed in the Export Processing Zone are temporary occupants from outside the region and 75% of the population are daily commuters who are living at a distance of 5-10 km. Therefore, based on these implied assumptions, temporary occupants in the Biyagama area of the future have been calculated. The expected total number of industrial workers is 308,356, of which 25% that is 77,089 are temporary occupants. By now there are two hostels managed by the Biyagama Export Processing Zone and there is a need to provide new hostel facilities for the future increasing community.

People of the area earn more income by providing accommodation facilities and there is a tendency of increasing line houses in the future due to the growth of new industrial enterprises and increasing temporary occupants. It is environmentally and socially negative due to the expectation of control the emergence of shocking city. This fact leads to develop required hostel facilities in a regular manner and mix residential zones that closer to the industrial promotional zones will be encourages to hostel facilities developments.

6.3.1.2. Proposed Urban Service Centres Priority Plan

Identification of urban service centres of the Biyagama area based on the Connectivity Analysis which has been done considering the major town centres, sub town centres and local nodes. Similarly, absence of a main town centre (CBD) as well as a unique node based spatial setting including sub centres and junctions along with the identified industrial zones have been proved through the Gephi-Network analysis and modularity class feature.

Existing towns, sub towns and junctions considered in accordance with the priority levels and derived priority urban service centres which will be facilitated for residential and commuting population through the intervention of strategic projects. Proposed Urban Service Centers Priority Plan will discuss the objective of "To facilitate 3 multi-nodal neighbourhood clusters" under the goal of Create multifaceted clusters while promoting unified industrial economic needs.

For the preparation of Density zoning, Development Pressure Index and Environmental Sensitivity Index has been considered. Also based on the promotional uses of the zones, it has been identified three mix residential promotion zones and one commercial development promotion zone. The high priority urban service centres have been identified through the analysis related to the superimposed image of the potential index, industrial density, cluster analysis, critical wetlands and liveability index. Accordingly, existing town centres classified with priority levels and Annexure 34 indicates those node hierarchies.

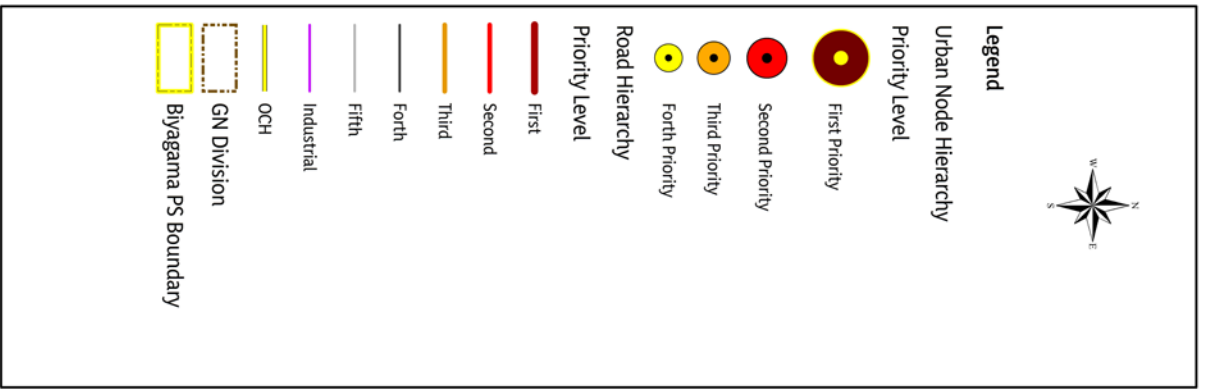
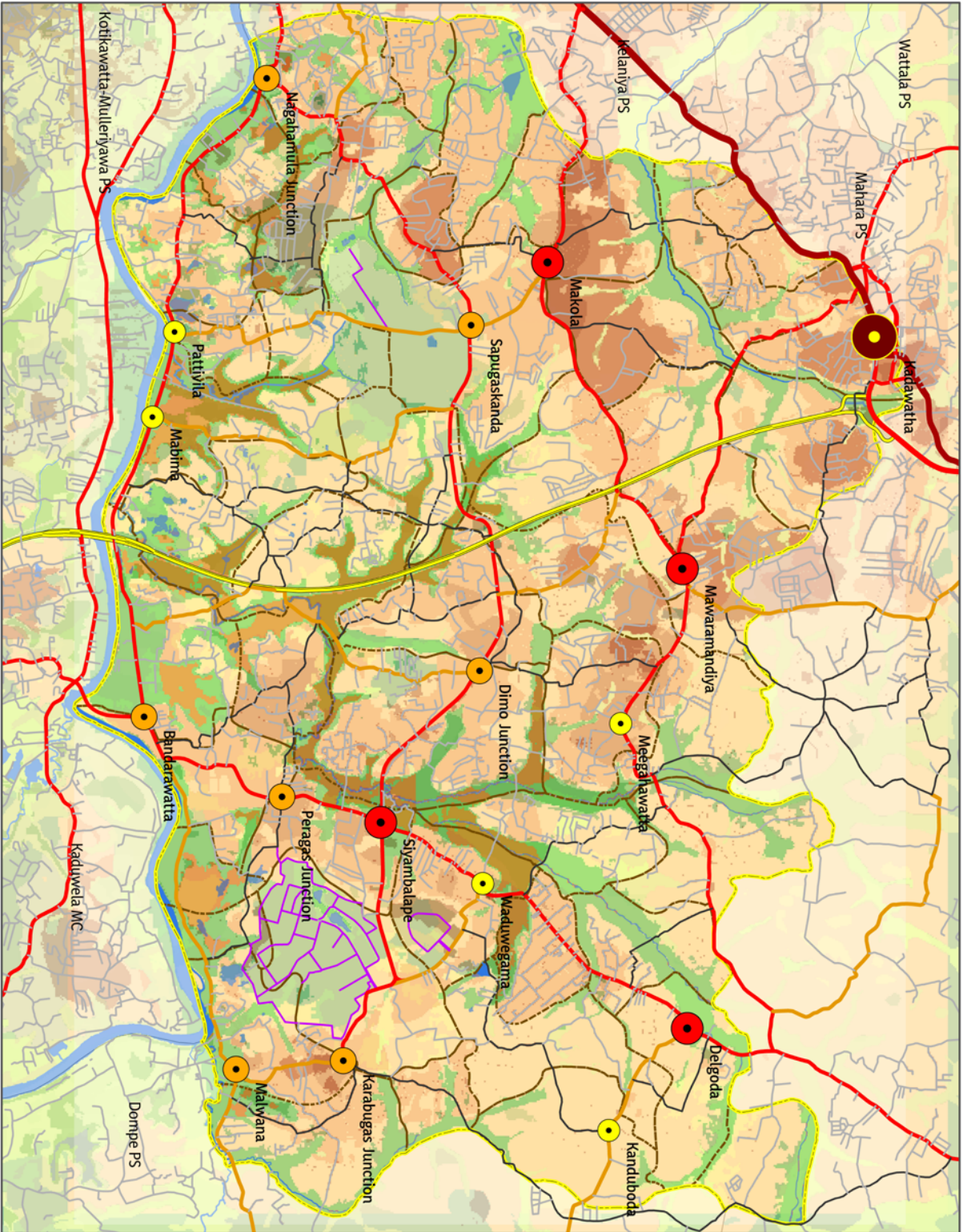
Based on this prioritization and the concept and density zoning plan, from Kadawatha to Mawaramandiya stretch will be develop as a high dense zone with mix residential uses. Nodal development with urban services of the Mawaramandiya town centre will be cater to the expected high population for the area. Delgoda town centre will be second priority node and it will cater to the population of Moderate Dense Urban Service Zone with a nodal development. From the SWOT analysis, it is identified that a prime land of the Delgoda town centre has been used for solid waste sorting purposes and further, bus stand is also not combined with the urban services. Therefore, through the strategic project it is expected to develop Delgoda town centre. As well as Makola "Y" Junction expected to develop as second priority node with integrating the strategic project of nodal development by extracting the advantage of commercial strip form Kiribathgoda area.

<i>Town Center / Junction</i>	<i>Priority level</i>
<i>Kadawatha</i>	<i>First Priority</i>
<i>Mawaramandiya</i>	<i>Second Priority</i>
<i>Makola</i>	
<i>Delgoda</i>	
<i>Siyambalape</i>	
<i>Nagahamula</i>	
<i>Karabugas Junction</i>	
<i>Dimo Junction</i>	
<i>Sapugaskanda</i>	
<i>Malwana</i>	
<i>Peragas Junction</i>	
<i>Mabima</i>	<i>Fourth Priority</i>
<i>Pattiwila</i>	
<i>Bandarawaththa</i>	
<i>Kanduboda</i>	
<i>Meegahawaththa</i>	
<i>Waduwegama</i>	

Table 6.3 : *Hierarchy of Urban Centres by Priority Levels*

Source : *Gampaha District Planning Team, 2017*

Above mentioned table 6.3 & the Map of 6.3 indicates the hierarchy of urban centres by priority levels in Biyagama PS area.



Proposed Urban Node Hierarchy - Biyagama Pradeshiya Sabha Area
 Source : Gampaha District Planning Team



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Prepared by : Gampaha District Office

Map 6.3 : Hierarchy of Urban Centres by Priority Levels

6.3.1.3. Education Services

According to the facilities related to the education sector in the Biyagama PS area, there are 27 of National and Provincial schools within planning area. Administrative activities of all these schools are handled by the Kelaniya Zonal Education Division. There are 25 mixed schools and 2 girl schools, but there are no boy schools. Based on the medium of study, there are 20 Sinhala medium schools, 3 Tamil medium schools, 1 English medium school. In addition, there are well known international schools in the area at present.

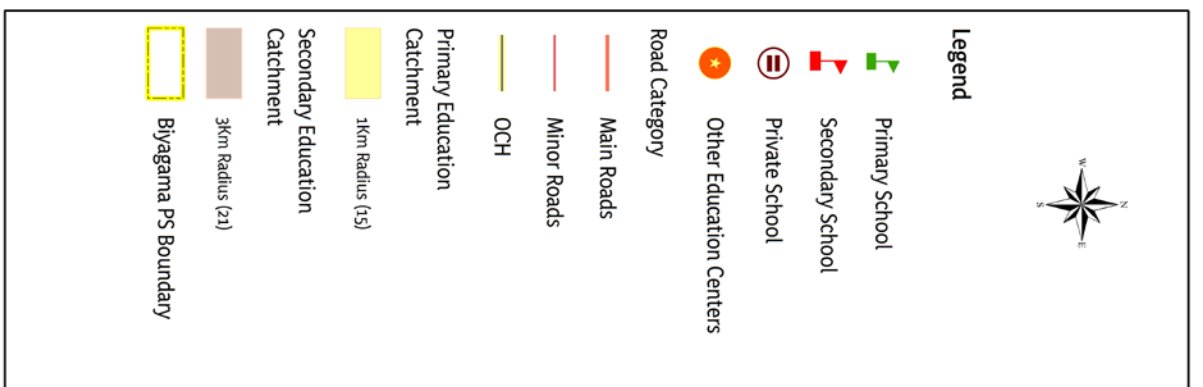
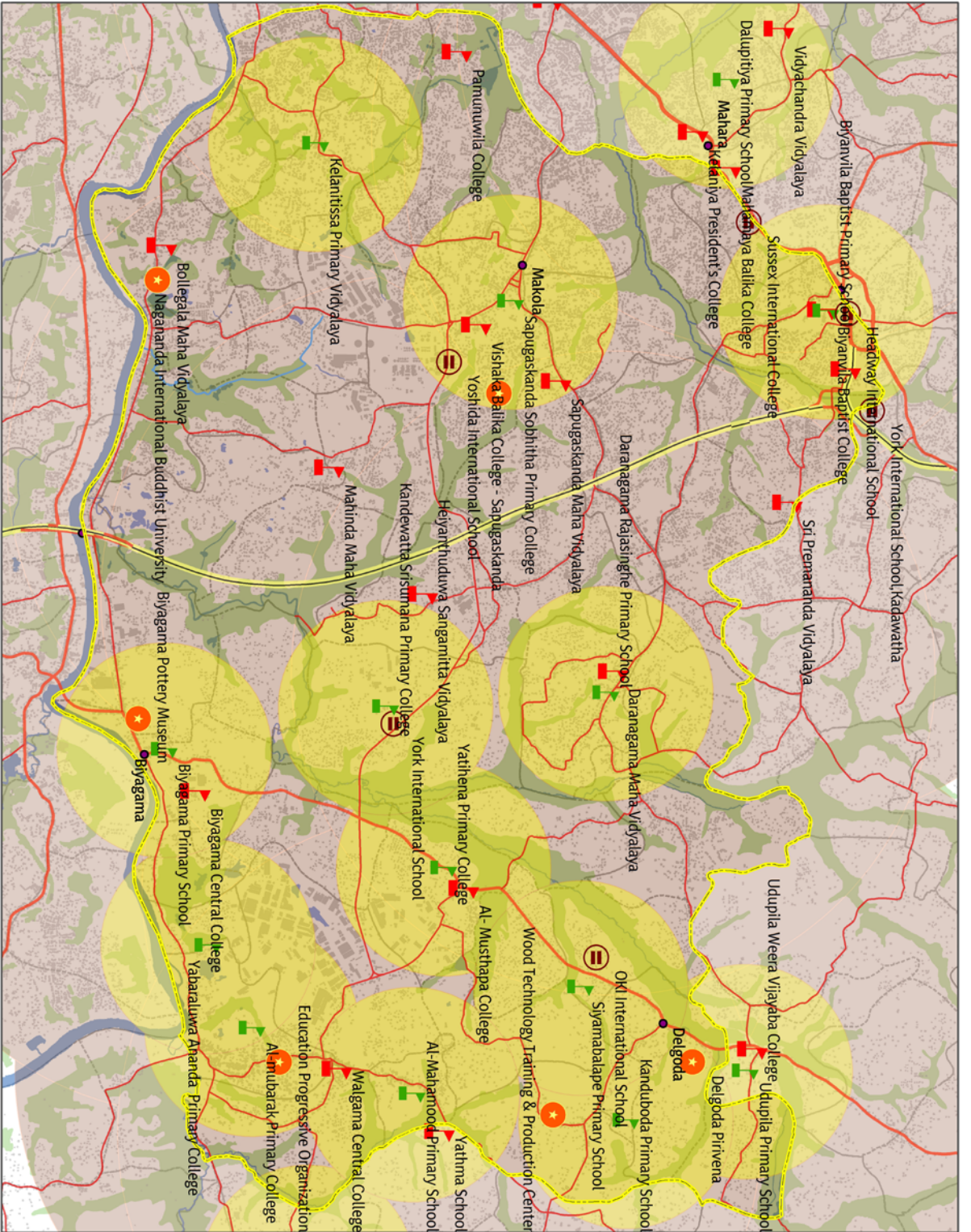
130 early childhood development centres have already been registered at the Biyagama Pradeshiya Sabha limits and it is clear that the present and future requirements have already been fulfilled in the area according to the international standard as one centre for 2500 persons of the resident population. In Biyagama PS area, the number of children for primary education per year is around 1762 and availability of primary schools to cater this requirement can be identified as optimum level based on the service area analysis of primary schools. The analysis covers a service area of a primary school as one-kilometre radius.

The service area analysis of secondary schools used the three-kilometre radius and the result implies the secondary education facilities are also in optimum level and can be facilitate to the whole Biyagama PS area. The current population of the Biyagama PS area recorded as 192,022 while the school education population has recorded as 23,788. It is a percentage of 12% of the residential population of the area and by 2030, the expected school education population will be 29,700. As per the following Map 6.4, available primary and secondary educational facilities are at an optimum level for current and future requirement of the Biyagama PS area under prevailing primary and secondary educational facilities and their service areas.

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Service Area of Education Facilities - Biyagama Pradeshiya Sabha area
 Source : Education Department- Western Province/Gampaha District Planning Team



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Map 6.4 : Service Area of Existing Education Facilities

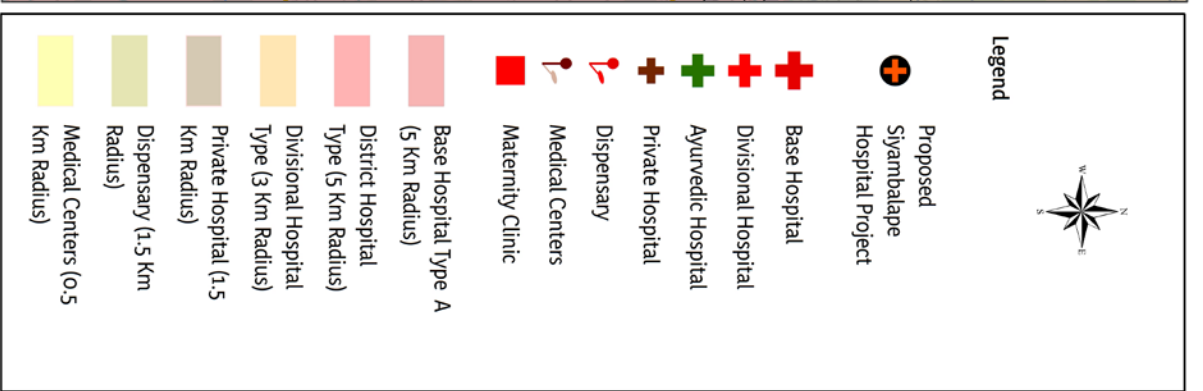
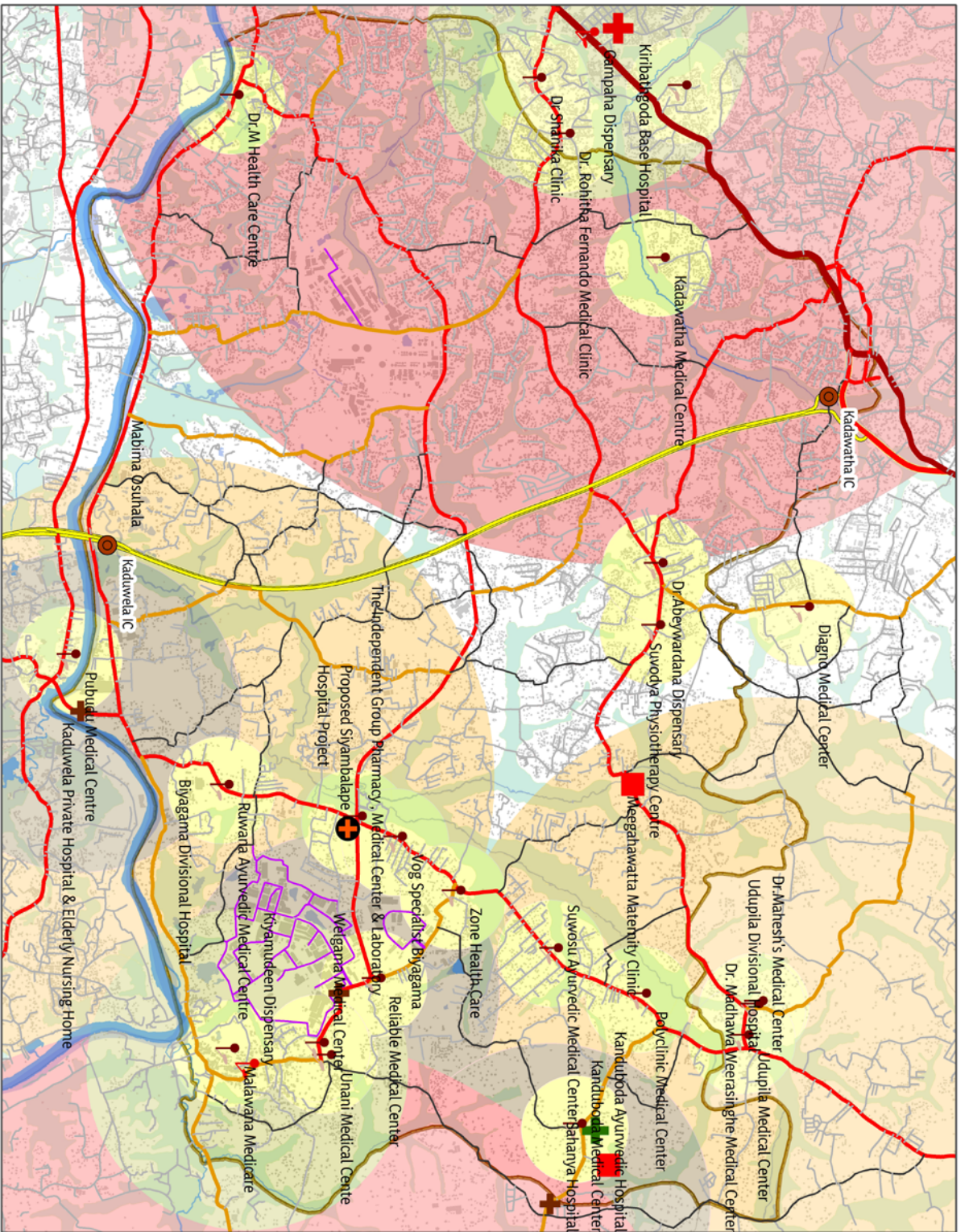
6.3.1.4. Health Facilities

According to the existing health facilities of the Biyagama PS area, Biyagama Divisional Hospital is coming under the "Type C" in the Divisional hospital's categorization. There are 3 wards and 30 beds capacity. According to the statistical data of the Regional Director's Office of Health Service, Biyagama Divisional Hospital has been provided health services for 99,263 outdoor patients and 7,672 indoor patients during the past year.

Malawana Central Dispensary and Medical Officer of Health (MOH) are other public health related institutions that located within Biyagama. The Biyagama Medical Officer of Health (MOH) covers the service of maternal and infant clinics at Biyagama, Heiyanthuduwa, Mawaramandiya, Gonawala, Makola, Free Trade Zone, Pahala Biyanwila, Kanduboda and Walgama areas. Moreover, at present small-scale private hospitals are growing and private medical centres are located within small neighbourhoods of the area. Even the location of Udupila Divisional Hospital beyond the Biyagama PS boundary, that also cater to the population of Biyagama PS area.

Considering the major facts like, Biyagama as the second largest employment-based EPZ, distribution of manufacturing plants and the employed commuting population consolidates that only the small-scale divisional hospital is not sufficient to bear the health service requirement. It is necessary to have a hospital with well improved health facilities due to the future vision of Biyagama as an industrial city, where there will be industrial hazards and accidents. Existing Biyagama Divisional Hospital also identified to upgrade with modern health facilities. The following Map 6.4 displays the service area analysis of the existing and proposed health facilities of Biyagama PS area.

Considering the Ayurveda treatment, the Kanduboda Ayurvedic Hospital in the Biyagama PS area has provided services to 235 indoor patients and 3070 outdoor patients in the past year and the Provincial Ayurveda Department has confirmed this as a hospital with 2 wards and 22 bed capacity hospital. Biyagama is popular for traditional medicine and Makola Sapugaskanda, Delgoda, Biyagama Malwana and the Mabima U.C.C. Ayurveda treatments are famous examples.



Service Area of Health Facilities- Biyagama Pradeshiya Sabha area

Source : Regional Director's office of Health Service- Gampaha/Gampaha District Statistical Handbook 2017



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Prepared by : Gampaha District Office

Map 6.5 : Service Area of Health Facilities

6.3.1.6. Public Market Facilities

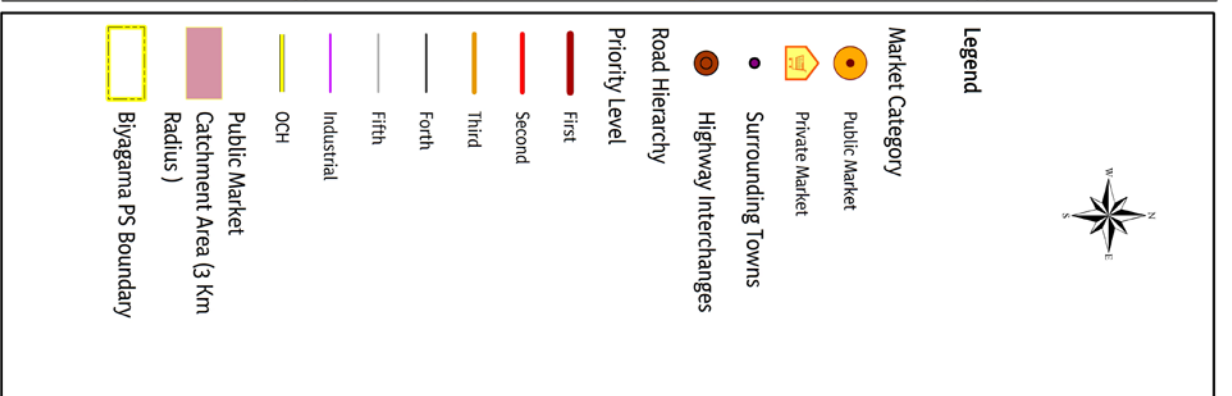
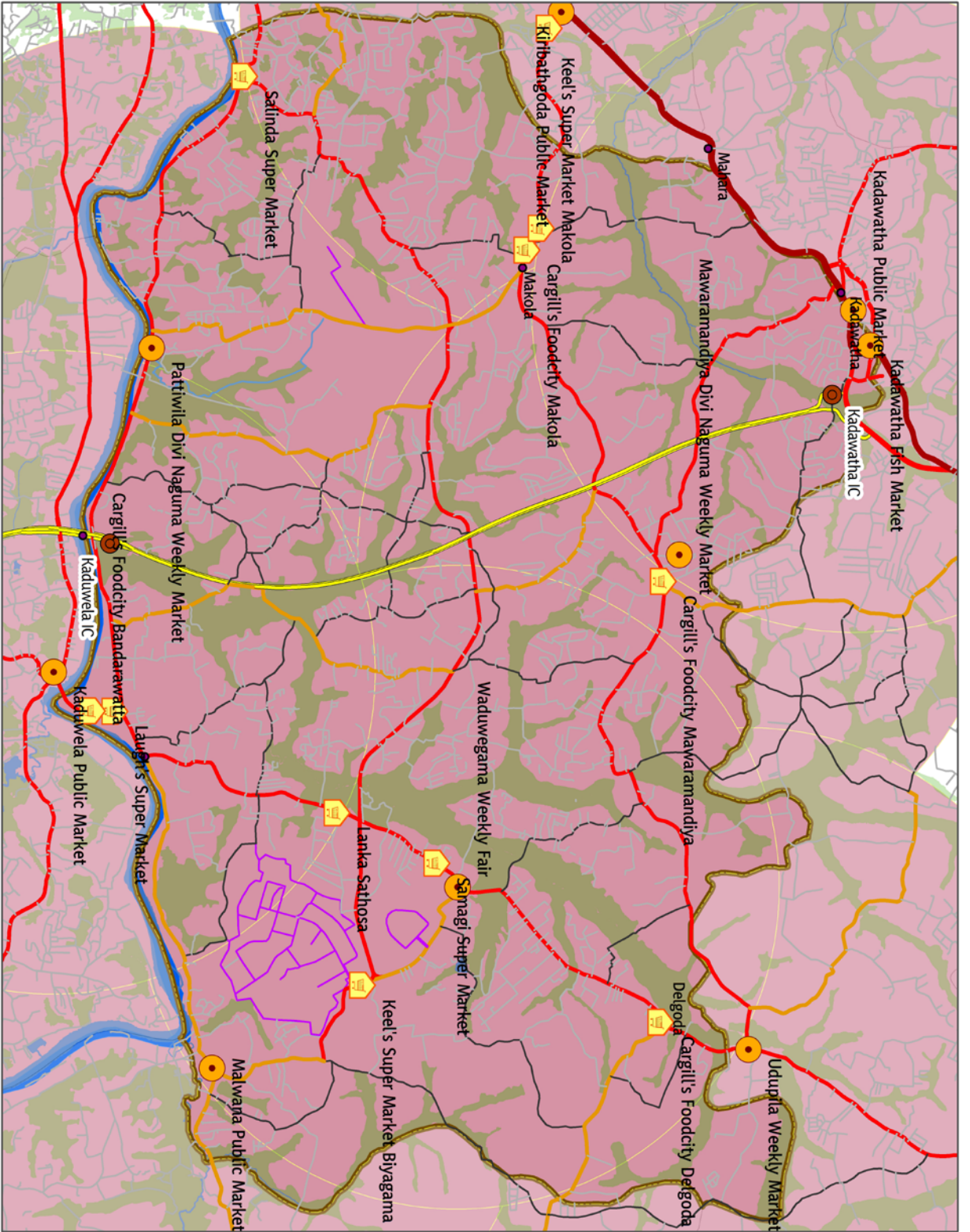
Analysis of the public market facilities and the service areas has proved that the Biyagama PS Area is presently at an optimum level in relation to the above requirements. Weekly fairs in Kadawatha, Pattiwila, Mawaramandiya, Malwana and Waduwegama can be identified as public markets belongs to the Biyagama PS area. The functional boundary of the area is beyond the administrative limits and that cause to becoming Biyagama residential population into the thresholds of the outer area public markets like Udupila, Kaduwela and Kiribathgoda that are located very closer to Biyagama PS boundary.

In addition, there are private super markets and service area analysis proved that Biyagama PS area is at an optimum level regarding the availability of existing public market facilities. In that sense, it is a positive fact for cater the current and expected population in the future and following Map 6.6 indicated the service area coverage of public markets within Biyagama.

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Service Area Of Public Market Facilities - Biyagama Pradeshiya Sabha area

Source : Google Map /Gampaha District Planning Team



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Prepared by : Gampaha District Office

6.3.1.6. Proposed Open Spaces & Recreation Facilities

Part A – Public Playgrounds & Recreational Parks

In the context of public open spaces & recreation facilities, as per the following Map 6.7 displayed the service area analysis of the public playgrounds and recreational parks of the Biyagama PS area. The analysis considered 1.6 Km radius for existing public playgrounds and recreational parks and that figure out the minimum level of facilities compare to the current population.

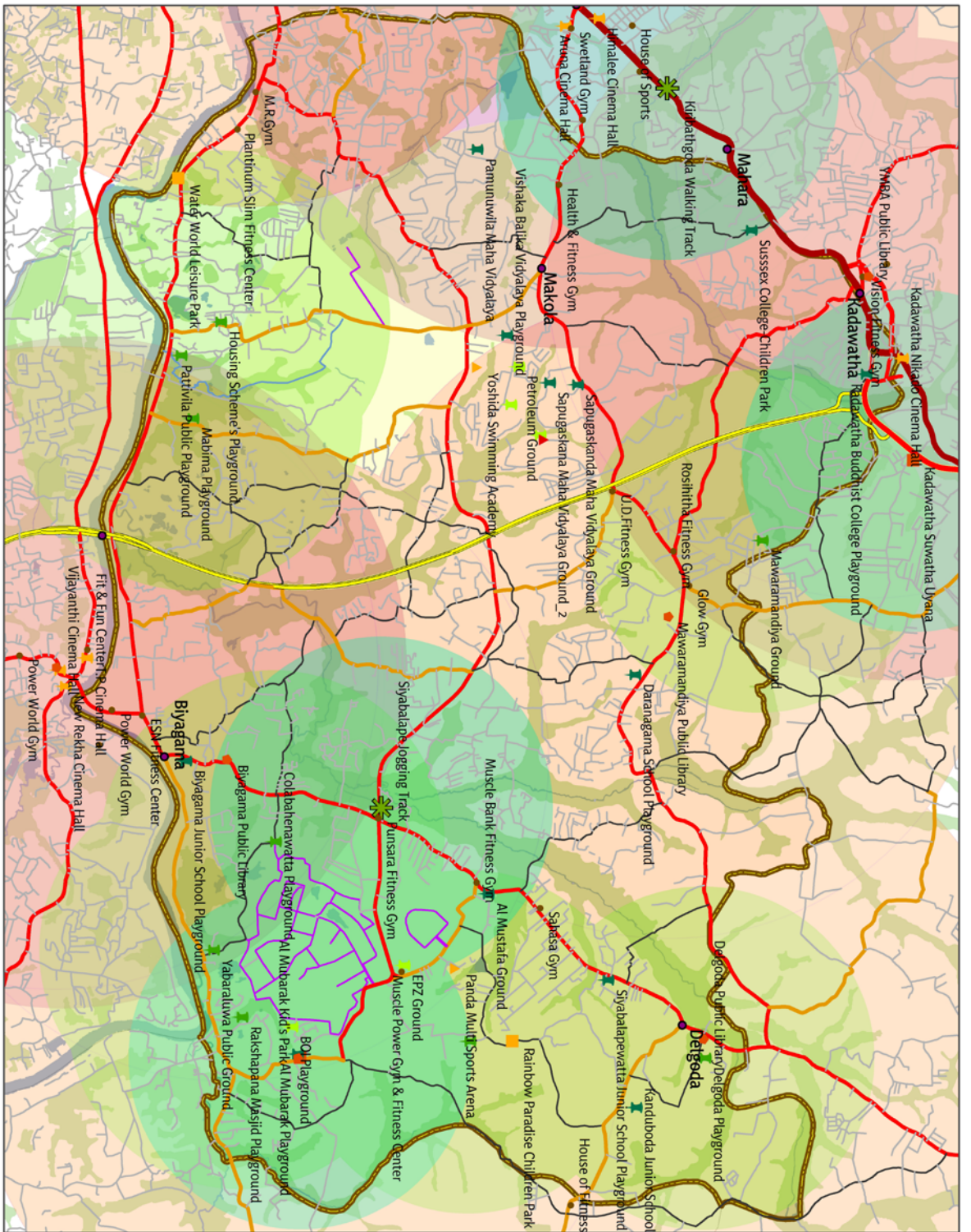
Malwana Al-Mubarak Kid's Park & Siyambalape walking path belongs to Biyagama PS area and those are under the existing public and recreational parks of the area. Kiribathgoda - Mahara walking path & recently built Suwatha uyana are located beyond the Biyagama PS boundary, but part of the Biyagama PS area included its service area also. There are two private children & recreational parks, namely Kanduboda Rainbow Paradise and Bollegala Water World. For the sport facilities, there is a private owned institution at Siyambalape Panda Multi Sport Arena. Also, private fitness centres are spreading all over the area.

Part B – Public Libraries

Considering the public library facilities of the Biyagama PS, there are four public libraries, namely Mawaramandiya, Delgoda, Malwana and Biyagama. Service area of the public library considered as the 3 km radius and the results of the analysis displayed 90% of the total area covered by the public libraries service area. Most of these libraries are located in the areas with more residential population. When consider the present and future requirements, it is proved that public library facilities are at an optimum level.

Part C – Cinema Halls & Theatres

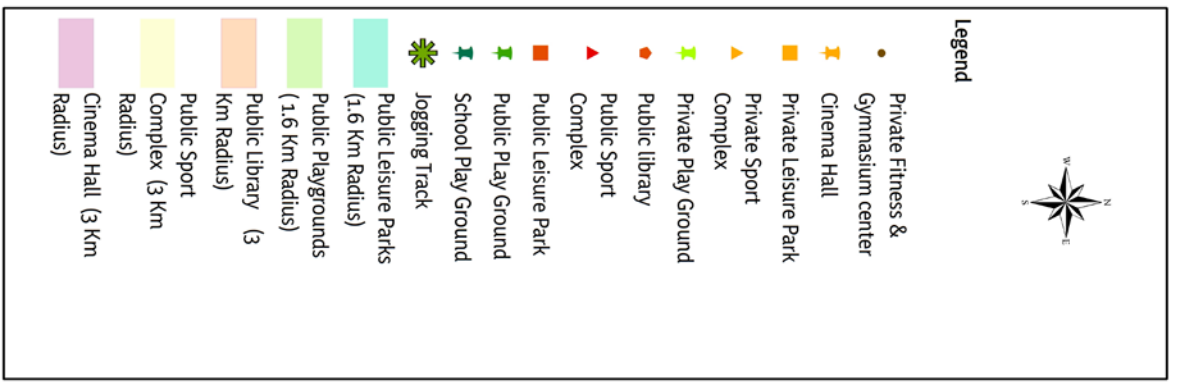
Part of the Kadawatha town center belongs to the Biyagama administrative boundary and if Kadawatha considered as main urban node, the two cinema halls located in the Kadawatha town comprised into Biyagama PS area. As well as Kiribathgoda & Kaduwela town centers also located close proximity to the Biyagama administrative boundary and the cinema halls located within these towns also captured the threshold population from Biyagama PS area also. Based on this context, the proposed high-density development promotion emphasised the need of open spaces & recreation facilities in order to cater the expected population for these zones.



Service Area of Public Recreation Facilities - Biyagama Pradeshiya Sabha area
 Source : Google Maps /Gampaha District Planning Team



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Map 6.7 : Service Area of Open Spaces & Recreation Facilities

6.3.1.7. Proposed Accident & Fire Rescue Facilities

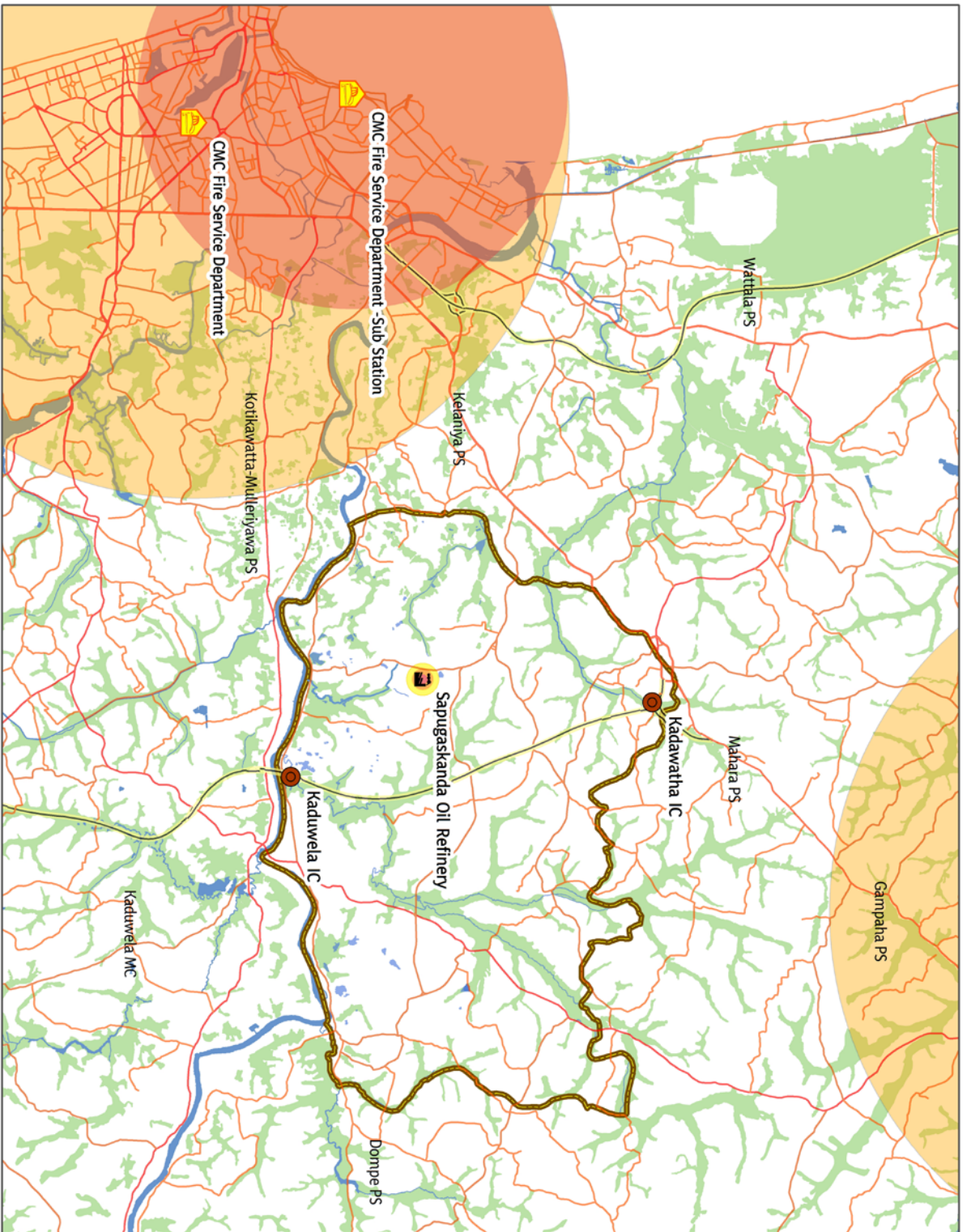
Future vision of the Biyagama Development plan directed to an industrial city that promote industrial development and industrial cities essentially considered the location of accident and fire rescue units under the service plan. In this section describes the proposed accident and fire rescue facilities and the service area analysis of the Biyagama & surroundings. Since the Sapugaskanda Oil Refinery is located within Biyagama PS area, the Emergency Storage (Emergency Storage Zone) has been introduced according to the Public Security Ordinance No. 1499/24 of 30 May 2017. These legal conditions are described in the annexure 35. The land of the Sapugaskanda Oil Refinery has been ordered to provide public security under the three zones of 100m to 300m as a High Security Zone.

At present, Biyagama EPZ with 57 manufacturing industries, Lindel Industrial Estate and Multi-national manufacturing companies are located within Biyagama PS area. However, there are no fire rescue unit in and around the Biyagama area. Hence, emergency services should be obtained from the fire rescue units located in Colombo and Gampaha. It is also confirmed that the service area of the above-mentioned fire rescue units can't cover the Biyagama PS area according to the relevant standards and emphasized the need of a fire rescue unit for any area. The following Map 6.8 implies the need of fire rescue unit for the moderate dense zones that having the promotional use of industrial development.

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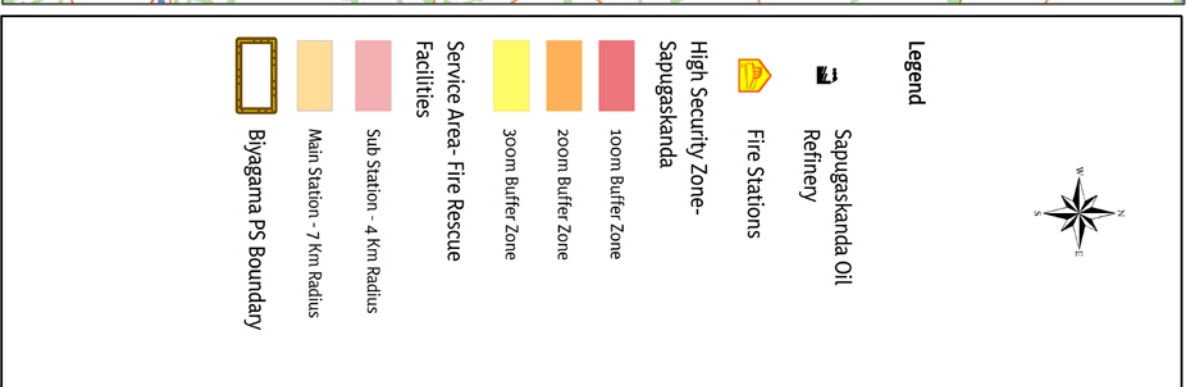


Service Area of Fire Rescue Facilities - Biyagama Pradeshiya Sabha area

Source : Google Maps/ Gampaha District Planning Team



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Map 6.8 : Service Area of Accident & Fire Rescue Facilities

6.3.2. Proposed Road & Transportation Strategic Plan

6.3.2.1. The Importance of Road & Transportation Strategic Plan

Biyagama located in between a strategic location in the National and Regional Road Network, and located between the Colombo-Kandy and Low level - Avissawella Roads which are two main road corridors out of seven main corridors in Sri Lanka. Similarly, road network improvements and development in the past and current periods have made a significant difference in commercial, industrial and other urban service sectors. New Kandy Road Corridor, Samurdhi Mawatha & recently built Outer Circular Highway can be identified as prime examples for this. The need for a strategic road & transport plan emerges on Biyagama PS area through the future development trends and also the integrating the advantage of two main interchanges of Kaduwela & Kadawatha.

Although there are several main road corridors emerged in the area, narrow internal road network displaying the weakness of the thoroughfare development. It has been proved through spatial integration and road development is an integral part of achieving the future vision as a future industrial city. In order to promote industrial activities, the priority of opening 13% of the land area for industrial investment opportunities is mainly based on the development of internal road network. Accordingly, the existing and proposed road developments will be categorizing as priority levels and that will derive a road hierarchy for area.

Through the proposed Biyagama - Kosgama Railway Project, Biyagama PS area will have two new railway stations, namely Sapugaskanda & Siyambalape. As an industrial city, Biyagama can get the value of this railway project by labour & freight transportation. In order to develop the surrounding area of the proposed railway stations in a planned manner as well as to resettlement of the people in these areas, proper action is required.

Biyagama PS area include to the service areas of Kadawatha, Mahara & Kiribathgoda LRT Stations of the Proposed Light Railway Project. Proposed LRT stations will be located in the eastern part of the Biyagama PS boundary and Road & Transport Strategic Plan should be incorporate the expected attraction of residential uses and "Park & Ride" multi-storied car parks to cater the future requirements.

6.3.2.2. Proposed Road Development Corridors & Road Hierarchy

The entire road network of the Biyagama urban area and the proposed road developments has been included in the road plan, with a priority basis. Initially, provision of central investment corridor and local industrial collector strategies are considered which are coming under the Industrial Economic Plan.

Accordingly, the road network of the area has been included into a road hierarchy and following table 6.4 indicates the proposed road developments in order to promote industrial and mix residential uses in Biyagama PS limits.

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First Priority	
Name of the Road	Proposed Road Width
Colombo – Kandy Road	<p>4 lanes, including Center line and Service line in both sides.</p> <p>(One lane is 3.5 m and 14 m are allocated for carriage ways. 6 m are allocated for light rail and centre line. 4.75 m for one side is allocated for service line and landscaping area and total width is 30 m.)</p> <p>Figure 6.4 displays the proposed cross section.</p>
Second Priority	
Name of the Road	Proposed Road Width
New Kandy Road	<p>4 lanes, including Centre line and Service line in both sides.</p> <p>(One lane is 3.5 m and 14 m are allocated for carriage ways. 3 m are allocated for Centre line and 4.75 m for one side is allocated for service line and landscaping area and total width is 26.5 m.</p> <p>Figure 6.5 displays the proposed cross section.</p>
Samurthi Mawatha	
Yatihena- Karabugas Junction Road	
Sapugaskanda - Gonawala Road	
Biyagama - Colombo Road	
Makola - Udupila Road	
Kadawatha - Mawaramandiya Road	
Third Priority	
Name of the Road	Proposed Road Width
Delgoda - Pugoda Road	4 lanes, including Centre line and Service line in both side
Biyagama- Dompe Road	<p>(One lane is 3.5 m and 14 m are allocated for carriage ways. 3 m are allocated for Centre line and 3 m for one side is allocated for Service line and landscaping area and total width is 22 meters.</p>
Pattiwila - Makola Road	
Mabima Road	
Gonawala - Koholwila Road	4 lanes, including Centre line and Service line in both side
Waduwegama - Yatihena Road	<p>(One lane is 3.5 m and 14 m are allocated for carriage ways. 3 m are allocated for Centre line and 3 m for one side is allocated for Service line and landscaping area and total width is 22 meters.</p> <p>Figure 6.6 displays the proposed cross section.</p>

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Proposed Road & Transportation Strategic Plan

Fourth Priority	
Name of the Road	Proposed Road Width
Mabima - Ganewela Road	2 lanes including Service line.
Power House Road (Near Biyagama Sub Station)	(One lane is 3,5 m and 7 m are allocated for carriage ways. 1.5m for center line ,2.25 m for service belt and landscaping area and total width is 13 meters.) Figure 6.7 displays the proposed cross section.
Waduwegama - Kanduboda Road	
Bollegala - Wijerama Road	
Daranagama - Meegahawaththa Road	
Gonahena - Ranmuthugala Road	
Meegahawaththa - Golummahara Road	
Sri JayathilakaMawatha- Kolama-bahenawaththa Road	
Ihala Biyanwila Road	
Malwaththa Road	
Dikwela Road	
Alubowila Road	
Ulhitiwala Road	
Maguruwila Road	
Pushparama Mawatha – Dewala Road	
Gunarathna Mawatha	
Siri Mangala Road	
Siriketha Road	
Gonahena Road	
Heyiyanthuduwa - Obawaththa Road	
Fifth Priority	
Apart from the proposed fourth priority, all the local roads must be at least 7 meters wide. Figure 6.8 displays the proposed cross section.	

Table 6.4 : Hierarchy of Road Developments by Priority Levels

Source : Gampaha District Planning Team, 2017

According to the above-mentioned table 6.4 and the following Map 6.9 displaying the proposed road widths and the priority levels. Also, existing and proposed road developments will create a hierarchical road pattern and that will lead the attraction of industrial, commercial and residential developments to the Biyagama PS area.

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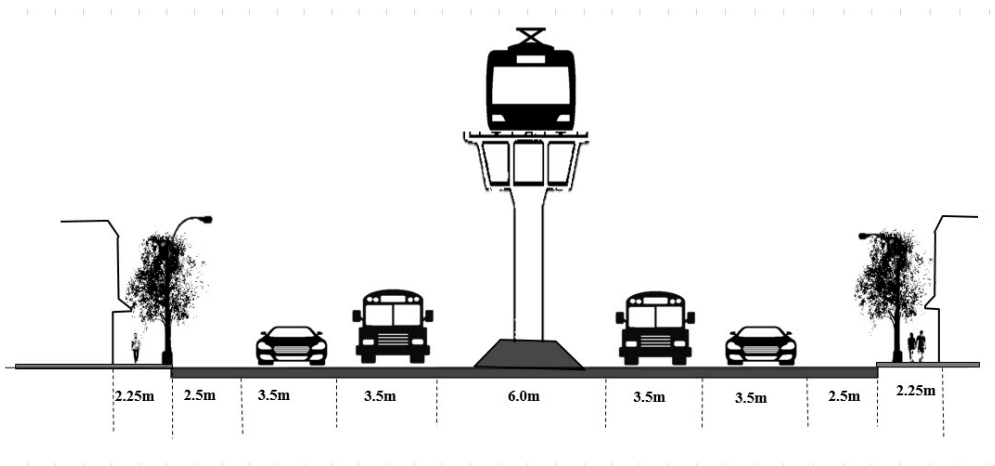


Figure 6.4 : Cross Section of First Priority Road Corridor
 Source : Gampaha District Planning Team, 2017

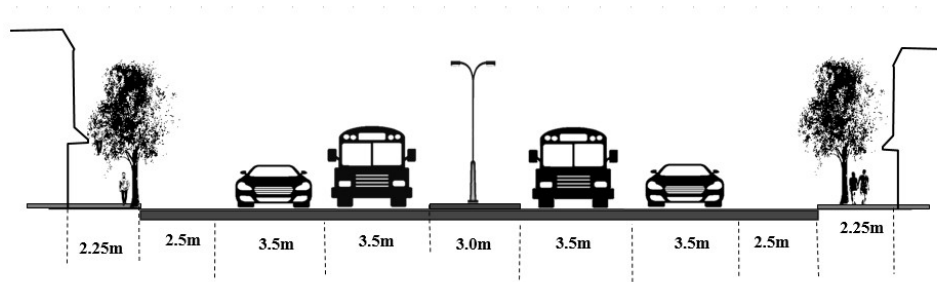


Figure 6.5 : Cross Section of Second Priority Road Corridor
 Source : Gampaha District Planning Team, 2017

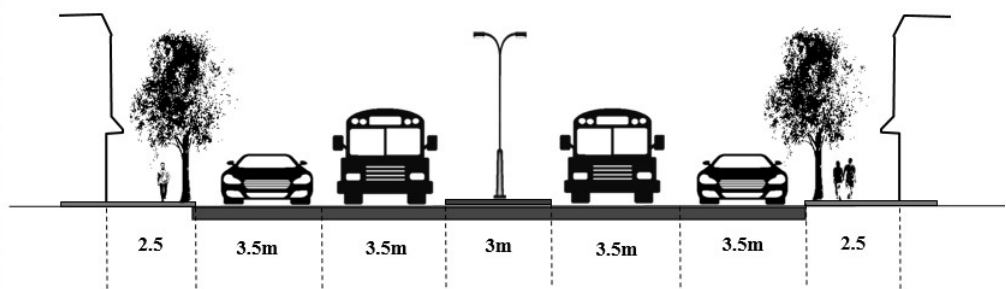


Figure 6.6 : Cross Section of Third Priority Road Corridor
 Source : Gampaha District Planning Team, 2017

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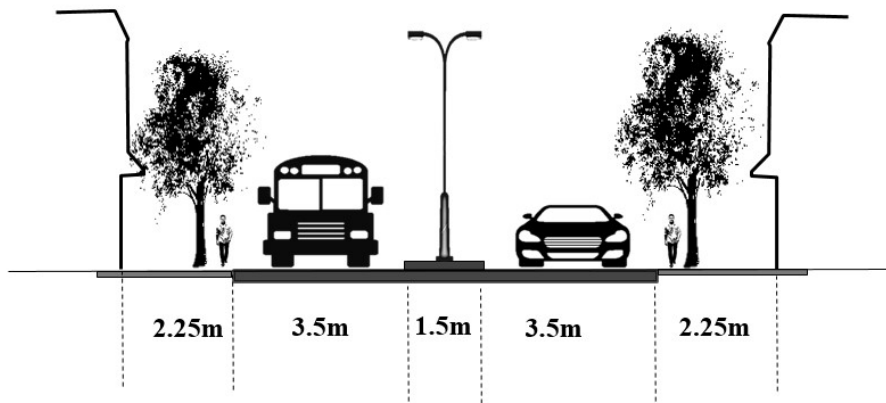


Figure 6.7 : Cross Section of Fourth Priority Road Corridor
Source : Gampaha District Planning Team, 2017

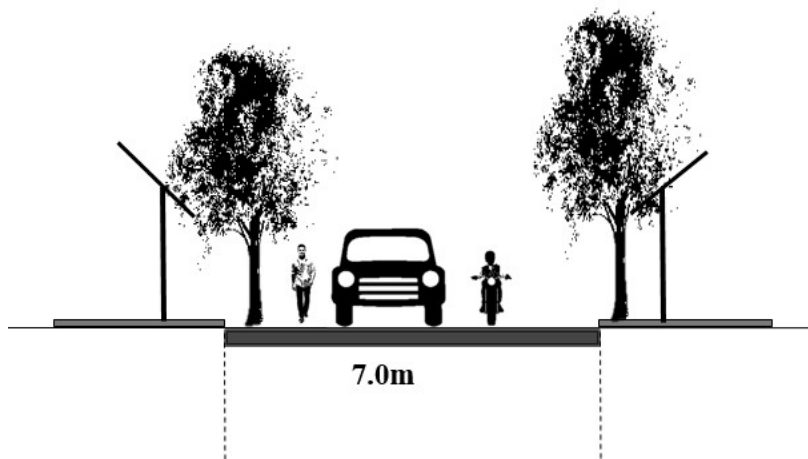
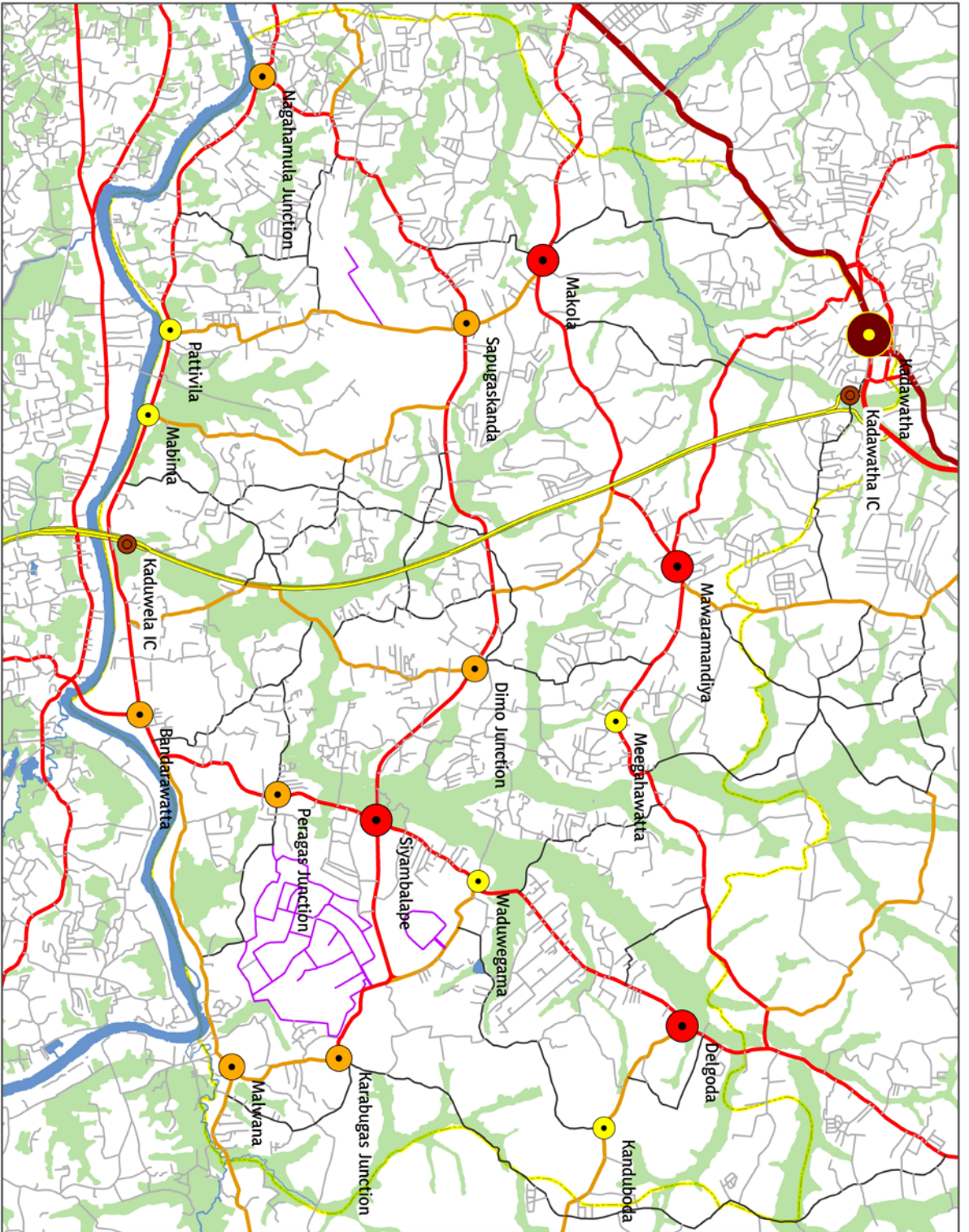


Figure 6.8 : Cross Section of Fifth Priority Road Corridor
Source : Gampaha District Planning Team, 2017



	Highway Interchange
	Urban Node Hierarchy
	Priority Level
	Road Hierarchy
	Priority Level
	Industrial
	Fifth Priority
	Fourth Priority
	Third Priority
	Second Priority
	First Priority
	Water Bodies
	Wetlands
	Biyagama PS Boundary

Proposed Road Hierarchy - Biyagama Pradeshiya Sabha Area
 Source : Gampaha District Planning Team



Urban Development Authority
 December 2018

Western Province Division

Biyagama Development Plan (2019-2030)

Prepared by : Gampaha District Office

Map 6.9 : Hierarchy of Road Developments by Priority Levels

6.3.3. Water Supply Plan

Under the physical infrastructure facilities, the water supply plan including proposed actions and projects for future water consumption in the Biyagama PS area. Data of 2011, Census & Statistics Department related to the population and housing shows that 51% of the housing units in the Biyagama PS area depend on the well water. 47% of the population is depend on piped born water and the water is obtained from the Kelani river. At present, Kelani River Right Bank Water Treatment Plant treated and distributed 180,000 cubic meters per day by covering the areas of North Colombo (TNC Area). As well as Lindel Water Treatment Plant administrate by BOI treated and consumed 9000 cubic meters of water.

Western Region Water Supply Plan in 2013 identified the water demand will be multiple in two over the next 10 years. With the increase of population in Gampaha District, 1,356,089 in 2015 to 1,689,370 in 2030, the water demand of 224,742 cubic meters (2015) will increase into 489,056 cubic meters per day by 2030. The proposed water supply proposals for the increasing water demand has been considered the time periods and divided into 3 main stages. Also, Biyagama PS area considered under the three main stages and there is a new proposal of water treatment plant for Biyagama - Mabima area.

<i>Time Period</i>	<i>Water Treatment Plant</i>	<i>Present Capacity (Per day/ Cubic Meter)</i>	<i>Proposed Capacity (Per day/ Cubic Meter)</i>
<i>Immediate Phase (2013-2020)</i>	<i>Kelani River Right Bank Water Treatment Plant (Biyagama- Pattiwila)</i>	<i>180,000</i>	<i>360,000</i>
<i>Intermediate Phase (2020-2030)</i>	<i>Proposed Mabima New Water Supply Treatment Plant</i>	<i>-</i>	<i>180,000</i>
<i>Ultimate Phase (2030-2040)</i>	<i>Proposed Mabima Water Treatment Plant</i>	<i>180,000</i>	<i>260,000</i>

Table 6.5 : Existing and Proposed Water Supply Centres and Capacity

Source : Western Region Water Supply Plan, 2013

From the proposed water treatment plant of Mabima, the coverage area of the Biyagama - Pattiwila Water Treatment Plant will be reducing and that will expect to cover other high demanding areas of Colombo North. At present, Biyagama urban area having ground water reservoir with the capacity of 4950 cubic meter and there will be three main systems for water distribution under the proposed Mabima Water treatment plant. The following table 6.6 describes the proposed projects and the water distribution capacity increment details of the existing & proposed new water treatment plant of Mabima.

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Water Supply Plan

Kelani River Right Bank (Biyagama- Pattiwila) Water Treatment Plant	Time Period 2015-2025
	800 mm DI- Establishment of water distribution system for Biyagama junction to Biyagama Ground Reservoir and Ground Reservoirs of Biyagama EPZ
	Establishment of water distribution system with a capacity of 600 mm DI from the Biyagama Ground Reservoir to the exist-ing water tower of Delgoda.
	Establishment of new water distribution system with a capacity of 315 mm DI from the Biyagama Ground Reservoir to the existing water tower of Malwana. (For existing 225mm PVC system)
Proposed Mabima Water Treatment Plant	Time Period 2020-2025
	Establishment of new water distribution system with a capacity of 900mm DI from Biyagama Junction to Mabima New Water Treatment Plant.
	Establishment of new water distribution system with 900mm DI capacity from Mabima Water Treatment Plant to the Weliveriya underground reservoir.

Table 6.6 : Proposed projects and the increase the water distribution capacity
Source : Western Region Water Supply Plan, 2013

Considering the proposed projects and capacity increments, the calculations of future water demand by 2030 for Biyagama PS area has been done. As an industrial city, Biyagama expected two sectors of commuting population, namely industrial employees and service seekers. Predicted residential population was also considered and the following table 6.7 implies the computed future water demand with the basis of international standards.

Classification	Expected Population-2030	International Standard (lpcd)	Future Water De-mand (Per Day/ Cubic meter)
Residential	246137	120	29536.4
Industrial - employed	308356	45	13876.0
Industrial - temporary occupants	77089	120	9250.6
Commercial - employed	16299	20	325.9
Institutional - employed	9127	10	91.2
Commercial - Service seekers	216544	5	1082.72
Institutional – Service seekers	121260	5	606.3
Lindel Industrial Estate			9000
Biyagama EPZ			20000
Total Water Demand - 2030			83769.38

Table 6.7 : Daily Water Demand within Biyagama Urban Area - 2030
Source : Gampaha District Planning Team, 2017

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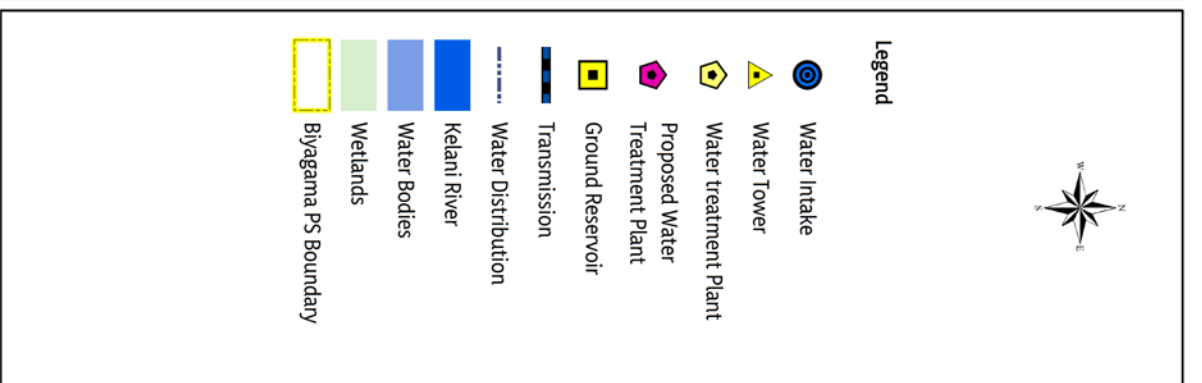
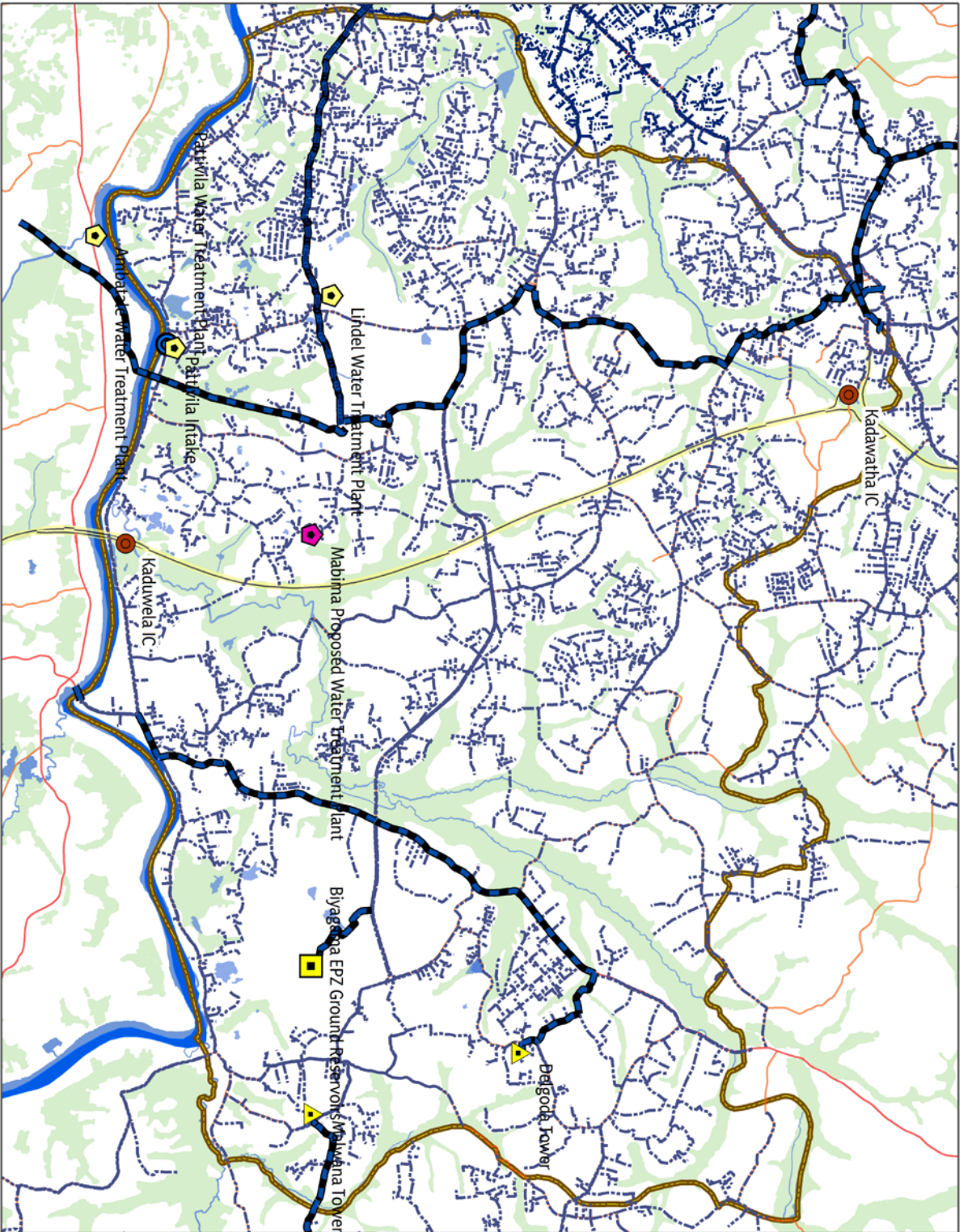
Water Supply Plan

Accordingly, the current distribution of the 43,000 cubic meters from the Biyagama-Pattiwila Water Treatment Plant will not be sufficient with the daily water requirement of 83,629.38 by 2030. It is about shortage of 40,769 cubic meters of water and the proposed Mabima New Water Treatment Plant will have 56,000 cubic meters of water covering the Biyagama, Delgoda and Malwana areas by the year 2030 and 45,000 cubic meters covering Biyagama and Dompe area. Accordingly, proposed Mabima water treatment plant can be fulfilling the future water demand of Biyagama & following table 6.8 is indicate that context.

Water Treatment Plant	Maximum Design Capacity	Current Distribution Capacity	Future Distribution Capacity	Future Water Demand (Per day cubic meters)	Difference of present supply & Future demand	The future Water Supply & Water Demand
Kelani River Right Bank Biyagama- Pattiwila (1st Stage- 2015)	180,000	43,000	-	83769.38	- 40769	26230.60
Kelani River Right Bank Biyagama- Pattiwila (Proposed 2nd Stage- 2025)	360,000	39,000	-			
Proposed Mabima Water Treatment Plant (Proposed 1st&2nd Stage- 2025/2040)	260,000		101,000			

Table 6.8 : Daily water demand and proposed water supply capacity-2030

Source : Gampaha District Planning Team, 2017



Proposed Water Supply & Distribution- Biyagama Pradeshiya sabha area

Source : National Water Supply & Drainage Board



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Biyagama Development Plan (2019-2030)

Prepared by : Gampaha District Office

6.3.4. Electricity Supply Plan

Electricity Supply Plan coming under the physical infrastructure sector and discussed the proposed methodologies to cater the future electricity demand of Biyagama PS area. To promote Biyagama Urban Area as an industrial city, this electricity supply plan is in the forefront. With the existing facilities, the gap between the existing and future requirements and new projects has been considered in this plan. According to the electricity distribution zoning, Gampaha District is coming under Northern part of the Western Province and the Biyagama Urban Development Area comes under the Kelaniya sub-region.

Records of the principal type of lighting in the Census of Population and Housing in 2012, 98% of the housing units in the Biyagama PS area depend on the electricity service. In order to discuss the physical resources for providing electricity supply to the Biyagama and surrounding area, it should be mentioned mainly the Biyagama Grid sub-station. It is a major power station of the Sri Lanka Electrical Transmission System which has been built through the Mahaweli Transmission System in the year 1984. The transmit power from Mahaweli Complex hydro plants to main load centers around Colombo, this GSS is having the connection of Biyagama - Kotmale transmission line.

According to the short-term project plan prepared by the Ceylon Electricity Board for the period of 2016- 2025, the following figure 6.9 & the table 6.9 indicates the projects have been introduced to provide electricity to Biyagama PS Area.

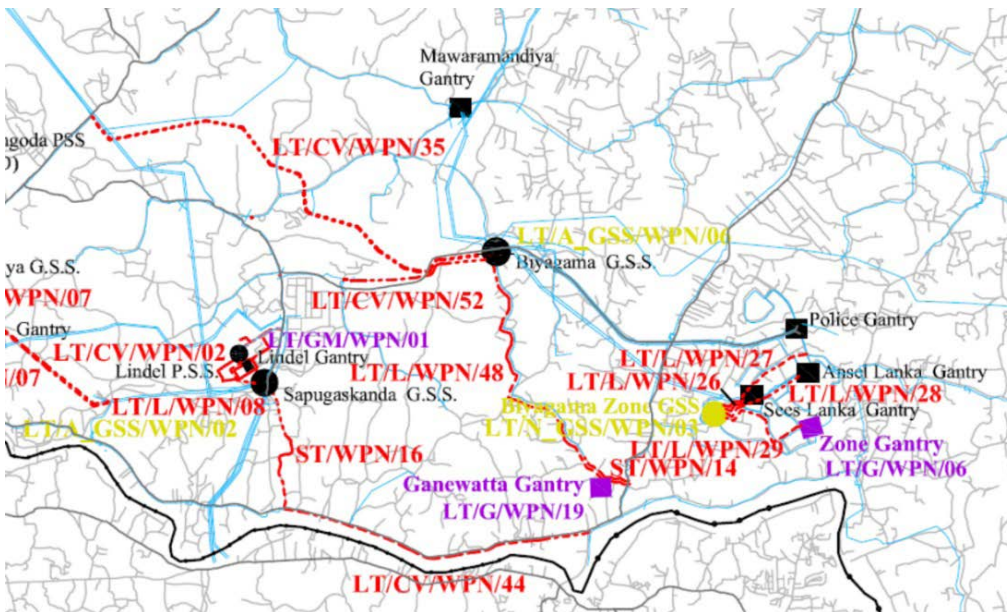


Figure 6.9 : Proposed Electricity Supply Projects

Source : Short Term Project Plan-CEB, 2016

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Electricity Supply Plan

Classification of Power Transmission Station	Suggested Project Area Codes	Existing and Proposed Ar-eas
Grid Sub Station - GSS	-	Grid Sub Station at Biyagama, Samurdhi Mawatha
	-	Sapugaskanda
	LT/N_GSS/WPN/03	Proposed Biyagama EPZ - Grid Sub Station
Primary Sub Station - PSS	-	Sapugaskanda Lindel Industrial Estate
Gantry	-	Mawaramandiya
	-	Dekatana
	-	Biyagama Police Circle
	-	Ansel Lanka
	-	Sees Lanka
	LT/N_GSS/WPN/03	Proposed Biyagama EPZ Gantry
	LT/G/WPN/19	Proposed Ganewaththa Gantry

Table 6.9 : Existing & Proposed new power transmission stations in the Biyagama PS Area

Source : Short Term Project Plan - CEB, 2016

Classification of Power Transmission	Suggested Project Area Codes	Existing and Proposed Areas
Electrical lines systems	LT/L/WPN/08	From Sapugaskanda GSS to Sapugaskanda Lindel Industrial Estate gantry (33kV SC Lynx Pole - Length 0.45 Km)
	LT/CV/WPN/52	From Biyagama GSS to Wee Mola Junction (33kV SC Raccoon Pole into 33kV SC Lynx Pole)
	LT/CV/WPN/35	From Biyagama GSS to Kiribathgoda, Gala Junction (33kV DC Cockroach Pole line into 33kV DC Lynx Pole (1.6 Km)/ Tower- Length 6 Km)
	LT/CV/WPN/02	From Lindel Industrial Estate PSS to All outgoing electrical line systems (11kV SC Raccoon Pole into 33kV SC Raccoon Pole - Length - 2.5 Km)
	LT/L/WPN/26	From Proposed Biyagama EPZ - GSS to Gantry of Sees Lanka (33kV DC Lynx Pole - 0.6 Km)
	LT/L/WPN/27	From Proposed Biyagama EPZ - GSS to Gantry of Biyagama Police Circle (33kV DC Lynx Pole – 1.7 Km)
	LT/L/WPN/28	From Proposed Biyagama EPZ - GSS to Gantry of Ansel Lanka (33kV DC Lynx Pole - 2 Km)
	LT/L/WPN/29	From Proposed Biyagama EPZ GSS to Gantry of Biyagama EPZ (33kV DC Lynx Pole – 1.5 Km)

Table 6.10 : New power supply lines and reform proposals

Source : Short Term Project Plan – CEB, 2016

Accordingly, the above mentioned table 6.10 describes the projects fulfill the electricity requirement for industrial and mixed residential development, which will meet the electricity needs of the whole area through the new power transmission lines and reforms.

6.3.5. Sewerage & Waste Water Management Plan

The Swerage & Waste Water Management of the Biyagama area is discussed under the Sewerage & Waste Water Management Plan. Accordingly, there is no sewerage and waste water management system with the coverage of total urban declared area of Biyagama. Since the minimum plot size for residential development is 10 perches, the waste water of the residential units are managed within the sites itself.

However, there are industrial waste water discharging methods for Biyagama EPZ and Sapugaskanda Lindel Industrial Estate. The daily water consumption of the Biyagama EPZ is 20,000 cubic meters and daily 16,000 cubic meters of waste water is discharged to the Kelani river through the Raggahawaththa canal after the waste water treatments.

Water Treatment Plant located at Lindel Industrial Estate consumed 9000 cubic meters of water to the factories in Sapugaskanda Oil Refinery Centre, Lindel Industrial Esatate and the Gas production centres nearby and it is calculated that 80% is discharge as waste water. It is about 7200 cubic meters of waster water.

It has been assumed that by 2030, the region would have to discharge as much as 80% of the waste water based on the future water demand. The calculations of total amount of waste water discharge considered the present waste water discharges have been done considering the present waste water discharges such as also, 16,000 cubic meters of waste water from Biyagama EPZ & 7200 cubic meters of waste water from Lindel Industrial Estate. With this context, the two zones with industrial promotional use implies the need of proper waste water management system for the Biyagama area. The table 6.11 displaying the calculations related to waste water discharge.

Especially under the need of the plan, highlighted the fact of water quality in Kelani river that used for the Biyagama Pattiwila & Ambathale water treatment plants to fulfil the water demand of the people in Colombo North and South area. The Biyagama Pattiwila Water Treatment Plant, which distributes water to the North Colombo water supply system, has been severely inconvenienced due to the industrial waste water in Biyagama. There are several complaints regarding the waste water of Biyagama EPZ, which is being released after the treatments for Alavinna and Raggawatta canals and those are examined by the Biyagama Agrarian Service Centre of Biyagama, Divisional Secretariat of Biyagama and responsible offices and institutions.

Proposed Density Zone	Expected amount of Total waste water by 2030					Volume of waste water disposal by zone
	Residential	Industry employed	Commercial service employed	Institutional and Administration service Employed	Commercial and Institutional Administration-Commuting	
High Dense Urban Transit Zone	2362.92	44.93	54.81	6.47	225.04	2694.16
High Dense Urban Service Zone	2362.92	0.43	56.39	10.18	254.92	2684.84
High Dense Commercial Zone	3780.67	56.36	61.13	5.96	242.67	4146.79
Moderate Dense Industrial Zone-I	3780.67	4834.79	33.27	19.61	240.78	8909.12
Moderate Dense Industrial zone-II	4962.12	5053.73	18.49	12.73	146.01	10193.09
Moderate Dense Local Business Zone	2835.50	609.73	12.42	7.59	91.70	3556.95
Moderate Dense Urban Service Zone	1654.04	6.81	4.60	2.32	30.72	1698.50
Low Dense Special Development Zone	189.03	494.03	19.65	8.14	119.37	830.23
The amount of waste water discharged in different sectors	21927.86	18501.3	260.78	73.02	1351.22	42114.2
Biyagama Export Processing Zone						16000
Lindell Industrial Estate						7200
Expected amount of total waste water by 2030 (m³)						65314.2

Table 6.11 : Calculated Total Amount of Waste Water
Source : Gampaha District Planning Team, 2017

Due to the problem arising out of the supply of drinking water to the people of the North Colombo, the conventional methodology for waste water treatments should be changed into modern waste water treatment methods and guidelines must be arisen. Considering this situation, it is expected to provide a stable solution by Western Region Water Supply Plan for the water pollution caused by the oil leakage with Pattiwila canal. Also, it is proposed to introduce Interceptor Sewer system to dispose refined waste water from the Biyagama EPZ through the Raggahawaththa canal. As per the following figure 6.10, the proposed industrial promotional density zones indicate the high waste water discharge values when compared with the other density zones and that ensure the need of modern technology based waste water treatment plant for Biyagama.

The vision of the Biyagama as an industrial city which handing hand with wetlands & environmental management emphasized the value of modern waste water treatment methodologies to control the arrival of shocking city.

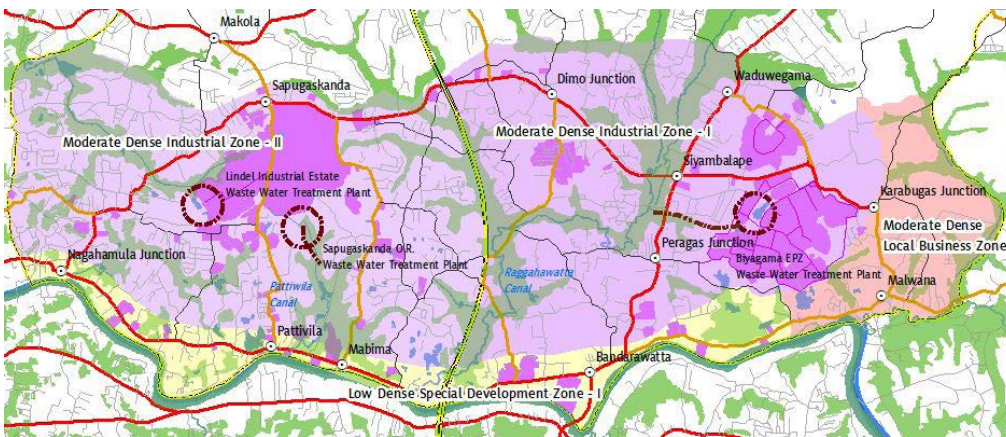


Figure 6.10 : Proposed & Existing Waste water treatment plants & the mechanism
Source : Gampaha District Planning Team, 2017

6.3.6. Solid Waste Management Plan

Solid waste management is key section of physical infrastructure and the procedures for solid waste management in the Biyagama Urban Area and the proposed projects have been discussed in this Solid Waste Management Plan.

Biyagama Pradeshiya Sabha is primarily responsible for the management of solid waste in the Biyagama Urban Area. Garbage collection is carried out for two days a week at the housing unit level in the area. The amount of garbage collection is about 15 to 16 tons of degradable garbage and 3 to 4 tons of non-degradable garbage. This garbage is sorted out in a land closer to Delgoda Bus terminal and Biyagama Pradeshiya Sabha building as degradable and non-degradable waste. Then, these sorted degradable waste send to Muthurajawela - Kelawarapitiya solid waste dumping yard and power generation project land and non-degradable waste to Dompe sanitary landfilling site.

However, the Biyagama Pradeshiya Sabha is expected to relocate this solid waste sorting plant at a different location considering as a weakness of locating such a service in a valuable land with public utility service area. According to the physical utilities, Biyagama Pradeshiya Sabha has one compacter, one tipper, 10 tractors and 35 hand-carts as well as human resources, there are 44 workers and 10 drivers for the purpose of collecting garbage.

Name of the Zone	Present Population (Residential and Commuting)	Expected Population by 2030 (Residential and Commuting)	Standard of Solid waste generated in a DS Area (Kg / person)	Amount of solid waste generation at Present - per day (Ton)	Amount of solid waste generation in Future -2030 - per day (Ton)
High Dense Urban Transit Zone	39689	85682	0.4	15.9	34.3
High Dense Urban Service Zone	42916	93684	0.4	17.2	37.5
High Dense Commercial Zone	53208	105565	0.4	21.3	42.2
Moderate Dense Industrial Zone-I	102398	237521	0.4	41.0	95.0
Moderate Dense Industrial zone-II	103828	232541	0.4	41.5	93.0
Moderate Dense Local Business Zone	37703	71076	0.4	15.1	28.4
Moderate Dense Urban Service Zone	17018	26014	0.4	6.8	10.4
Low Dense Special Development Zone	47925	65639	0.4	19.2	26.3
Total				177.9	367.1

Table 6.12 : Calculated Daily Solid Waste Generation
Source : Gampaha District Planning Team, 2017

Accordingly, the daily collection of solid waste has been calculated considering the current residential population and commuting population. Further it is calculated that it will be increased up to 367.1 tons by 2030 and it is given in the following table 6.12.

Although the amount of solid waste generated in proposed zones of industrial activities are used for the calculations. The Biyagama Pradeshiya Sabha does not collect solid waste from industrial enterprises. Until recent times in the Biyagama EPZ, the management of solid waste has been done within their own land, and a new solid waste management program introduced in 2018 has been taken to manage the solid waste. In the new procedure, it is proposed to manufacture electricity using non-hazardous waste, which is identified as a sustainable environmental development strategy in the BEPZ.

6.4. Economic Development Strategies

6.4.1. Industrial Economic Plan

The vision of the Biyagama Urban Area as “The Tranquilized Industrial City ” has mainly based on the industrial development to uplift the local economy of the area and also the national & regional economy.

Accordingly, the main goal under that vision was to Create multifaceted clusters while promoting unified industrial economic needs. The background for industrial promotion has been formed through provision of basic needs such as economic and physical requirements for industrial development. Under this goal, it is expected to open up 13% from the total land area through collector road pattern for industrial investments, to promote industrial oriented business zone around central investment corridor and to facilitate 30% of manufacturing sector employment contribution.

Accordingly, proposed industrial economic plan with four main strategies will be provided to achieve the above-mentioned objectives. The current job market focusing manufacturing industries of the area will be further developed and the daily commuting industrial workers will be increased up to two lakhs. According to the calculations, it will be 200,996. Based on the research hypothesis regarding the Biyagama EPZ workers, it is estimated that 25% employees are temporary occupants who prefer to reside closer to the employment centres. Using that the predicted temporary occupants will be 77,089 in Biyagama area by 2030. Further, it is confirmed through calculations that there will be 308,356 daily commuter workers based on the industrial enterprises in 2030.

Following sections will describe the proposed four main strategies of Industrial Economic Plan that proposed to develop Biyagama as a place where 300,000 daily commuters for industrial sector works.

6.4.1.1 Central Investment Corridor Strategy

The Central Investment Corridor Strategy is expected to promote the Samurdhi Mawatha and Gonawala-Sapugaskanda road as a connected road stretch where agglomerates basic industrial needs and services. With this proposal it will be a main priority road corridor that connects to the Biyagama - Colombo Road via Nagahamulla junction. This road will connect with proposed Kelani Temple access road via Gonawala - Koholvila road and later it will join with the proposed crescent road (Biyagama - Colombo Road) which will demarcate the outer scared boundary of Kelani Temple. Also, it will give the access for Colombo port through the proposed Elevated Port Highway from Peliyagoda.

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Industrial Economic Plan

In order to develop the accessibility for Biyagama industrial promotional area, Nagahamula junction will be developed as the first main industrial access from Colombo port side. Karabugas junction will be developed as the second main industrial access to the Biyagama industrial promotional area through the country side such as Dompe, Dekatana areas. With this nodal development, Central Investment Corridor will be a well integrated road stretch by incorporating these two main industrial nodes and internal road network of the area.

Establishing a center for industrial oriented banking & financing is a key strategic project in the Central Investment Corridor & Dima junction was the most suitable location for this purpose as a well-connected node of the area. This is particularly beneficial to industrial investors and employees, who have fulfilled their needs from the banks that located in outer areas.

It has also been identified to allocate a site for a skill up-gradation centre in the Central Investment Area as a strategic project to generate the labour force for manufacturing industries and creating a skilled workforce for the future requirements. From this it will expect to reduce the unemployment rate of 3.6 % in the Gampaha District and reduce the total youth unemployment rate to 20.29 by 2020. Also, this will be a plus point for future industrial sector which handing hand with the new technology to get the advantage of talented youth labour pool.

As per the service area analysis of existing health facilities under the social infrastructure category, it is necessary to have a hospital with well improved health facilities within Central Investment Corridor due to the major facts like, Biyagama as the second largest employment-based EPZ, distribution of manufacturing plants and the employed commuting population who always in a risk with industrial hazards and accidents. And also, existing Biyagama Divisional Hospital should upgrade with modern health facilities which can link with the new hospital to cater the basic health needs for future industrial related commuting population.

The Central Investment Corridor is lying through three sensitive wetland eco systems and with the face of increased development pressure, developments should be allowed by protecting the wetland network character of the area. For the purpose of this, it is expected to develop wetland park which integrating the Siyambalape walking path, Raggahawatta canal and the surrounded agro wetlands. From these environmental positive impacts, it is expecting to lead the Biyagama PS area as "Tranquilized Industrial City" which will be "A Greenscape Industrial City Idol" that incorporates the unique wetland network of Biyagama.

6.4.1.2 Local Industrial Collector Strategy

Under this strategy, it is expected to cover the Objective of open up 13% from the total land area through collector road pattern for industrial investments and identification of major internal road corridors to develop with four lanes. Accordingly, the developable lands in the Mabima and Pattiwila will be open for industrial investments through Mabima & Pattiwila -Makola Road developments. It is also proposed to connect Jayanthi Mawatha, which connects with the Kaduwela Interchange, with the Mahena road and develop Malwana - Dompe Road up to Biyagama -Thotupola junction. Similarly, the road runs from Waduwegama junction up to Biyagama Zone and Gonawala - Kohalwila road coming under the category of proposed internal road development proposals.

It is expected to attract the industrial investments to the southern part of Biyagama planning area and upgrade the value with the promotion of manufacturing industries. Mabima - Ganawela Road, Power house road which runs near the Biyagama Grid station, Kottunna - Mahena road, Manguruwila road and Bollagala - Wijerama road are the other proposed road developments with two lanes plus service lines.

The internal road network will be connected to Central investment corridor on the north direction and Biyagama - Colombo road on the south direction. It is also proposed to develop the junctions that connecting to the Central Investment Corridor as sub industrial nodes of the area. It is proposed to construct Biyagama - Kosgama Railway line according to the Master Plan of Railway Department and to construct two new railway stations for Sapugaskanda and Siyambalape. Therefore, it is expected to provide transport facilities for the employees of the industrial areas linking the respective stations through the internal road network. Similarly, construction of this railway line facilitates the freight transportation and that can facilitate the future transport requirements also.

6.4.1.3 Plug & Play Industrial Parks Strategy

The third strategy under the Industrial Development Plan is to create industrial parks with all required infrastructure facilities. It has been identified that the southern part of the planning area that link with Central Investment Corridor as the most suitable locations for promotion of industrial development with the considerations of economic, physical, social and accessibility. This can be referred in the Annexure 18 of industrial suitability analysis.

Accordingly, three lands associated with wetland environment have been identified in Heiyanthuduwa area and it is expected to open up these lands for value added industrial investment with wetland associated conservation requirements. It is expected that the three industrial parks will provide a model for industries in the surrounding area as well as the industries which are to be attracted to the area in the future or otherwise to design as a sustainable industrial model under the strategic projects.

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Economic Development Strategies

Industrial Economic Plan

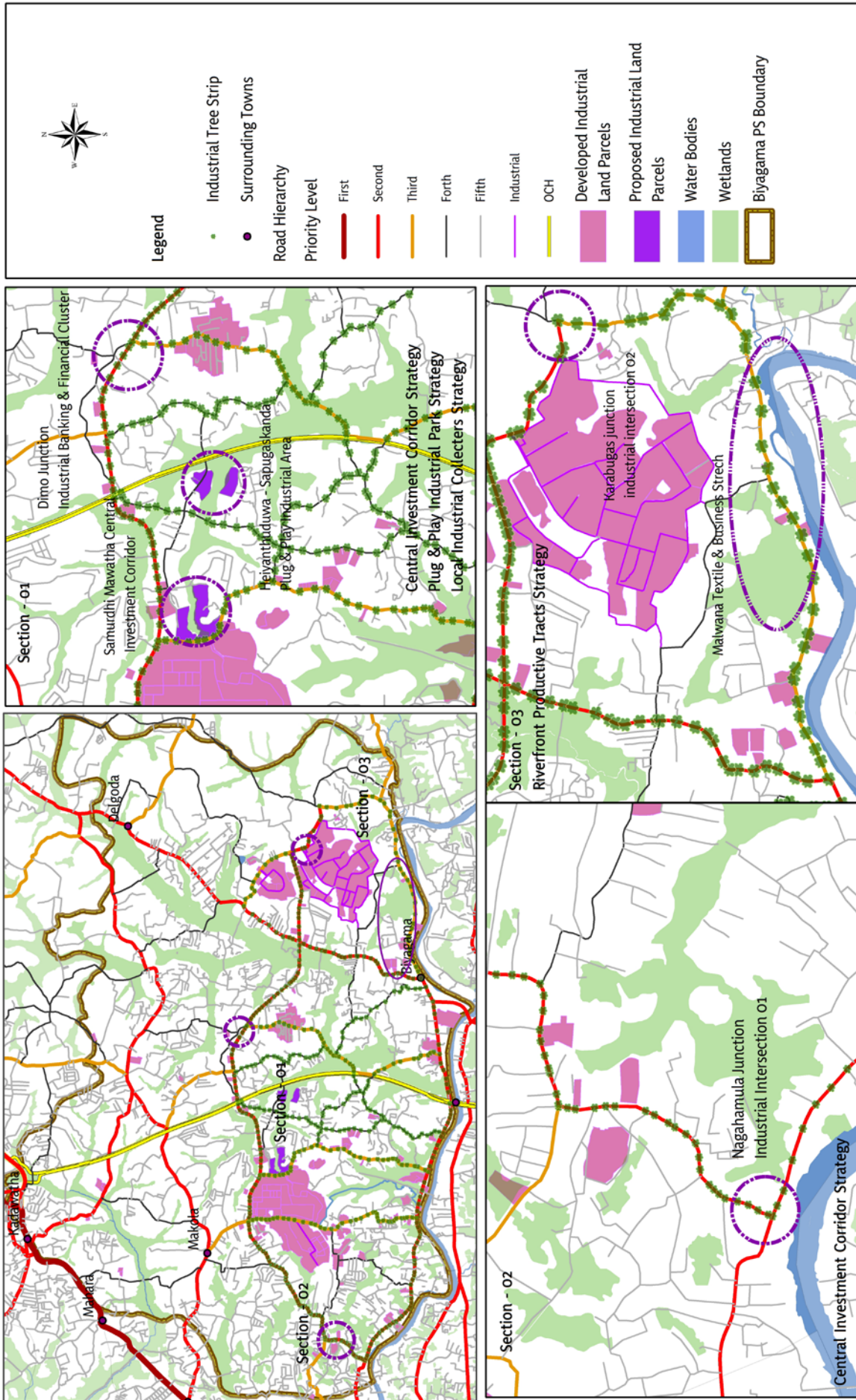
At the same time, it is proposed to develop access of the Dimo junction and the area of Dimo utility vehicle workshop cluster with basic infrastructure facilities to attract the large-scale manufacturing industries. There are about 20 acres of land that can be considered as developable land & it is expect to create Plug & Play industrial park as a catalyst for investment opportunities.

6.4.1.4. Riverfront Productive Tracts Strategy

The Walgama and Malwana area has already been developed for by products of textile and fabric related businesses due to the influence of the Biyagama EPZ. This businesses character which is related to fabric and related raw material are expanded from the Karabugas junction to Malwana Town area. Considering this situation, River front Productive Tracts Strategy is proposed to develop the local business of the area under the Industrial Economic Plan.

It is expected to create textile related raw material-based business stretch by taking the advantage of scenic view in Kelani River as a plus point to the business promotion. As the first step, there should be a relocation of unauthorized sales outlets which become the backyards for Kelani river. Also, this strategy will incorporate the CRIP-Project that mitigate the flood impact through a flood mitigation wall and Malwana town area will be develop by integrating the natural landscape view of Kelani river for the local business development as per this strategy.

The following Map 6.11 displaying the proposed four strategies under Biyagama Industrial Economic Plan.



Map 6.11 : Proposed Industrial Economic Plan

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The Plan

Environmental
Sustainable Strategies

Wetland
Conservation Plan

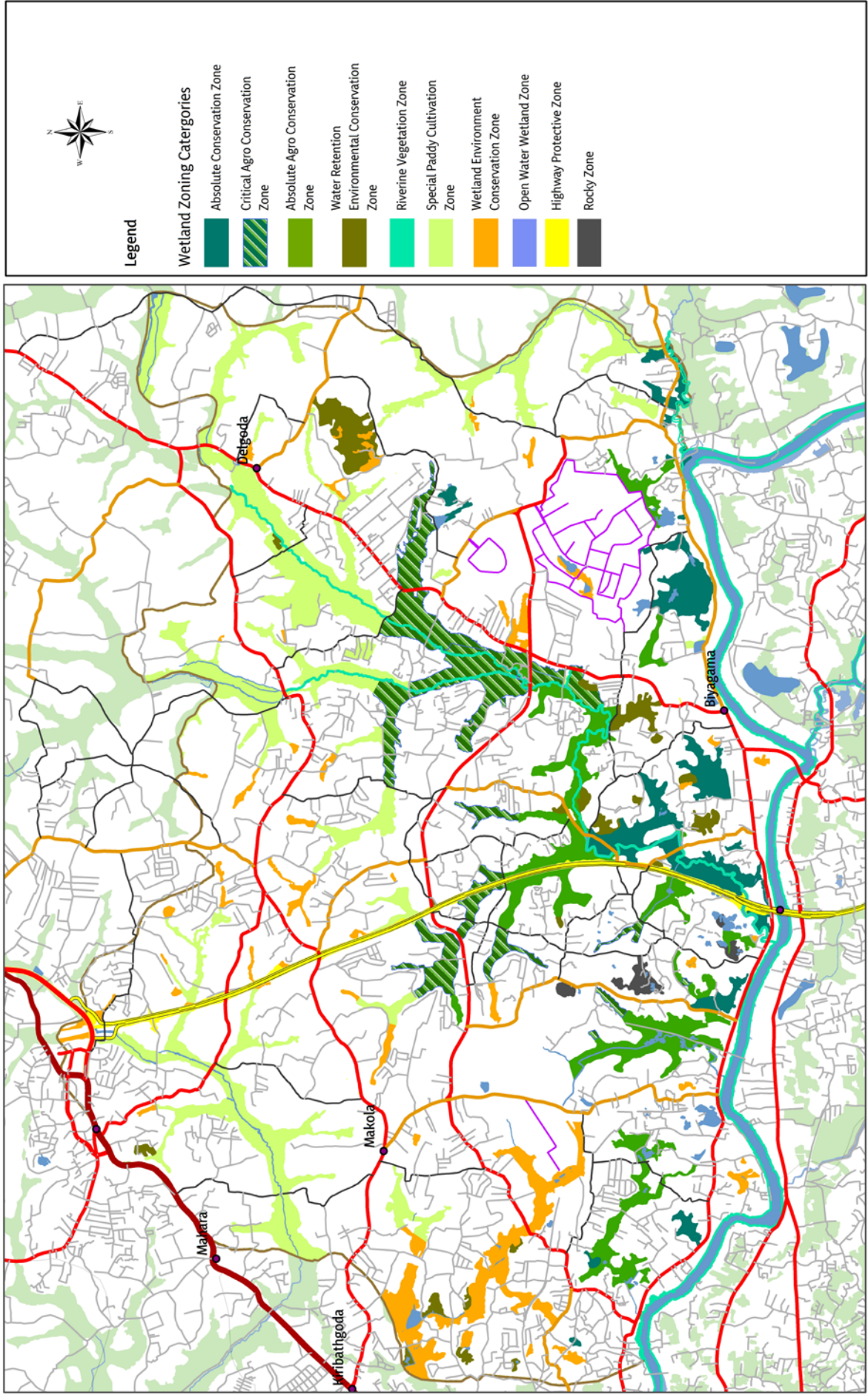
6.5. Environmental Sustainable Strategies

Landuse composition of the Biyagama urban area indicates the 19% of environmental features and it is emphasized achievement of economic development from the promotion of industrial sector should be balance growth by integrating the sustainable development principles. The proposed sustainable environment development strategies have been identifying to conserve the sensitive wetland ecosystem of the area with the ambition of developing the Biyagama urban area as the Tranquilized Industrial City with wetlands. Through this, it can be address to the planning need of the Biyagama development plan in order to minimize the conflict between the industrial development & sensitive wetlands and also the protection of water retention areas to mitigate the flood impact.

6.5.1. Wetland Conservation Plan

The need for a Wetland Conservation Plan for Biyagama is to minimize the negative impacts for wetland eco system on the promotion of industrial development of the Biyagama area. Density of green spaces are decreased with the intensity of industrial and residential development and furthermore, that gradually reduced the sensitive wetland ecosystem of the area. At this context the proposed wetland conservation plan will lead the physical development of the area in sustainable way.

Preparation of wetland conservation plan based on the environment related analytical studies & result of the analysis guide to create wetland categories which coming under a wetland zoning plan. The first step of the Wetland Conservation Plan is identification of the threatened wetland eco systems using the results of the Development Pressure & Environmental Sensitivity Indexes. Then all data layers related to geological features, soil composition, water flow direction of water bodies & drainage network, sub basins, SLLRDC wetland categories & periodic flood events are used to identify the critical wetlands of the area. As the final step of the analysis consider the present land use and abandoned paddy analysis from the Biyagama Agrarian Office used to finalized the preparation of wetland conservation plan.



Map 6.12 : Wetland Conservation Plan

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Absolute Conservation Zone

No permission is given for the any development activity and all marshy areas should be conserved as a water retention area.



Critical Agro Conservation Zone

No permission is given for the any development activity and all the paddy lands which links with main waterbodies should be conserved as a water retention area in flood situation.



Absolute Agro Conservation Zone

No permission is allowed for any development activity and encourage all abandoned paddy lands in the area to be used only for agricultural activities and conserve them as a water retention system during floods.



Water Retention Environment Conservation Zone

No permission is allowed for any development activity and scrub lands associated with highly sensitive wetlands should be conserved as a water retention area in flood situation.



Riverine Vegetation Zone

No permission is allowed for any development activity within the reservations of Kelani River and the canals and encourage riparian buffers for reservations.



Special Paddy Cultivation Zone

No permission is allowed for any development activity and encourage all existing paddy lands in the area to be used only for agricultural activities and conserve them as a water retention system during floods.



Wetland Environmental Conservation Zone

It is encouraged to promote environmental practices that are in line with environmental regulations and limits, and primarily supported to promote wetland environmental parks and public recreation.



Open Water Wetland Zone

No permission is allowed for any development activity and encourage the conservation of all open water retention areas and watercourses such as rivers, tributaries, canals, trenches, ponds and tanks in the area.



Highway Protective Zone

60 m from the boundary of the highway is coming under the Highway Reservation Zone and the no permission is allowed within the first 10m and only linear parks are allowed within that.



Rocky Zone

Table 6.13 : Definition of the Zone and its Territory
Source : Gampaha District Planning Team, 2017

According to the Wetland Conservation Plan, 553 hectares of high sensitivity wetlands have been identified and those are collection of water retention wetlands which have to be conserved, abandoned paddy fields which are act as water retention areas and could be used as productive paddy fields and scrub lands act as additional water retention areas. In addition, the Kelani River reservation and tributaries have been identified as river reservation related to the riverine vegetation zone and all water resources and canals named as an open water retention zone. The paddy system, which is 13% of landuse in the area conserve the ecology equilibrium and allocated only for cultivation of paddy.

In order to achieve the vision of 'The Tranquilized Industrial City', the second goals is to control the emergence of shocking city with environmental and social negatively impacts, 127 hectares of wetland areas have been identified as small-scale wetland parks under the wetland environment conservation zone.

The Urban Development Authority has also created a Wetland Zoning Plan, guidelines and directives to cover the 20% of wetland ecosystem in Western Province which has defined by the Raamza summit with the involvement of responsible & relevant stakeholders. In that wetland zoning, wetlands of Biyagama planning area belonging to following two zones.

- Wetland Nature Conservation Zone
- Special Paddy Cultivation Zone

According to the analysis-based wetland zones of the Biyagama Development Plan includes under the above mentioned two zones as follow. Absolute Conservation Zone & Wetland Environmental Conservation Zone are including to the Wetland Nature Conservation Zone. Special Paddy Cultivation, Critical Agro Conservation & Absolute Agro Conservation zones are including to the Special Paddy Cultivation Zone. The regulations, guidelines and directives that apply to these two zones are detailed in Volume II.

6.5.2 Landscape Plan

The future vision of the Biyagama urban area emphasized the industrial city development with associating the unique wetland network highlight the need of landscape plan and that is a combination of the environmental sustainable strategies in wetland conservation plan and the industrial economic plan. With that basis, it is expected to promote the Co-operate Environmental Responsibility (CER) in industrial enterprises and expected to facilitate the future industrial development and the environment management with the base of Wetland Conservation Plan.

According to the zones described in the Wetland Conservation Plan, 127 hectares of wetland areas identified for Wetland Environment Conservation Zone and these wetlands will be taken into wetland stewardship mechanism for the purpose of creating public outdoor recreation spaces and wetland parks for the area.

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Landscape Plan

Wetland Stewardship means,

“Long-term conservation of ecosystems in wetlands using purchasing, donations, conservation conciliation ”(this can provide direct eco-ecological, social and economic benefits).”

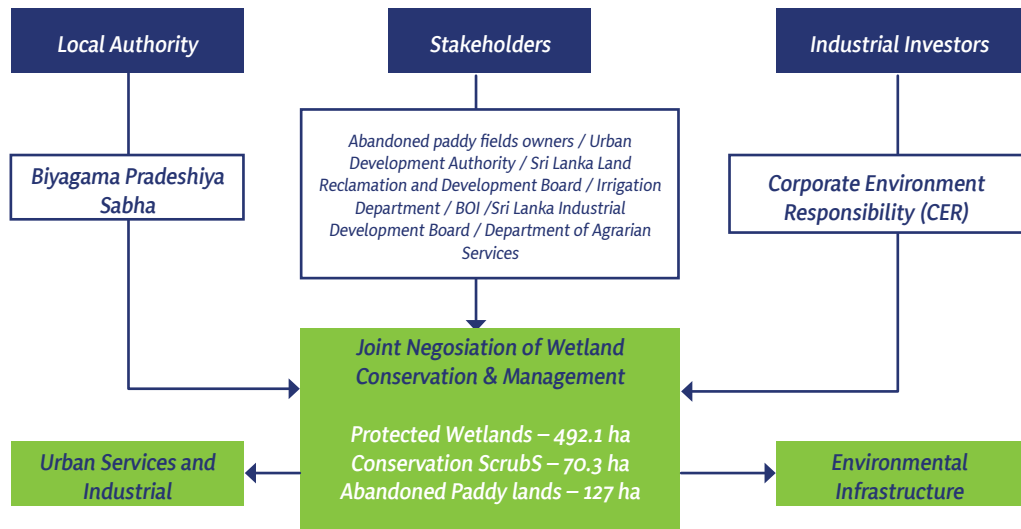
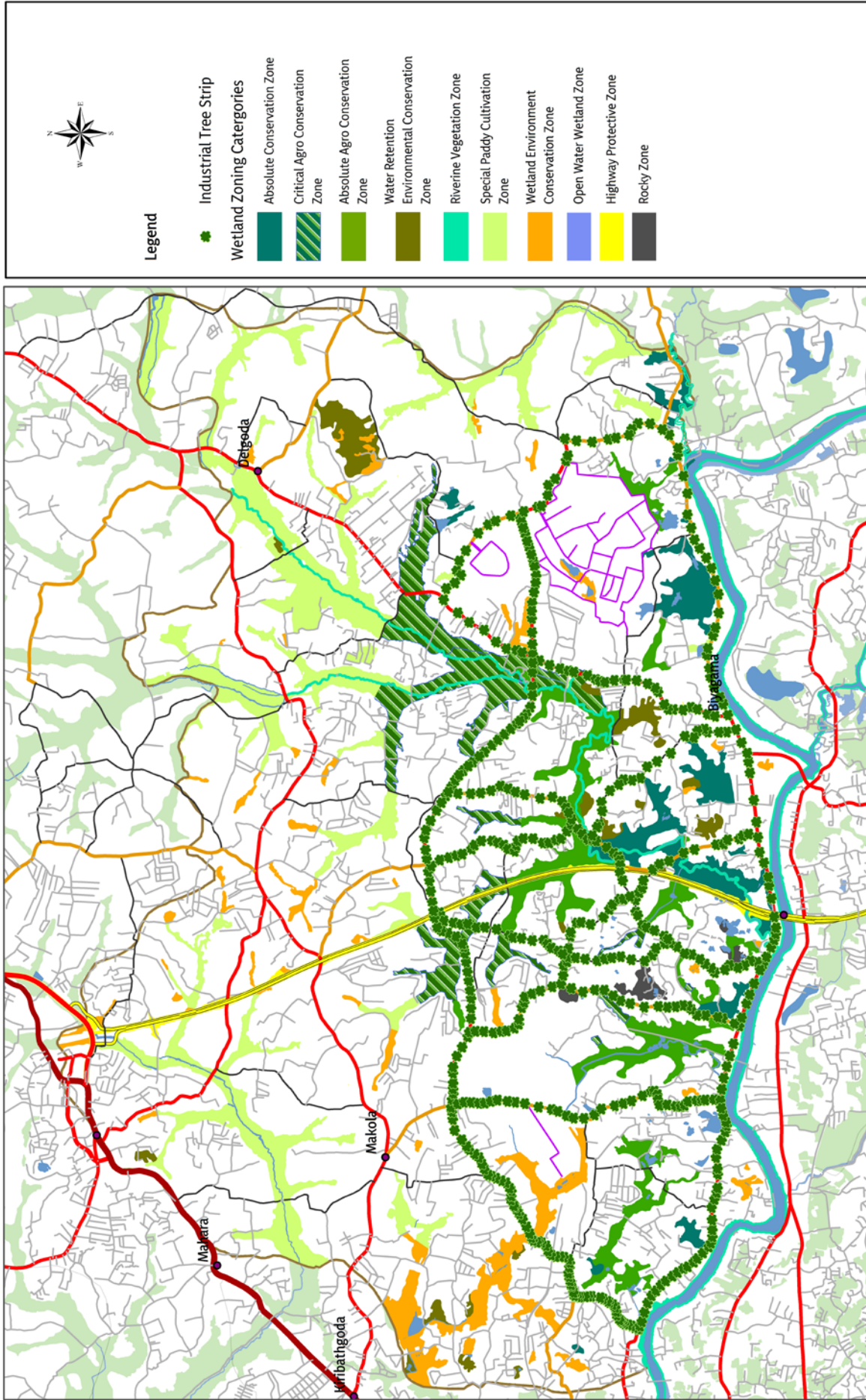


Figure 6.11 : Responsible Implementation Mechanism of the Wetland Stewardship
 Source : Gamapaha District Planning Team, 2017

Industrial investors who willing to invest in Biyagama and industrial employers who already established in the area are committed to investing in the wetland stewardship for 127 hectares of wetlands with co-operate environmental responsibilities. Under this strategy, industrial enterprises are involving with the institutional contribution to achieve this “Tranquilized Industrial City” vision.

Wetlands that connecting with proposed Central Investment Corridor will be promote as wetland parks which enhance the public outdoor recreation and that will indirectly minimize the unauthorized wetland fillings. Siyambalape wetland park, Yatihena tank & surrounding area development are the examples for these wetland park developments. As well as, small wetland parks, linear parks will be developing in High Dense Urban Service Zone for the purpose of integrating wetland based industrial environment with the residential development. Landscape plan with these wetland parks development will be guide to the future vision of “Tranquilized Industrial City” and the responsible implementation mechanism of the wetland stewardship displaying from the figure 6.11.



Map 6.13 : Landscape Plan

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Environmental Sustainable Strategies

Landscape Plan

Disaster Risk Reduction Plan

Local industrial collectors' development strategy under the proposed industrial economic plan expected to develop internal road network of the industrial promotional area. These road developments will be integrating the strategic project of tree strips development which is under the sustainable environment strategies. This will provide an opportunity for relief of environmental problems, such as air pollution, noise pollution and urban heat resulting from industrial development and this tree strips development will add a landscape value to the area. It is proposed to provide landscaping and service line maintenance area for road corridors and 4.75-meter-wide corridor for first & second priority road corridors, 2.5-meter-wide corridor for third priority roads and 2.25m wide corridor for fourth priority roads. The following map 6.13 displays the proposed landscape plan of the area.

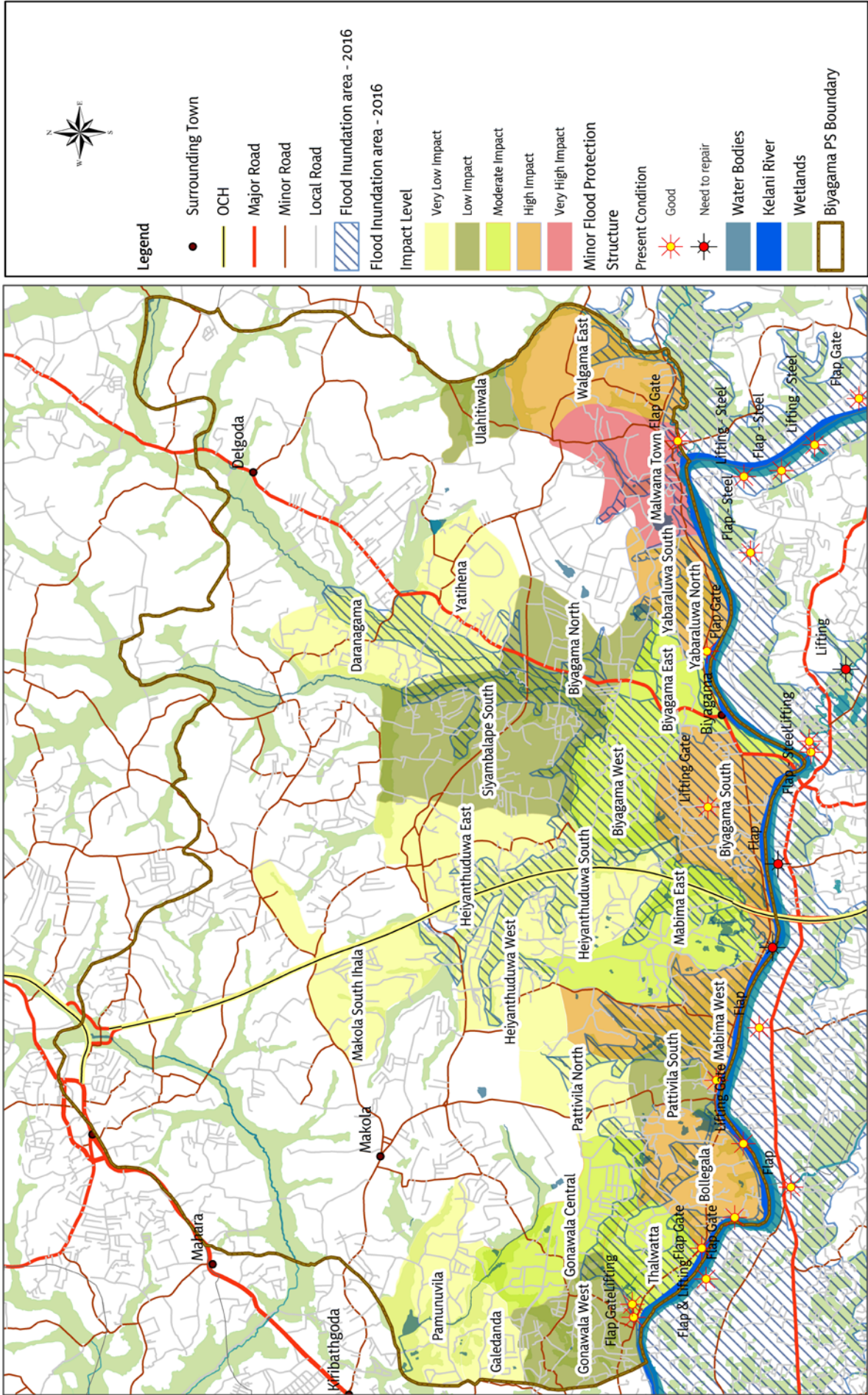
6.5.3. Disaster Risk Reduction Plan

The socio-economic impact of the Kelani river flood can be identified as the key issue under the planning need of the Biyagama development plan. This has been proved with rational base in the discussions of key planning issues related to the economic loss of local and national level. The livelihood of the people also disturbed and Malwana, Yabaraluwa, Mabima, Pattiwila & Biyagama South GN divisions highly affected due to the floods. This context leads the urgent need of actions to Disaster Risk Reduction for the Biyagama PS area.

Disaster Risk Reduction Plan is indirectly linked to the proposed environmental conservation plan under the sustainable environmental strategies. In here, the sensitive wetland network will be managing through the identification of critical wetlands that retain the flood water in high capacity. The reservations of the Kelani river and connected tributaries, canals will strengthen the legal framework for unauthorized constructions as well as the mitigation of the flood impact.

As the physical development interventions in local level aspect, Malwana Sambawela canal which is frequently affected by the floods has been identified to restore and conserve the associated wetland system. This restorative work is based on the study in a sequence of flood events and that will cause to identify five major impact zones by using flood affected GN divisions as per the following Map 6.4.

Under that categorization, the very high flood impact zone was the Malawana GN division. In order to minimize the negative environmental impacts, the current commercial and residential development pressure and the promotion of existing development potentials also considered. The need of restoration of the minor flood protection structures due to damage from the 2016 flood event has also been identified under the Disaster Risk Reduction Plan.



Flood Impact Zones & Disaster Risk Reduction Plan - Biyagama PS Area
 Source : Disaster Management Center/ Gampaha District Planning Team

Urban Development Authority
 December 2018

Western Province Division

Biyagama Development Plan (2019-2030)

Prepared by : Gampaha District Office

Map 6.14: Flood Impact Zones and DRR Plan

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Environmental
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Public Outdoor
Recreational Space Plan

6.5.4 Public Outdoor Recreational Space Plan

According to accepted standards of the Urban Development Authority, 1.0 hectare of open space should be provided for 1000 people. The current recorded population is 192,022 and the population projections in the Biyagama Development Plan, it is expected to reach approximately 248,000 by the year 2030. With this fact, Biyagama PS area need 247 ha of Public Outdoor & Recreation Spaces for cater to the total expected population in the future.

6.5.4.1 Details of Public Outdoor & Recreation Spaces Biyagama PS Area

At present, 11.7 ha of total public outdoor & recreation spaces are located in the Biyagama PS area. These public outdoor & recreation spaces are listed in following table 6.14 and the Annexure 36 with the categorization standards followed by Urban Development Authority.

No	Type of Park	Extent (ha)
1.	Pocket Parks (EPP)	1.2
2.	Mini Park (EMP)	4.0
3.	Local Parks (ELP)	5.5
4.	Linear Park (ELiP)	1.0
	Total	11.7

Table 6.14 : Existing Public Outdoor & Recreation Spaces - 2018 (Biyagama PS Area)
Source : Landscape & Environment Division - Urban Development Authority, 2017

The analysis of the public outdoor & recreation spaces for future requirement has been indicated through the annexure 37.

No	Type of Park	Extent (ha)
1.	Pocket Parks (EPP)	1.1
2.	Mini Park (EMP)	1.4
3.	Linear Park (ELiP)	215.9
	Total	218.4
4.	Existing Public Outdoor Recreation Space	11.7
	Total	230.1

Table 6.14 : Proposed Public Outdoor Recreation Space Plan for Biyagama PS area - 2019 - 2030
Source : Landscape & Environment Division - Urban Development Authority, 2017

In addition, the Public Outdoor Recreation Space Plan also incorporates the following suggestions:

1. *Reconstruction of existing parks and play grounds.*

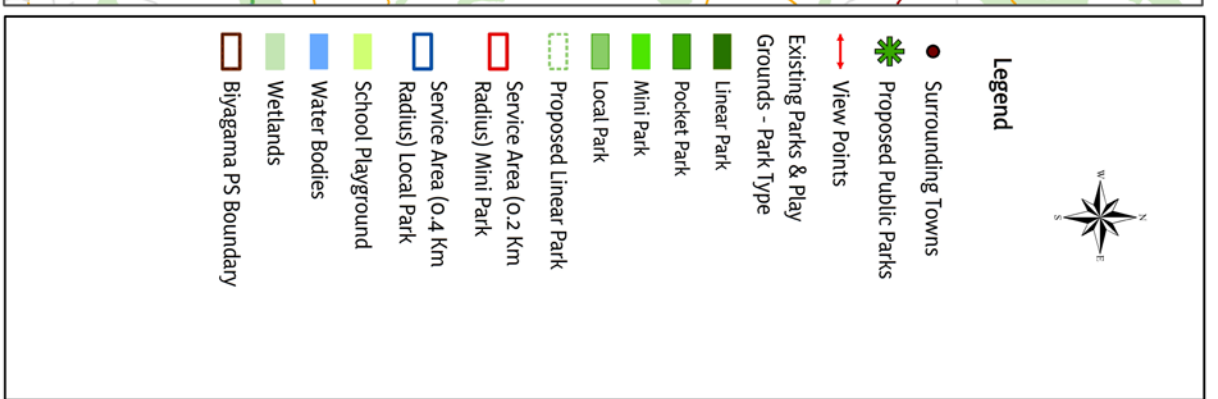
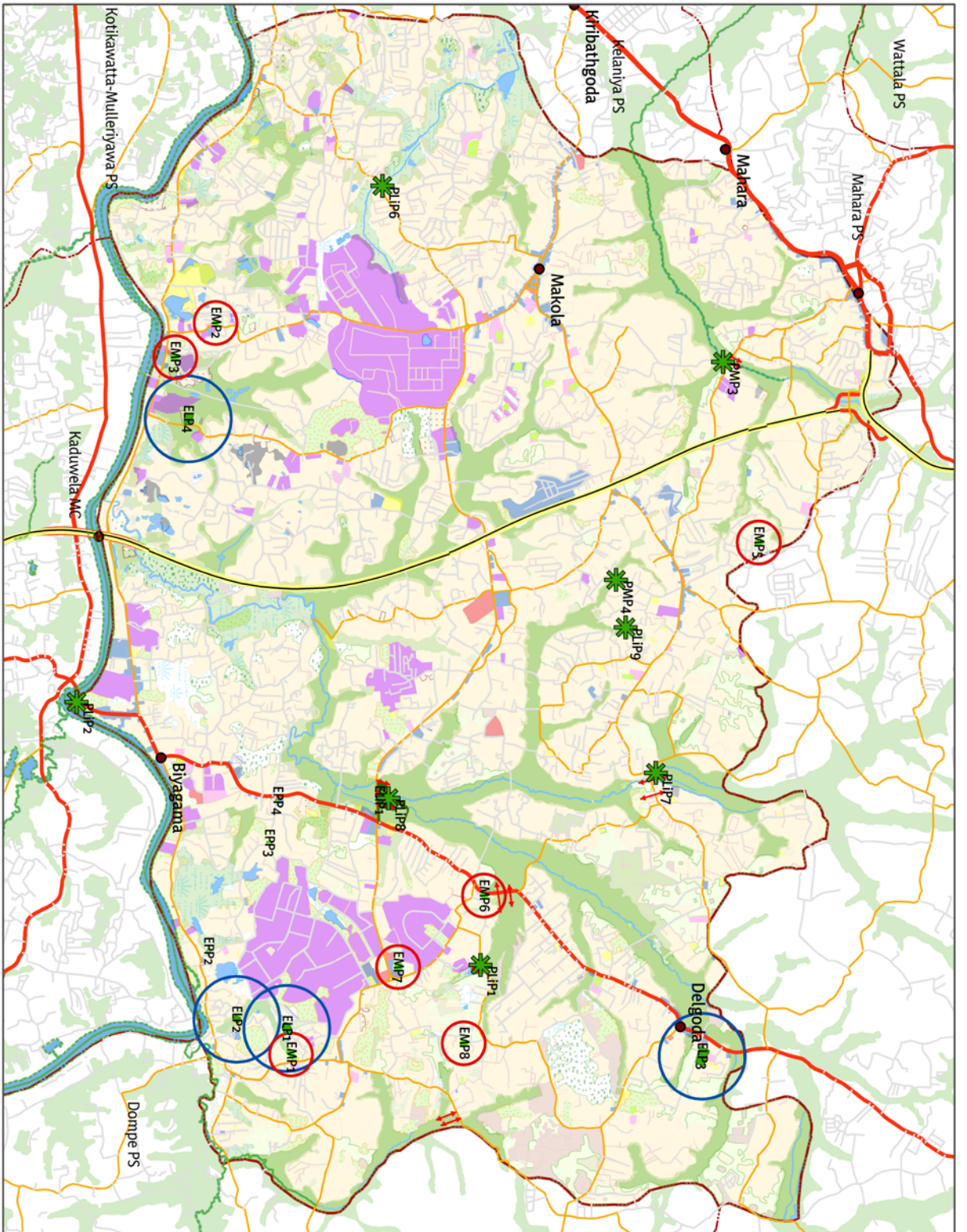
The existing parks and gardens should be developed according to a proper landscape plan under the guidance of the qualified persons. The 10% land from the land subdivisions should be developed as Pocket Park. Annexure 37 indicated the details of 10% land from the subdivisions

2. *Developing the Linear park concept.*

The Kelani River and the canal reservations should be developed as Linear park concept. Under that it is expected to minimize the flood impact of the Kelani River, improve the public outdoor facilities for people and minimize unauthorized constructions in the river and canals reservations.

3. *Flood prevention, retention and paddy cultivation*

Considering the Kelani River flood impact, it is necessary to protect the existing paddy lands & abandoned paddy lands for flood prevention and retention in the area. The development activities should be structured in accordance with the relevant laws, regulations and guidelines with regard to the recommendations of the relevant institutions.



Public Open Spaces & Recreational Spaces - Biyagama Pradeshiya Sabha Area

Source :Environment & Landscape Division / Gampaha District Planning Team



Urban Development Authority
December 2018

6.6. Implementation Strategies

6.6.1 Strategic Projects & Other Projects

As the future vision of the Biyagama "The Tranquilized Industrial City" under the Biyagama Urban Development plan, it is expected to integrate physical, social, environmental and economic aspects all together by implementing the identified strategic projects on the real ground. In that, all the strategic projects have been categorizing under four sections to identify the priority levels of each projects and Annexure 34 indicate that mechanism.

First Priority Projects

1. *Central Investment Corridor Development Project*
 - *Develop Gonawala - Sapugaskanda Road with four lanes*
 - *Develop Karabugas Junction - Yatihena Road with four lanes*
2. *Main Industrial Nodal Development in Central Investment Corridor*
 - *Nagahamula Junction Industrial Nodal Development*
 - *Karabugas Junction Industrial Nodal Development*
3. *Major Local Industrial Collector Development Project*
 - *Develop Biyagama - Colombo Road with four lanes*
 - *Develop Malwana - Dompe Road with four lanes*
 - *Develop Mabima Road with four lanes*
4. *Plug & Play Industrial Parks Development Project*
 - *Develop Sapugaskanda Plug & Play Industrial Park - I*
 - *Develop Sapugaskanda Plug & Play Industrial Park - II*
5. *Malawana Fabric & Commercial Riverfront Corridor Development Project*
6. *Malawana Sambawela Canal Restoration Project & Riverfront Park Development Project*
7. *Siyambalape Wetland Park Development Project*
8. *Mawaramandiya Linear Park Development Project*
9. *Yatihena Tank & Surroundings Park Development Project*
10. *Biyagama Technological Waste Water Treatment Plant Project*
11. *Industrial Oriented Smart Business Centre Development Project*
12. *Delgoda Town Centre Development Project*
13. *Mawaramandiya Town Centre Development Project*
14. *Makola Town Centre Development Project*

06 Chapter The Plan

Implementation Strategies

Details of Public
Outdoor and Recreation
Spaces Biyagama PS Area

Second Priority Projects

1. *Sub Local Industrial Collector Development Project*
 - *Develop Pattiwila - Makola Road with four lanes*
 - *Develop Thai Temple Road with two lanes*
 - *Develop Dimo Road with four lanes*
 - *Develop Mankada Road with four lanes*
 - *Develop Mawaramandiya - Makola Road with four lanes*
 - *Develop Jayanthi Mawatha with two lanes*
 - *Develop Kanduboda Tank Road with two lanes*
2. *Develop Plug & Play Industrial Park in Dimo Industrial Cluster Area*
3. *Tree strips development along the local industrial collector roads*
4. *Establish a Solid Waste Sorting Centre*
5. *Develop the Mabima Water Treatment Plant*
6. *Sapugaskanda Waste Water Treatment Project*
7. *Kadawatha Public Market Development Project*

Third Priority Projects

1. *Biyagama - Kosgama Railway Project*
2. *Siyambalape Hospital Development Project*
3. *Siyambalape Skill Up-gradation Centre Development Project*
4. *Biyagama Hostel Facilities Development Project*
5. *Develop Gonawala - Koholvila Road with two lanes*
6. *Makola Middle Income Housing Project*

Project Brief for First Priority Projects


Project : 01

Name of the Project	Central Investment Corridor Development Project		
Division of the Project	Improvement of Infrastructure facilities for Industrial Promotion		
Project Description			
Province	District	DS Division	GN Division
Western	Gampaha	Biyagama	Walgama West & East, Biyagama North, Siyambalape South, Hei-yanthuduwa North, West & East, Sapugaskanda, Gonawala West, East & Central
Location			
Current Status / Land Use in the Surrounding	<p>Industries and related commercial activities are agglomerated in & around Samurधि Mawatha and Gonawala area with mixed residential development.</p>		
Land Ownership	Road Development Authority & Private Owners		

<i>Expected Status</i>						
Type of Project	New		Improvement		Extension	Land Improvement only
			X			
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others
					X	
Rational of the Project	<p>Samurdhi Mawatha which built by the Board of Investment & Biyagama - Colombo Main Road provide more potential for industrial promotion within Biyagama area. The distance to the port is a considerable factor of attraction of industrial investments. However, Samurdhi Mawatha which getting access to the Colombo harbour through Makola, Kiribathgoda via the Colombo - Kandy main road is facing a 10-15 km/h heavy traffic congestion every day. Also, vehicles below 3.5m are not allowed to enter from the Peliyagoda 4th mile post in the Colombo - Biyagama Road. Therefore, they have to use the Waragoda Road to enter the Colombo - Kandy Road & this situation leads to discourage the freight transportation. According to the industrial economic plan, it is proposed to connect Samurdhi Mawatha, Gonawala - Sapugaskanda road each other and develop as a Central Investment Corridor with the basic infrastructure facilities. Accordingly, this road develops as a priority lane via Nagahamula junction and connect to the Biyagama Colombo road. According to the Kelani-ya Development Plan Koholvila - Gonawala road via proposed Kelani temple access road and Creasant road connected to each other. And It will give the access to Colombo harbour via proposed elevated port access highway.</p>					
Project Objectives	<ul style="list-style-type: none"> To provide basic facility corridor to enhance the industrial economy. To improve the efficiency of freight transportation through connecting to the harbour within a short time. 					
Imaginary Situation						
Project Period	Short term (1> Year)		Medium term (1-3 Years)		X	Long term (3< Years)
Project Related Zone	<p>Moderate Dense Industrial Zone I and II, Moderate Dense Local Business Zone, Low Dense Special Development Zone</p>					

Project : 02

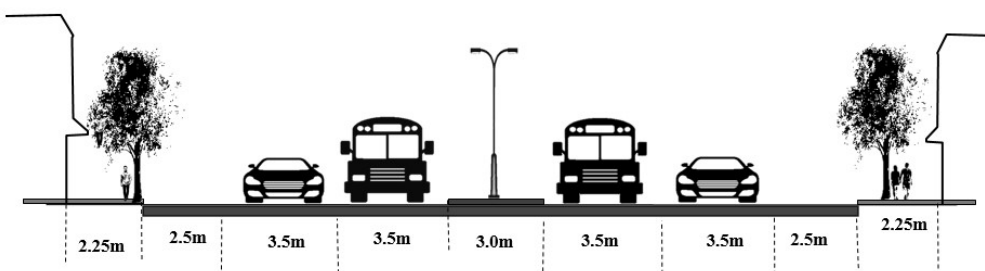
Project	Main Industrial Nodal Development in Central Investment Corridor					
Division of the Project	Improvement of Infrastructure facilities for Industrial Promotion					
Project Description						
Province	District	DS Division	GN Division			
Western	Gampaha	Biyagama	Gonawala West & Walgama West			
Location						
<p>Nodal Point 1- Nagahamula Junction Existing Situation</p>		<p>Nodal Point 2- Karubugas Junction- Existing Situation</p>				
Current Status / Land use of the Surrounding	Commercial uses are developed in the surrounding area of Nagahamula and Karubugas junction.					
Land Ownership	Road Development Authority and Private Owners					
Expected Status						
Type of Project	New	Improvement	Extension	Land Improvement only		
		X				
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others
					X	

<p>Rational of the Project</p>	<p>As per the future vision of Biyagama Development Plan, “Transquilized Industrial City”, it is proposed to promote industrial based economy within Biyagama Urban Area. In order to achieve this, it is expected to develop the Central Investment Corridor which will be constructed by connecting Sapugaskanda-Gonawala Road and Samurdhi Mawatha as agglomerated industrial related ser-vices into a main corridor.</p> <p>Nagahamulla Junction is providing the access to the Moderate Dense Industrial Zone - II from the Colombo side & Karabugas Junction giving access for Mod-erate Dense Industrial Zone – I from the internal areas of counrty side like Dompe, Dekatana.</p>				
<p>Project Objectives</p>	<ul style="list-style-type: none"> • Provision of efficient transportation for export and import goods of the manu-facturing plants as well as the employees from the internal areas 				
<p>Imaginary Situation</p>					
<p>Project Period</p>	<p>Short term (1> Year)</p>	<p>Medium term (1-3 Years)</p>	<p>X</p>	<p>Long term (3< Years)</p>	
<p>Project Related Zone</p>	<p>Moderate Dense Local Business Zone and Low Dense Special Development Zone</p>				

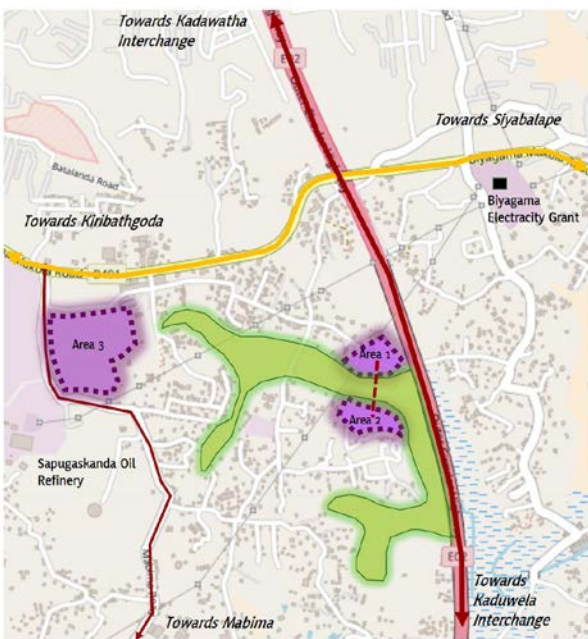
Project : 03


Name of the Project	Major Local Industrial Collector Development Project		
Division of the Project	Improvement of Infrastructure Facilities for Industrial Promotion		
Project Description			
Province	District	DS Division	GN Division
Western	Gampaha	Biyagama	Walgama West & East, Biyagama North, Siyambalape South, Heiyanthuduwa North, West & East, Sapugaskanda, Gonawala West, East & Central
Location			
Current Status / Land use of the Surrounding -	Along both sides of these roads represent the commercial, industrial and residential mixed land use pattern.		
Land Ownership	Road Development Authority and Private Sector		

Expected Status						
Type of Project	New		Improvement	Extension		Land Improvement only
			X			
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others
					X	


<p>Rational of the Project</p>	<p>As per the future vision of Biyagama Development Plan, “Transquilized Industrial City”, it is proposed to promote industrial based economy within Biyagama Urban Area. Under this, it is proposed to open up 13% from the total land area through collector road pattern for industrial investments. Improvement of the internal road pattern giving the access for proposed moderate dense industrial zones and indirectly this project supports to the industrial investments by opening the suitable lands for industrial promotions.</p> <p>The Main Port Access Road and the Biyagama - Colombo Road which is a part of as the New Kandy Road and the Mabima Road that gives access to the inner lands are expected to develop with 4 lanes. Further it is proposed to widen Malwana - Dompe Road up to 4 lanes which provide access to Malwana where industrial related business activities as well as homestead industries are expanded.</p>				
<p>Project Objectives</p>	<ul style="list-style-type: none"> • Open up internal lands for industrial investment opportunities in the area. • Promote industrial related commercial uses through improving the main access roads associated with the Central Investment Corridor. 				
<p>Imaginary Situation</p>					
<p>Project Period</p>	<p>Short term (1> Year)</p>	<p>Medium term (1-3 Years)</p>	<p>X</p>	<p>Long term (3< Years)</p>	
<p>Project Related Zone</p>	<p>Moderate Dense Industrial Zone I and II, Moderate Dense Local Business Zone, Low Dense Special Development Zone.</p>				

Project : 04

Name of the Project	Development of Sapugaskanda Industrial Park - I & II		
Division of the Project	Improving the Infrastructure for Industrial Promotion		
Project Description			
Province	District	DS Division	GN Division
Western	Gampaha	Biyagama	Sapugaskanda and Heiyantuduwa West
Location			
		<p>Current Status / Land use of the Surrounding</p> <p>The Area number 3 is located very close to the Sapugaskanda Oil Refinery Centre and Lindel Industrial Estate & the access is provided through the Mabima Road. Sri Seelarathana Nahimi Mawatha provides access to the area 1 & 2 and the proposed land is located very close to the Central Investment Corridor. Industry related storage facilities, Warehouse facilities as well as commercial uses are also located near the proposed land.</p>	
Land Ownership	Private		
Land Extent	Area 01 - 7.5 Acre Area 02 - 5.5 Acre Area 03 - 30.3 Acre		

<i>Expected Status</i>						
<i>Type of Project</i>	<i>New</i>		<i>Improvement</i>		<i>Extension</i>	
					X	
<i>Project Category</i>	<i>Conservation (Environment or Archaeological)</i>	<i>Commercial</i>	<i>Landscape & Recreational Activities</i>	<i>Relocation</i>	<i>Infrastructure Development</i>	<i>Others</i>
						X
<i>Rational of the Project</i>	As per the future vision of Biyagama Development Plan, "Transquilized Industrial City", it is proposed to promote industrial based economy with sustainable environment principles. Through this process the wetlands which are distributed throughout the area will be harmonizing to the brownfield development by minimizing the negative impacts to create sustainable industrial environment. Also, this project will be guided model industrial park for Western region with the development of economic and environment values.					
<i>Project Objectives</i>	<ul style="list-style-type: none"> Regularisation of Industrial Development under Sustainable Environmental Principles Minimizing the negative impacts on sensitive wetlands 					
<i>Imaginary Situation</i>						
<i>Project Period</i>	Short term (1> Year)	X	Medium term (1-3 Years)		Long term	
<i>Project Related Zone</i>	Moderate Dense Industrial Zone II					


Project : 05

Name of the Project	Malwana Fabric & Commercial Riverfront Corridor Development Project					
Division of the Project	Promotion of small-scale industries related to large scale industries					
Project Description විස්තරය						
Province	District	DS Division	GN Division			
Western	Gampaha	Biyagama	Malwana			
Location						
						
Current Status / Land use of the Surrounding	There are some unauthorized commercial and business activities developed along the Right Bank of Kelani River reservation. Most of the businesses are fabric related industries which are inter connected with the Biyagama EPZ.					
Land Ownership	Reservations of Irrigation Department and Private Owners					
Expected Status						
Type of Project	New	Improvement	Extension	Land Improvement only		
		X				
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others
						X
Rational of the Project	<p>Malwana town is a sub town located in the Biyagama PS area and closer to the Biyagama EPZ. Fabric related sub-industries and commercial activities are spread along the Biyagama – Dompe Road. Under the current development pressure, these commercial uses are also being expanded, covering the Kelani River Reservation and always this commercial strip affected by Kelani River seasonal flood events. Accordingly, the project will be introduced on the basis of the local buissness promotion & development with proper regulatory framework by making the advantage of aesthetic value of the Kelani River.</p> <p>Further it is proposed the Recreational Park Development Project along the canal bank of Malwana Sambawela in order to promote the land use of the area as a Moderate Dense Local Business Zone in the future as well as base on sustainable economy and environmental values.</p>					

Project Objectives	<ul style="list-style-type: none"> • Combine the Kelani River Reservation with its natural landscape to economic value generations. • Reduce the impact of flood situations to the local economy and people. 				
Imaginary Situation					
Project Period	Short term (1> Year)	X	Medium term (1-3 Years)	Long term (3 Years)	
Project Related Zone	Moderate Dense Local Business Zone				


Project : 06

Name of the Project		Malawana Sambawela Canal Restoration Project & Riverfront Park Development Project	
Division of the Project		Public Open Space & Environmental Management	
Project Details			
Province	District	DS Division	GN Division
Western	Gampaha	Biyagama	Malwana
Location			
<p>The map displays the Malawana Sambawela Canal area. Key features include: <ul style="list-style-type: none"> Industrial Establishments (Waste dumping site): Located north of the canal, near the intersection with the Dompe main road. Residential Expansion: Residential areas are shown along the canal and extending towards the Kelani River. Commercial & Urban Mix Expansion: Commercial and mixed-use areas are indicated near the canal's confluence with the Kelani River. Proposed Projects: <ul style="list-style-type: none"> River drive along the Kelani River. Non-structural recreation park. Rakshapana rock plain area as a Heritage site. Bathing place Improvement. </p>			
Current Status / Land use of the Surrounding	<p>Biyagama EPZ and its solid waste dumping area located in north of Sambawela Canal. Commercial and mix residential environment can be seen in that area. The Sambawela Canal flows into the Kelani river through an abandoned paddy field and Dompe main road. Due to recent floods, the canal is eroded. Also, Commercial uses are widely used as unauthorized constructions on both sides of the canal reservation.</p>		
Land Ownership	Canal Reservation and Private		

<i>Expected Status</i>						
<i>Type of Project</i>	<i>New</i>	<i>Improvement</i>		<i>Extension</i>	<i>Land Improvement only</i>	
	X					
<i>Project Category</i>	<i>Conservation (Environment or Archaeological)</i>	<i>Commercial</i>	<i>Landscape & Recreational Activities</i>	<i>Relocation</i>	<i>Infrastructure Development</i>	<i>Other</i>
			X			
<i>Rational of the Project</i>	<p><i>Biyagama Development Plan identified Malwana town as sub town center within Biyagama PS area which is having current high development pressure and also as the highest flood affected GN division. Accordingly, it is expected to protect river and canal reservation with a proper environmental management, while regulating the pressure of local economy and mixed residential development based on indirect economic benefits from the Biyagama EPZ. Further it is proposed to develop Malwana - Sambawela Canal and its surrounding as a river front recreational park through sustainable economic and environmental considerations. Also, this project proposed to promote this area as a Moderate Dense Local Business Zone in the future.</i></p>					
<i>Project Objectives</i>	<ul style="list-style-type: none"> • <i>Combine the Kelani River Reservation with its natural landscape to economic value generations.</i> • <i>Reduce the impact of flood situations to the local economy and people.</i> 					
<i>Imaginary Situation</i>						
<i>Project Period</i>	<i>Short term (1> Year)</i>	X	<i>Medium term (1-3 Years)</i>		<i>Long term (3 Years)</i>	
<i>Project Related Zone</i>	<i>Moderate Dense Local Business Zone</i>					


Project : 07

Name of the Project	Siyambalape Wetland Park Development Project					
Division of the Project	Public Open Spaces & Environmental Management					
Project Description						
Province	District	DS Division	GN Division			
Western	Gampaha	Biyagama	Biyagama North & Siyambalape South			
Location						
Current Status / Land use Surroundings	Commercial activities are concentrated at the main junction linking Samurधि Mawatha which is the main access to the Biyagama EPZ & New Kandy Road. In addition, Technical Training Institutions, warehouses and logistic facilities are located in the surrounding area. Also, the Siyambalape Walking Path and playgrounds are available public spaces of this project area.					
Land Ownership	Canal Reservation and Private Owners					
Expected Status						
Type of Project	New	Improvement	Extension	Land Improvement only		
	X					
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others
			X			

<p>Rational of the Project</p>	<p>In order to balance the sensitive wetland ecosystem and industrial development, it is proposed in the Biyagama Development Plan to promote wetland park development with sensitive wetland systems that are mostly exposed to the negative impact of development pressure. Due to the future expectation of agglomerating industrial and commercial uses for the Central Investment Corridor, this project has been proposed on the basis of protection of aesthetic and ecological importance of the Siyambalape paddy field and the Raggahawatta canal ecosystem.</p>				
<p>Project Objectives</p>	<ul style="list-style-type: none"> • To balance the Industrial development and wetland environmental values. • To create a resting place within the Central Investment Corridor. 				
<p>Imaginary Situation</p>					
<p>Project Period</p>	<p>Short term (1> Year)</p>	<p>X</p>	<p>Medium term (1-3 Years)</p>	<p>Long term (3 years)</p>	
<p>Project Related Zone</p>	<p>Moderate Dense Industrial Zone - I</p>				

Project : 08

Name of the Project	Mawaramandiya Linear Park Development Project					
Division of the Project	Public Open Spaces & Environmental Management					
Project Description						
Province	District	DS Division	GN Division			
Western	Gampaha	Biyagama	Mawaramandiya			
Location						
<p>The map shows the Mawaramandiya sub-town center. A red line indicates the proposed linear path along a canal, starting from Makola on the west and ending near Dikwela Road on the east. Key landmarks include the Mawaramandiya Multi-Purpose Building, Sudharshi Mawatha, and Priyankara Mawatha. A green shaded area represents wetlands with small ponds, and a yellow circle marks a proposed children's park. Roads shown include Biyagama Kadawa, Dikwela Road, and Makola-Udupila Road.</p>						
Current Status / Land use of the Surrounding	Most of the residential uses are spread over the area between Sudarshi Mawatha, Priyankara Mawatha and Dikwela Road of the Mawaramandiya sub town center. Multi purpose building of Biyagama Pradeshiya Sabha, Public Library & Pre - Childhood Development Centre are located closer to that area.					
Land Ownership	Canal Reservation and Private Land					
Expected Status						
Type of Project	New	Improvement	Extension	Land Improvement only		
	X					
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others
			X			

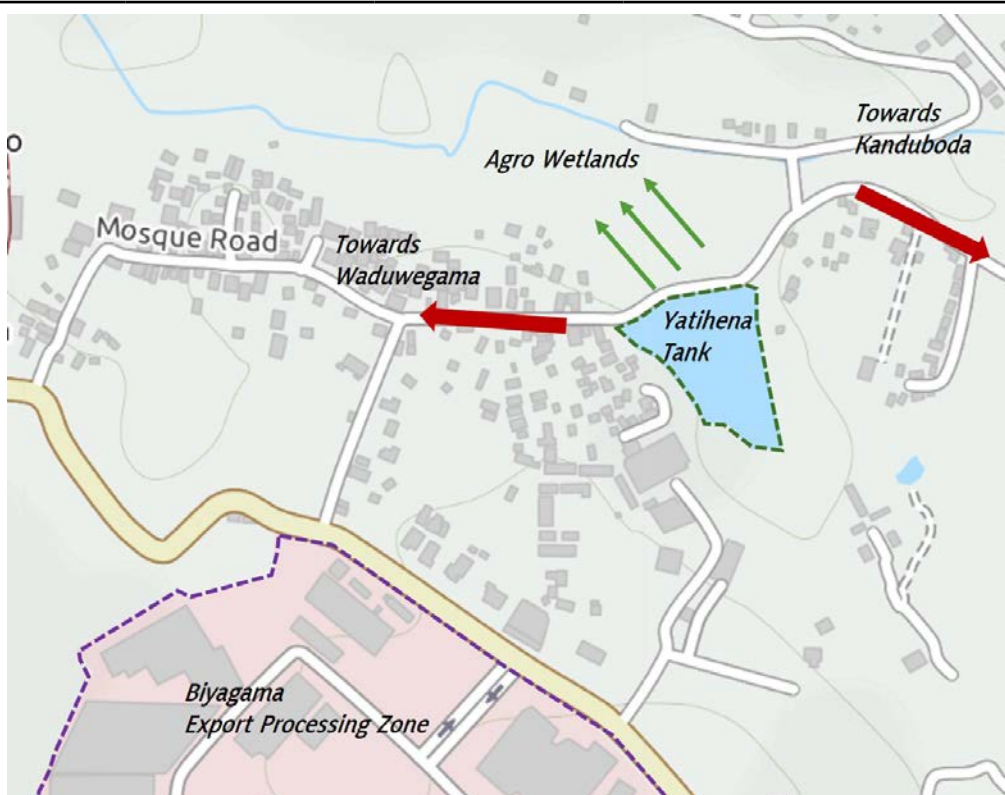
<p>Rational of the Project</p>	<p>Under the density zoning, it has been proposed a High Dense Urban Service Zone centralising Mawaramandiya Sub town center in the Biyagama Urban Development Plan. The project has been proposed to minimize the unauthorized filling of the abandoned paddy lands as well as to promote recreation and public spaces within this zone. This will also lead to attract the verticle developments with residential complexes and mix development for undeveloped lands in the area.</p>				
<p>Project Objectives</p>	<ul style="list-style-type: none"> • Establishment of a resting place in the High dense urban area • Promotion of mixed residential uses in the undeveloped lands. 				
	 <p>The top photograph shows an aerial view of a park with vibrant green grass and winding red paths. Numerous people are seen walking and playing on the paths. The bottom photograph shows a ground-level view of a red path winding through a lush green park with trees and bushes. Two people are walking along the path.</p>				
<p>Project Period</p>	<p>Short term (1> Year)</p>	<p>X</p>	<p>Medium term (1-3 Years)</p>	<p>Long term (3 Years)</p>	
<p>Project Related Zone</p>	<p>High Dense Urban Service Zone</p>				

Project : 09

Name of the Project	Yatihena Tank & Surroundings Park Development Project
Division of the Project	Public Open space & Environmental Management
Project Description	

Province	District	DS Division	GN Division
Western	Gampaha	Biyagama	Kanduboda West, Yatihena


Location



Current Status / Land use of the Surrounding	Located in close proximity to the Biyagama EPZ. Hostels for temporary employees, mixed residential and industrial land uses are commonly identified & well connected agro - wetland system also around this area
Land Ownership	Tank Reservation and Private Owners

Expected Status

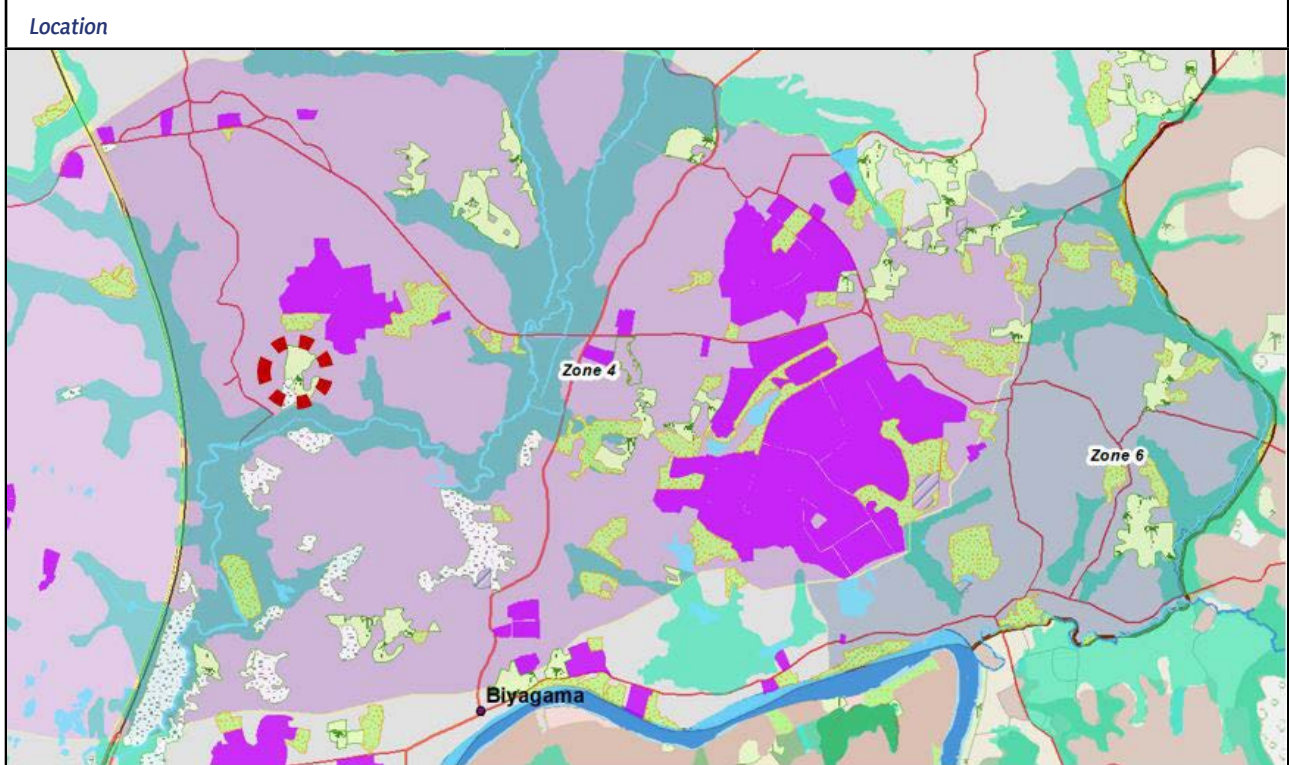
Type of Project	New	Improvement	Extension	Land Improvement only		
	X					
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others
			X			

<p>Rational of the Project</p>	<p>The Biyagama Urban Development Plan attempts to balance the wetland environment and industrial development through developing wetland systems as wetland parks, which are most exposed to negative impacts on development pressure. Under the Density Zoning, Moderate Dense Urban Service Zone and the Moderate Dense Industrial Zone I connected through Wawa Road or else Yatihena road. Accordingly, it is expected to develop the Yatihena tank and the surrounding environment as a recreational area. This project will also contribute to the flood control as well as agricultural activities while aesthetic and important ecological system will be protected in the face of emerging residential and industrial development.</p>				
<p>Project Objectives</p>	<ul style="list-style-type: none"> To balance the Industrial, mixed residential and wetland environmental protection 				
<p>Imaginary Situation</p>	 <p>The top photograph shows a wide view of a wetland park with a wooden walkway crossing a pond. The pond is filled with water lilies and surrounded by tall grasses and sunflowers. People are seen walking on the bridge. The bottom photograph shows a closer view of a wooden walkway next to a pond. A person is crouching on the walkway, possibly taking a photo or looking at something in the water. There are sunflowers and other plants in the foreground.</p>				
<p>Project Period</p>	<p>Short term (1> Year)</p>	<p>X</p>	<p>Medium term (1-3 Years)</p>	<p>Long term (3 Years)</p>	
<p>Project Related Zone</p>	<p>Moderate Dense Urban Service Zone</p>				

Project : 10

Name of the Project	Biyagama Technological Waste Water Treatment Plant Project
Division of the Project	Development of Infrastructure for promotion of industries
Project Description	

Province	District	DS Division	GN Division
Western	Gampaha	Biyagama	Siyambalape South




Current Status / Land use of the Surrounding	Multi- national manufacturing companies, Industrial related infrastructure facilities, Container yards, Commercial enterprises & residential developments are common landuses of the area. Biyagama EPZ, Dimo industrial cluster are the two main industrial clusters within this area & scrublands are identified as developable lands in this zone.		
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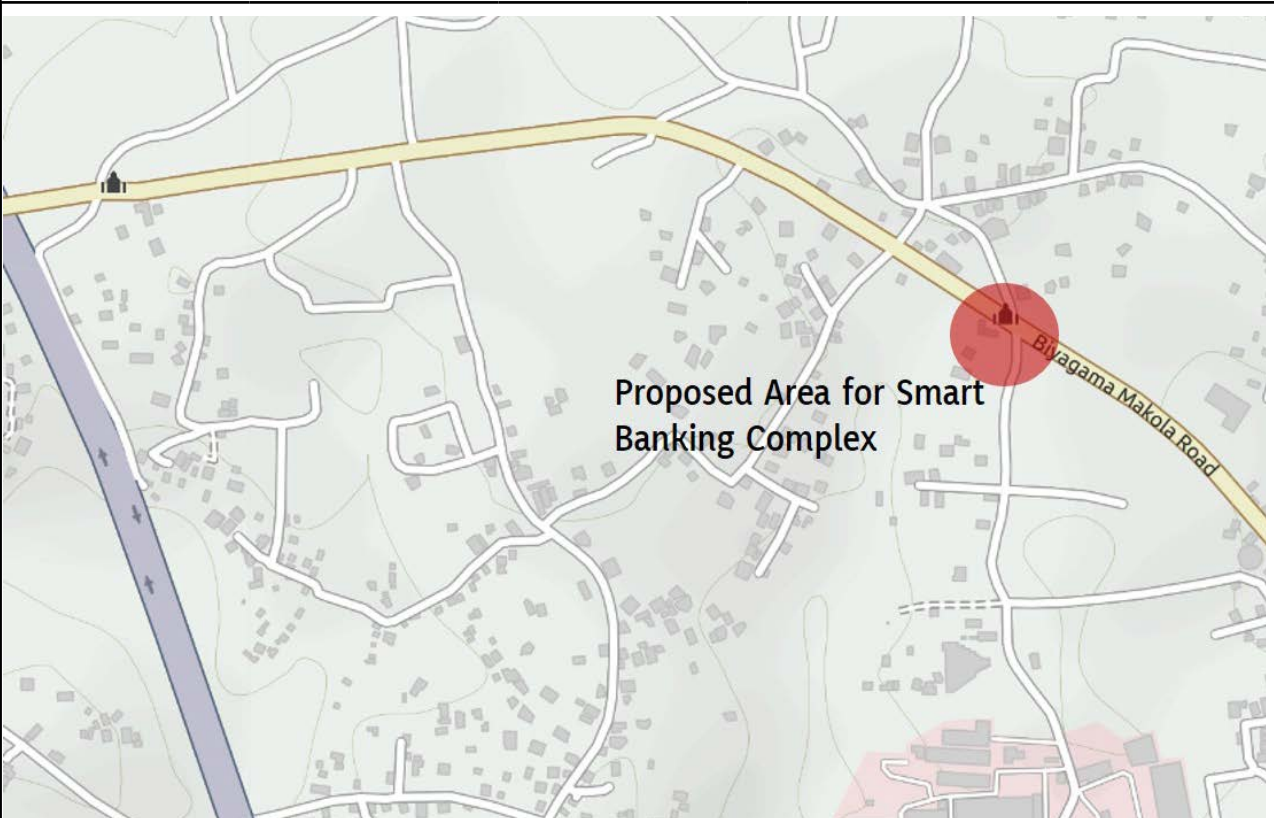
Land Ownership	Private	Land Extent	6.5 Acre
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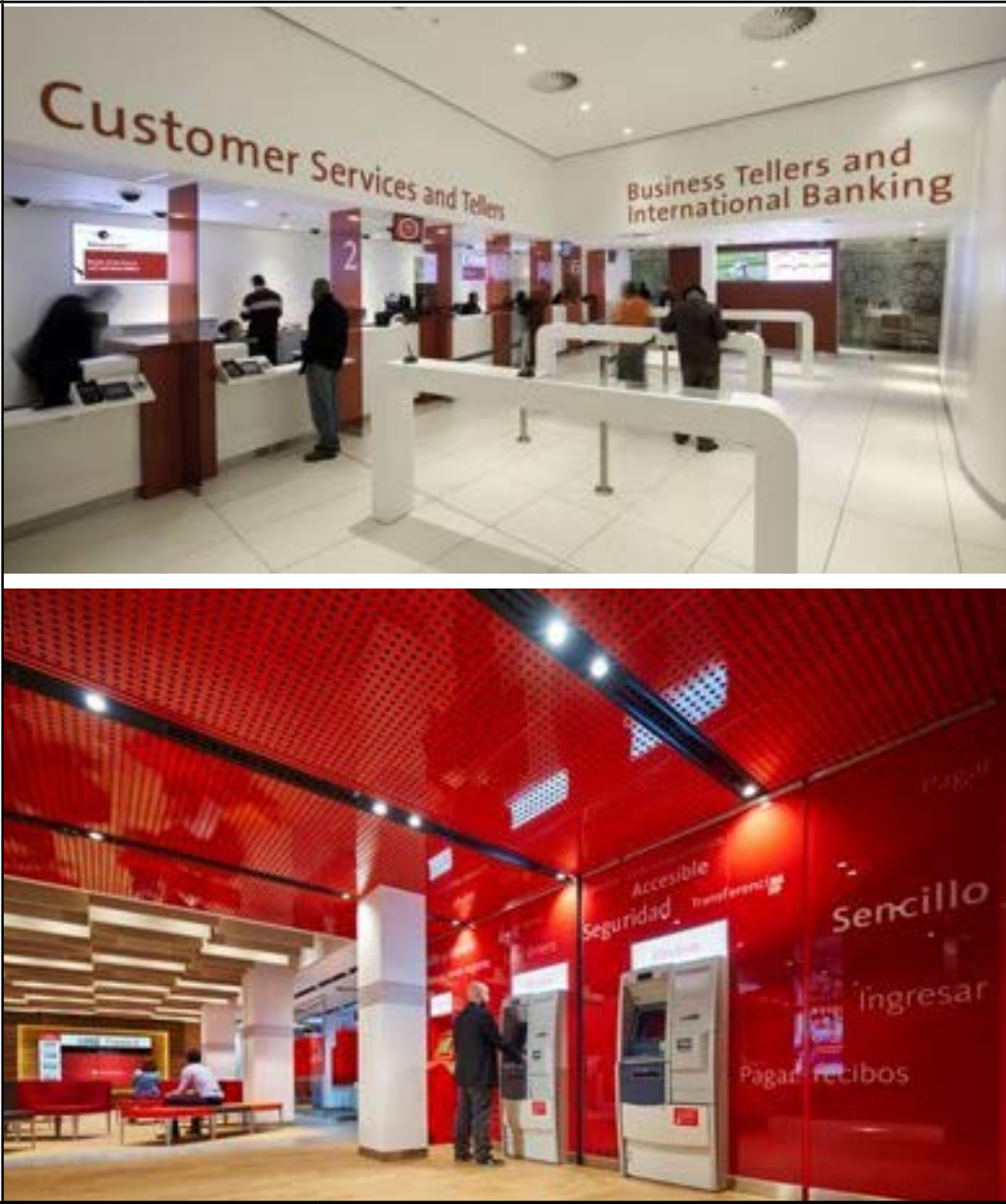
Expected Status

Type of Project	New	Improvement	Extension	Land Improvement only		
	X					
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others
					X	

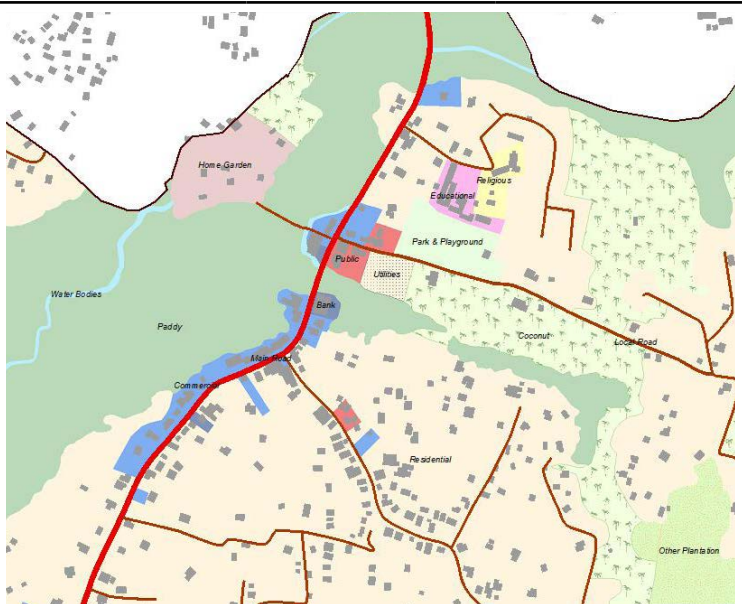
<p>Rational of the Project</p>	<p>Kelani River Right Bank Water Treatment Plant which is located in the Pattiwila area in Biyagama fulfil the drinking water requirement of the North Colombo area. The treated industrial waste water discharge into the Kelani river through the canals & waterways of the area and during the flood situations this situation led many issues related to the quality of water in Kelani river.</p> <p>The Biyagama Development Plan envisages further development under a sustainable eco principles by the vision of the Tranquilised Industrial City. Proposed Waste Water Treatment Project identified by the Biyagama Development Plan will focus to protect the water quality of the Kelani River which is the main drinking water source of Colombo. Also, according to the predicted waste water discharging calculations in industrial uses in promotional zones, it is higher in this zone in relation to other density zones.</p>				
<p>Project Objectives</p>	<ul style="list-style-type: none"> • Protection of the quality of drinking water of the people of North Colombo. • Promote industries under the sustainable environmental principles. 				
<p>Imaginary Situation</p>					
<p>Project Period</p>	<p>Short term (1> Year)</p>	<p>Medium term (1-3 Years)</p>	<p>X</p>	<p>Long term (3 Years)</p>	
<p>Project Related Zone</p>	<p>Moderate Dense Industrial Zone - I</p>				

Project : 11

Name of the Project	Industrial Oriented Smart Business Centre Development Project					
Division of the Project	Modern Infrastructure Development related to Industries					
Project Description						
Province	District	DS Division	GN Division			
Western	Gampaha	Biyagama	Heiyanthuduwa East			
Location						
						
Current Status / Land use of the Surrounding	Both sides of the Samurdhi Mawatha having industries & its related land uses as well as residential & commercial uses. Dima industrial cluster located close proximity to this proposed site & access getting from the Mahena Road.					
Land Ownership	Private					
Land Extent	0.4 Acre					
Expected Status						
Type of Project	New	Improvement		Extension		Land Improvement only
	X					
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others
					X	

<p>Rational of the Project</p>	<p>Biyagama Development Plan is expected to promote basic infrastructure required for the industrial development & direct Biyagama as Tranquilized Industrial City. All the financial & business sector related banks are not located in Delgoda, Makola and Mawaramandiya in the Biyagama sub town centers. Therefore, people have to fulfill those services from the banks of Kiribathgoda, Kaduwela and Kadawatha which are located outside the city limits. Proposed Smart Banking Centre targeting mainly the manufacturing industries and employment centers as well as Biyagama residential community. With this, it is expected to provides an efficient service through a combination of modern technology in order to fulfil all banking activities, financial institutions and commercial facilities at one place.</p>				
<p>Project Objectives</p>	<ul style="list-style-type: none"> • Creating a financing chain with efficient services for promoting industrial economy 				
<p>Imaginary Situation</p>					
<p>Project Period</p>	<p>Short term (1> Year)</p>	<p>Medium term (1-3 Years)</p>	<p>X</p>	<p>Long term (3 Years)</p>	
<p>Project Related Zone</p>	<p>Moderate Dense Industrial Zone - I</p>				

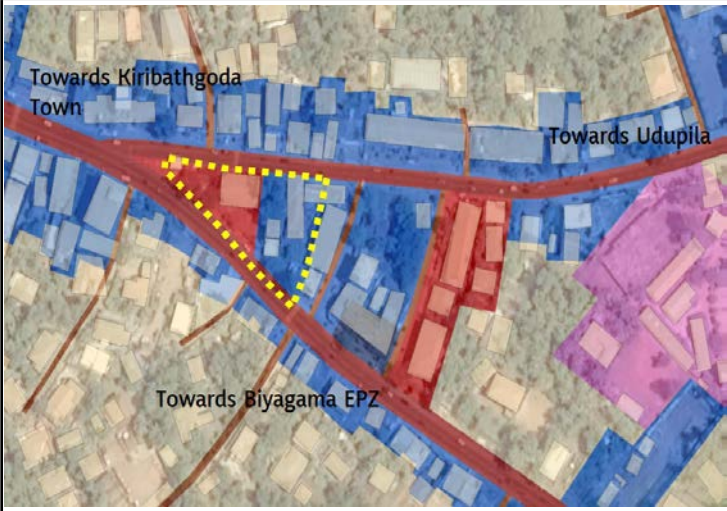
Project : 12

Name of the Project	Delgoda Town Centre Development Project					
Division of the Project	Nodal Development					
Project Description						
Province	District	DS Division	GN Division			
Western	Gampaha	Biyagama	Delgoda			
Location						
					Current Status / Land use of the Surrounding Delgoda Sub town center creates by the connection of Delgoda - Pugoda Road and New Kandy Road. At present several commercial and administrative requirements are concentrated around this junction.	
Land Ownership	The UDA made land acquisitions					
Expected Status						
Type of Project	New		Improvement	Extension		Land Improvement only
			X			
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others
						X
Rational of the Project	Delgoda town centre could be identified as the main urban centre in the Moderate Dense Urban Service Zone, according to the proposed density zoning of Biyagama Development Plan. Delgoda town center which is located in close proximity to Biyagama EPZ & with a rapid development pressure of the area lead the need of planned manner nodal development. This project aims to link the existing bus terminal and the commercial development with improved urban services. With this nodal development, it serves over 6,000 housing units and getting benefits about 24,000 residential community.					
Project Objectives	<ul style="list-style-type: none"> Expansion of commercial and urban services in the Moderate Dense Urban Service Zone. 					
Project Period	Short term (1> Year)		Medium term (1-3 Years)		X	Long term (3 Years)
Project Related Zone	Moderate Dense Urban Service Zone					

Project : 13

Name of the Project		Mawaramandiya Town Center Development Project					
Division of the Project		Nodal Development					
Project Description							
Province	District	DS Division		GN Division			
Western	Gampaha	Biyagama		Mawaramandiya			
Location							
					Current Status / Land use of the Surrounding Mankada Road from Kadawatha to Udupila & part of Delgoda - Pettah bus route from Kiribathgoda to Udupila links with Mawaramandiya town center. It is one of the sub town center within the Biyagama Urban Declared Area which provides commercial and urban services.		
Land Ownership	Private						
Expected Status							
Type of Project	New		Improvement		Extension		Land Improvement only
	X						
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others	
						X	
Rational of the Project	Mawaramandiya could be identified as the main urban centre in the proposed High Dense Urban Service Zone of the density zoning plan of Biyagama Development Plan. Due to the close proximity to the Kadawatha, Mawaramandiya obtained high development pressure under the Development Pressure Index. This identification has been proved by an area which gets access from Colombo - Kandy main road, Kadawatha interchange of the Outer Circular Highway which will be the gateway of proposed Central Expressway and proposed light rail project. Through these future transport-oriented developments will cause to attract commercial and residential uses to the area. That emphasized the need of proper management of these uses & providing all services and facilities to satisfy the requirements of the future generations. With this project, there will be nodal development which provides services for more than 7000 housing units and around 30,000 of people as beneficiaries.						
Project Objectives	<ul style="list-style-type: none"> Facilitate urban services in High Dense Urban Service Zone for residential & commuting population. 						
Project Period	Short term (1> Year)		Medium term (1-3 Years)		X	Long term	
Project Related Zone	High Dense Urban Service Zone						

Project : 14

Name of the Project	Makola Town Center Development Project						
Division of the Project	Nodal Development						
Project Description							
Province	District	DS Division			GN Division		
Western	Gampaha	Biyagama			Sapugaskanda		
Location							
				Current Status / Land use of the Surrounding Makola Junction creates the connection of the Makola road which starts from Colombo – Kandy Main Road at Kiribathgoda town up to the Biyagama EPZ and the road which runs up to Udupila Junction. It is developed with the commercial and administrative landuses.			
Land Ownership	Private						
Land Extent	0.80 Ha						
Expected Status							
Type of Project	New		Improvement		Extension		Land Improvement only
			X				
Project Category	Conservation (Environment or Archaeological)	Commercial	Landscape & Recreational Activities	Relocation	Infrastructure Development	Others	
						X	
Rational of the Project	Makola junction can be identified as the main urban service centre of the High Dense Commercial Zone according to the density-based zoning of Biyagama Development Plan. Due to the development pressure in Kiribathgoda area, presently a commercial corridor has been developed towards Makola from Kiribathgoda and it has become the main reason of developing Makola junction as a main urban centre centralised with banking facilities, commercial facilities such as super markets. Also, location of the main job creation centres such as Sapugaskanda Oil Refinery and Lindel Industrial Park in the surrounding area and located very closer to Colombo – Kandy main road and become Makola junction as the main urban service providing centre for resident and commuting population. Accordingly, this project has been proposed to develop a nodal development in Makola junction by using the advantage of commercial development on both sides of the road.						
Project Objectives	<ul style="list-style-type: none"> Expansion of urban service requirements of the High-Density Commercial Zone. 						
Project Period	Short term (1> Year)		Medium term (1-3 Years)		X	Long term (3 Year)	
Project Related Zone	Moderate Dense Commercial Zone						

6.6.2 Responsible Institutional Framework

<i>Plan/Sub Plans & Action projects</i>	<i>Relevant Institutions</i>	<i>Responsibilities of the Institute for Implementing the project</i>
A. Industrial Economic Plan		
1. Central Investment Corridor Development Project - Develop Gonawala-Sapugaskanda Road with four lanes - Develop Karabugas Junction- Yatihena Road with four lanes	Road Development Authority Urban Development Authority	Implimenting and Monitoring of projects
2. Main Industrial Nodal Development in Central Investment Corridor - Nagahamula Junction Industrial Nodal Development - Karabugas Junction Industrial Nodal Development	Road Development Authority Urban Development Authority	Implimenting and Monitoring of projects
3. Major Local Industrial Collector Development Project - Develop Biyagama - Colombo Road with four lanes - Develop Malwana - Dompe Road with four lanes	Road Development Authority Urban Development Authority	Implimenting and Monitoring of projects
4. Sub Local Industrial Collector Development Project - Develop Pattiwila - Makola Road with four lanes - Develop Thai Temple Road with two lanes - Develop Dimo Road with four lanes - Develop Jayanthi Mawatha with two lanes - Develop Gonawala - Koholvila Road with two lanes	Road Development Authority Urban Development Authority	Implimenting and Monitoring of projects
5. Biyagama - Kosgama Railway Project	Srilanka Railway Department National Housing Development Authority	Implimenting of projects
6. Plug & Play Industrial Parks Development Project - Develop Sapugaskanda Plug & Play Industrial Park – I - Develop Sapugaskanda Plug & Play Industrial Park – II - Develop Plug & Play Industrial Park in Dimo Industrial Cluster Area	Urban Development Authority Board of Investments Sri Lanka Central Environment Authority	Funding, Monitoring of projects and Preparing environmental assessment reports
7. Industrial Oriented Smart Business Centre Development Project	Urban Development Authority Board of Investments Sri Lanka	Funding, Monitoring and Implimenting of projects
8. Malawana Fabric & Commercial Riverfront Corridor Development Project	Urban Development Authority Irrigation Department Sri Lanka Land Reclamation & Development Corporation	Funding, Redevelopment of streams, Removing unauthorised uses, Monitoring and Implimenting of projects
B. Environmental Conservation & Management plan		
9. Malawana Sambawela Canal Restoration Project & Riverfront Park Development Project	Urban Development Authority Irrigation Department Sri Lanka Land Reclamation & Development Corporation	Funding, Redevelopment of streams, Removing unauthorised uses, Monitoring and Implimenting of projects
10. Tree strips development along the local industrial collector roads	Urban Development Authority Road Development Authority Biyagama PS	Funding, Monitoring and Implimenting of projects

<i>Plan/Sub Plans & Action projects</i>	<i>Relevant Institutions</i>	<i>Responsibilities of the Institute for Implementing the project</i>
11. Siyambalape Wetland Park Development Project	Urban Development Authority Sri Lanka Land Reclamation & Development Corporation Biyagama PS	Funding, Monitoring and Implementing of projects
12. Mawaramandiya Linear Park Development Project		
13. Yatihena Tank & Surroundings Park Development Project		
C. Infrastructure Development Plan		
C.1 Road and Transportation Plan		
14. Develop Mankada Road with four lanes	Urban Development Authority Road Development Authority	Funding, Monitoring & Implementing of projects
15. Develop Mawaramandiya - Makola road for four lanes		
16. Develop Kanduboda Tank Road with two lanes		
C.2 Swerage & Waste Water Management Plan		
17. Biyagama Technological Waste Water Treatment Plant Project	Central Environment Authority	Funding, Monitoring and Implementing of projects
18. Sapugaskanda Waste Water Treatment Project		
C.3 Solid Waste Management Plan		
19. Establish a Solid Waste Sorting Centre	Biyagama Pradeshiya Sabha	Funding, Monitoring and Implementing of projects
C.4 Water Supply Plan		
20. Develop the Mabima Water Treatment Plant	National Water Supply and Drainage Board	Funding, Monitoring and Implementing of projects
C.5 Service Management Plan		
21. Siyambalape Hospital Development Project	Ministry of Health	Funding, Monitoring and Implementing of projects
22. Siyambalape Skill Up-gradation Centre Development Project	Sri Lanka Vocational Training Authority Board of Investments Sri Lanka	Funding, Monitoring and Implementing of projects
23. Makola Middle Income Housing Development Project	National Housing Development Authority	Funding, Monitoring and Implementing of projects
24. Biyagama Hostel Facilities Development Project	Board of Investments Sri Lanka National Housing Development Authority	Funding, Monitoring and Implementing of projects
C.6 Urban Services Improvement Plan		
25. Mawaramandiya Town Centre Development Project	Urban Development Authority Biyagama Pradeshiya Sabha	<ul style="list-style-type: none"> Funding, Monitoring and Implementing of projects
26. Delgoda Town Centre Development Project		
27. Makola Town Centre Development Project		
28. Kadawatha Public Market Development Project		

Table 6.16: Responsible Institutional Framework
Source : Gampaha District Planning Team, 2017

Definitions

Working Age Population

The working age for Sri Lanka is defined as age 15 years and above. The total working age population who are employed or unemployed during the reference week is identified as the economically active population or labor force.

Source: Quarterly Report of the Sri Lanka Labor Force Survey, Department of Census & Statistics Ministry of National Policies and Economic Affairs, 2016

Carrying Capacity - Industrial Sense

"The maximum level of industrial activity that can be supported by the environment without causing serious or irreversible damage to its natural environment"

Source: Defined by the International Journal of Sustainable Future for Human Security J-Sustain Vol. 1, No. 1 (2013) 30-34 -<http://www.j-sustain.com>

Wetland Stewardship

"Wetlands stewardship can include: Long-term preservation using purchase or donations, and conservation easements."

- Non-compensatory enhancement, restoration, or establishment.
- Improved management through use of best management practices, management plans or agreements, and partnership contracts.
- Incentives such as current use taxation, transfers of development rights, etc.

Source: Defined by the Exploring Wetlands Stewardship –A Guide for Washington Landowners and Communities, Washington State Department of Ecology Shore lands and Environmental Assistance Program Olympia, Washington, 2008

Abbreviations

BOD	- Bio-Chemical Oxygen Demand
BOI	- Board of Investments
BWTP	- Biyagama Water Treatment Plant
CBD	- Central Business District
CEB	- Ceylon Electricity Board
CER	- Co-operate Environmental Responsibility
CESMA	- CESMA International Pvt. Ltd
COD	- Chemical Oxygen Demand
CRIP	- Climate Resilience Improvement Project
DBIP	- Development of Basin Investment Plan
DS	- Divisional Secretariat
ESI	- Environmental Sensitivity Index
GSS	- Grid Sub Station
Ha	- Hectares
PDNA	- Post Disaster Need Assessment
Kv	- Kilo Volt
KW	- Kilo Watt
LRT	- Light Railway Transit
Lpcd	- Litres per Capita per Day
Mw	- Megawatt
MGIF	- Multi Purpose Gamma Irradiation Facility
NDVI	- Normalized Differences Vegetation Index
OCH	- Outer Circular Highway
PS	- Pradeshiya Sabha
SWOT	- Strengths, Weaknesses, Opportunities, Threats
TNC	- Towns North of Colombo
WPN	- Western Province North
WQI	- Water Quality Index
3K	- Kottawa, Kaduwela, Kadawatha Urban Area

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Annexures



Annexure 01: Stakeholder Participation – Group wise

Group Category	Name	Designation
Industry & Commerce	A.K. Jayasinghe	Director, (Biyagama EPZ), BOI
	Nalaka Jayasundara	Director, Export Agriculture Department
	P.F.W. Dayanath	Engineer, Management, Ceylon Petroleum Corporation
	Ananda Ganepola	Chairman, Mawaramandiya Trade Association
	Saman Liyanage	Chairman, Delgoda Trade union
	Sumaeda Bandara	Deputy Chairman, Kadawatha Trade Union
	P.H.Chinthaka	Deputy Secretary, Biyagama Trade Union
	U.A. Sanjeewa Lakmal	Executive Officer, Free Trade Union
	Pradeep Kumara	Secretary, Makola Three wheeler's Association
	B.M. Susil Prasanna	Chairman, Kadawatha Three Wheeler's Association
Administrative & Infrastructure	R. P. Hettiarachchi	Deputy Director, Kachcheriya, Gampaha
	Thamara Herath	Deputy Director, Biyagama Divisional Secretariat Office
	G.D.C Fonseka	Director Zonal Education , Kelaniya
	P.H.S. Bandara	Director Divisional Education , Biyagama
	K.M.G.U. Jayathilaka	Senior District Manager, National Housing Development Authority
	R.A.P.W. Wickramasinghe	Secretary, Biyagama Pradeshiya Sabha
	N.N. Lokuge	Engineer, RDA, Gampaha
	Champika Ranasinghe	Senior Engineer, Biyagama Water Treatment Plant
	L.W. Halgahawatta	Engineer (P&D), National Water Supply & Drainage Board
	R.A.N.K. Ranathunga	Work Officer, Biyagama, National Water Supply & Drainage Board
	J.M.K Charitha Jayasundara	Transport – Assistant, Road & Passenger Transport Authority
	R.P.L Padmasiri	Engineer Assistant, PRDA (WP)
	T.M. Pushapakumara	Ceylon Electricity Board
	B.S. Madhushanka	Electrical Engineer, LECO
	S. Godage	Engineer, Railway Department
	D.Padmasiri	PHI, Biyagama Pradeshiya Sabha
	J.S. Gunawardhana	Sub Police Inspector, (Motor Traffic Division) - Meegahawatta Police Station
	W.V. Wasantha	Sub Police Inspector, Biyagama Police Station
Danushka Rachinda	Development Officer, Biyagama Divisional Secretariat Office	
Environmental & Agriculture	B.W.S. Priyadarshani	Senior Environmental Officer, Central Environment Authority
	T.D. Wijesooriya	District Irrigation Engineer's Office
	W.R.D. Weerakkodi	District Irrigation Engineer's Office
	W.J.M. Dayarathana	Assistant Director, Land Use Policy Planning Department

Environmental & Agriculture	Athula Weerasinghe	Land Use Officer, Biyagama Divisional Secretariat Office
	W.M.P. Kumari	Agrarian Research & Production Assistant, Biyagama Aggaraan Office
	S.A.L. Chandana	
	L.W.P.I. Karunasena	
	K.Y. Jayasinghe	
	Sharmila Rajakaruna	

Annexure 02: Gazette Notification of Core Area of Metro Colombo Development Region

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The Gazette of the Democratic Socialist Republic of Sri Lanka

EXTRAORDINARY

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No. 2049/11 - MONDAY, DECEMBER 11, 2017

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PART I : SECTION (I) — GENERAL

Government Notifications

URBAN DEVELOPMENT AUTHORITY ACT, No. 41 OF 1978

The Prescription under Section 3

I, Patali Champika Ranawaka, the Minister of Megapolis and Western Development, declare by this prescription by virtue of the powers vested in me by Section 3 of the Urban Development Authority Act, Number 41 of 1978 that as it is my opinion to name and develop the area comprising the 05 Municipal Councils, 07 Urban Councils, and 07 Pradeshiya Sabhas whose exclusive boundaries and borders have been marked clearly and definitely already by the Ministry of Provincial Councils and Local Government, and detailed in Columns I and II of the 1st Schedule here, as the **Core Area of the Metro Colombo Development Region**.

PATALI CHAMPIKA RANAWAKA,
Minister of Megapolis and Western Development.

Ministry of Megapolis and Western Development,
17 and 18 Floors,
“Suhurupaya”,
Sri Subuthipura Road,
Battaramulla,
08th December 2017.

2A පිටුව (I) කොටස - ශ්‍රී ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජයේ අති විශේෂ ගැටපි ගනුයේ - 2017.12.11
Part I: Sec. (I) - GAZETTE EXTRAORDINARY OF THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA 11.12.2017

SCHEDULE I

DECLARATION OF THE CORE AREA OF THE METRO COLOMBO DEVELOPMENT REGION

Column I	Column II
<p>The domain of Colombo Municipal Council, the domain of Dehiwala-Mt. Lavinia, Municipal Council, the domain of Moratuwa Municipal Council, the domain of Sri Jayewardenepura-Kotte Municipal Council and the domain of Kaduwela Municipal Council, the borders of which have been declared under the Municipal Councils Ordinance No. 29 of 1947 in the <i>Extraordinary Gazette</i> of the Democratic Socialist Republic of Sri Lanka.</p>	<ul style="list-style-type: none"> - The Domain of the Colombo Municipal Council located within the borders declared in the <i>Extraordinary Gazette</i> No. 329/8 and dated 10.08.1978 - The Domain of the Dehiwala-Mt. Lavinia Municipal Council located within the borders declared in the <i>Extraordinary Gazette</i> No. 329/8 and dated 10.08.1978
<p>The domain of Maharagama Urban Council, the domain of Kolonnawa Urban Council, the domain of Kesbewa Urban Council, the domain of Boralesgamuwa Urban Council and the domain of Ja-Ela Urban Council, the domain of Wattala-Mabola Urban Council and the domain of Peliyagoda Urban Council, the borders of which have been declared under the Urban Councils Ordinance No. 61 of 1939.</p>	<ul style="list-style-type: none"> - The Domain of the Moratuwa Municipal Council located within the borders declared in the <i>Extraordinary Gazette</i> No. 957/13 and dated 08.01.1997 - The Domain of the Sri Jayawardenapura-Kotte Municipal Council located within the borders declared in the <i>Extraordinary Gazette</i> No. 941/9 and dated 17.09.1996
<p>The domain of Mahara Pradeshiya Sabha, the domain of Biyagama Pradeshiya Sabha, the domain of Wattala Pradeshiya Sabha, the domain of Ja-Ela Pradeshiya Sabha, the domain Kelaniya Pradeshiya Sabha, the domain of Kotikawatta Pradeshiya Sabha, and the domain of Homagama Pradeshiya Sabha the borders of which have been declared under the Pradeshiya Sabha Act No. 15 of 1987.</p>	<ul style="list-style-type: none"> - The Domain of the Kaduwela Municipal Council located within the borders declared in the <i>Extraordinary Gazette</i> No. 1639/11 and dated 02.02.2010
<p>The total ground area of the domains of the 19 Local Government Institutions as described in the Column II, comprising the domains of the above Local Government Institutions.</p>	<ul style="list-style-type: none"> - The Domain of the Maharagama Urban Council located within the borders declared in the <i>Extraordinary Gazette</i> No. 1218/35 and dated 10.01.2002 - The Domain of the Kolonnawa Urban Council located within the borders declared in the <i>Extraordinary Gazette</i> No. 329/8 and dated 10.08.1978 - The Domain of the Kesbewa Urban Council located within the borders declared in the <i>Extraordinary Gazette</i> No. 1426/15 and dated 04.01.2006 - The Domain of the Boralesgamuwa Urban Council located within the borders declared in the <i>Extraordinary Gazette</i> No. 1426/15 and dated 04.01.2006 - The Domain of the Ja-Ela Urban Council located within the borders declared in the <i>Extraordinary Gazette</i> No. 231/13 and dated 09.02.1983

SCHEDULE I (Contd.)

DECLARATION OF THE CORE AREA OF THE METRO COLOMBO DEVELOPMENT REGION

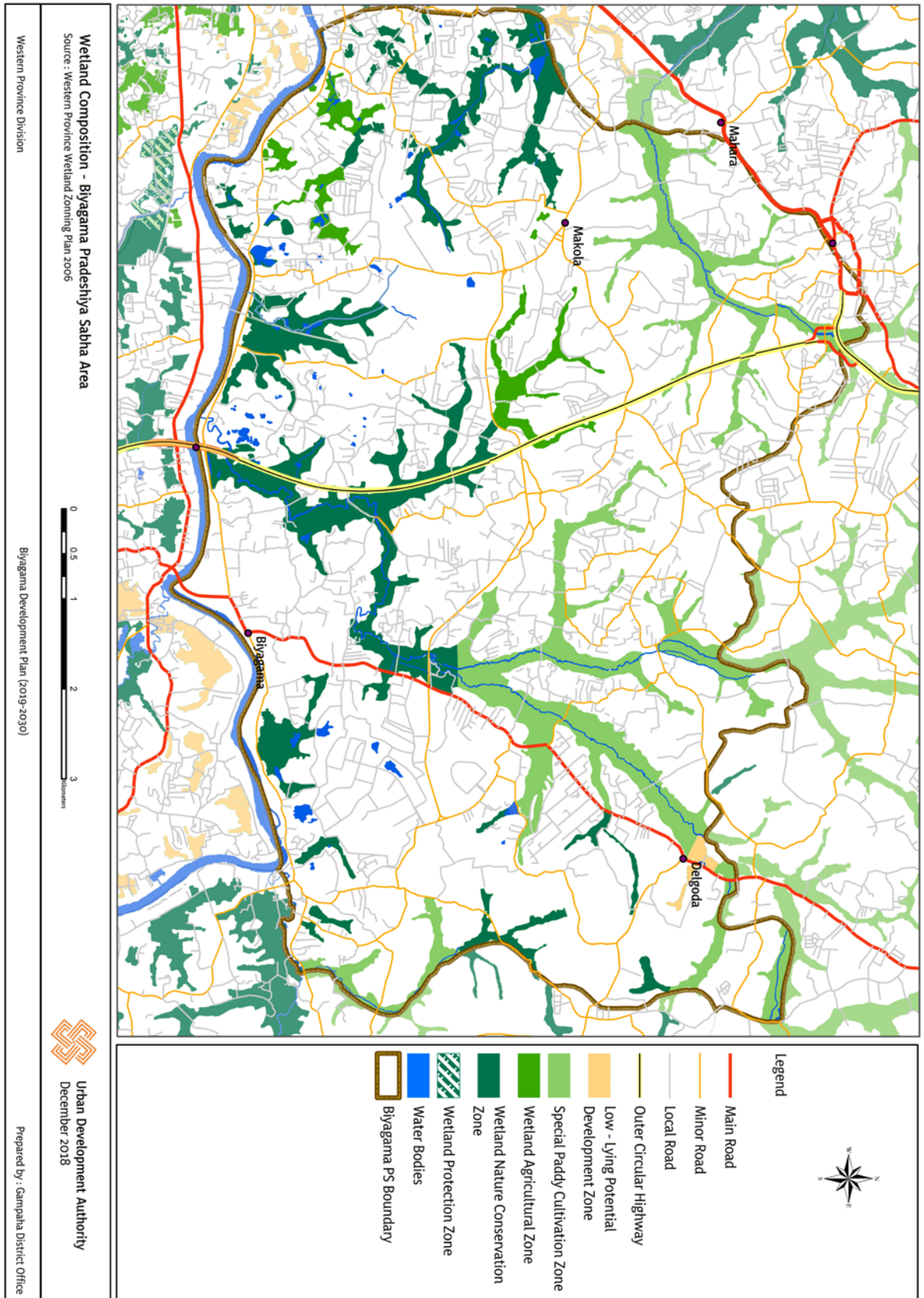
Column I

Column II

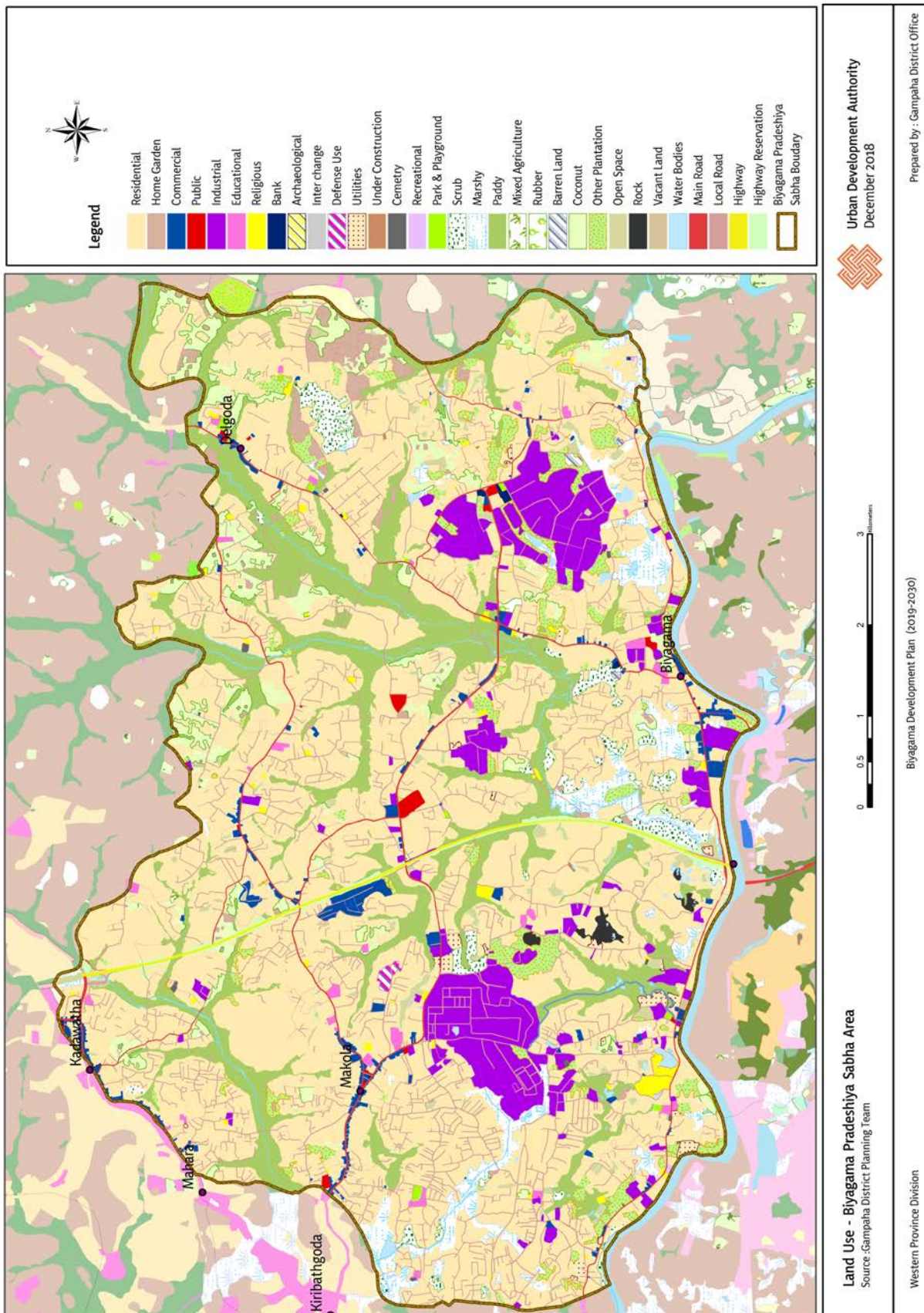
- The Domain of the Wattala-Mabola Urban Council located within the borders declared in the *Extraordinary Gazette* No. 231/13 and dated 09.02.1983
- The Domain of the Peliyagoda Urban Council located within the borders declared in the *Extraordinary Gazette* No. 231/13 and dated 09.02.1983
- The Domain of the Mahara Pradeshiya Sabha located within the borders declared in the *Extraordinary Gazette* No. 453/6 and dated 12.05.1987
- The Domain of the Biyagama Pradeshiya Sabha located within the borders declared in the *Extraordinary Gazette* No. 867/21 and dated 21.04.1995
- The Domain of the Wattala Pradeshiya Sabha located within the borders declared in the *Extraordinary Gazette* No. 453/6 and dated 12.05.1987
- The Domain of the Ja-Ela Pradeshiya Sabha located within the borders declared in the *Extraordinary Gazette* No. 453/6 and dated 12.05.1987
- The Domain of the Kelaniya Pradeshiya Sabha located within the borders declared in the *Extraordinary Gazette* No. 453/6 and dated 12.05.1987
- The Domain of the Kotikawatta Pradeshiya Sabha located within the borders declared in the *Extraordinary Gazette* No. 453/5 and dated 12.05.1987
- The Domain of the Homagama Pradeshiya Sabha located within the borders declared in the *Extraordinary Gazette* No. 453/5 and dated 12.05.1987

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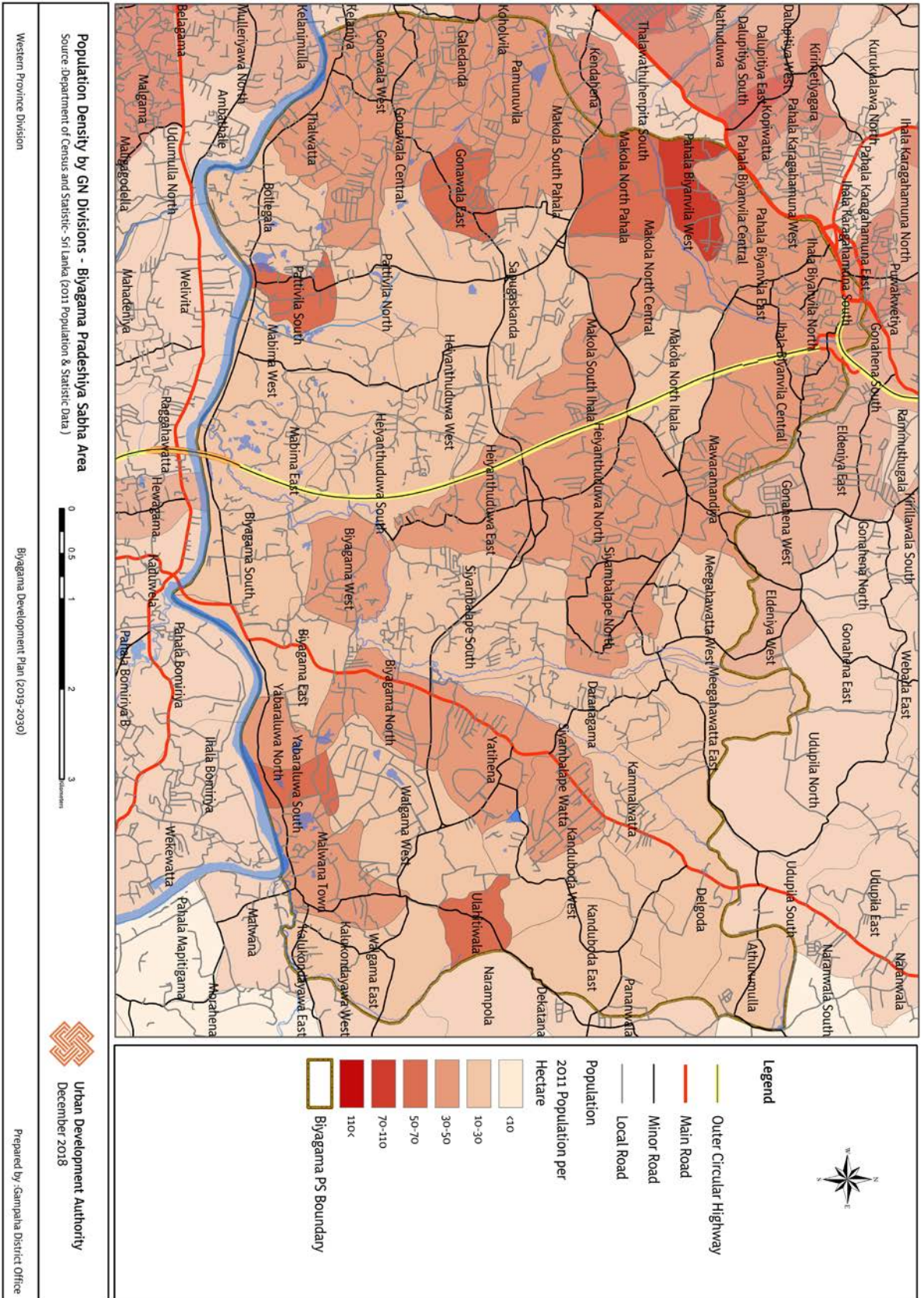
Annexure 03: WetLand Composition of Biyagama PS Area



Annexure 04: Landuse of Biyagama PS Area



Annexure 07: Population Density by GN division- 2011 Population and statistic Data



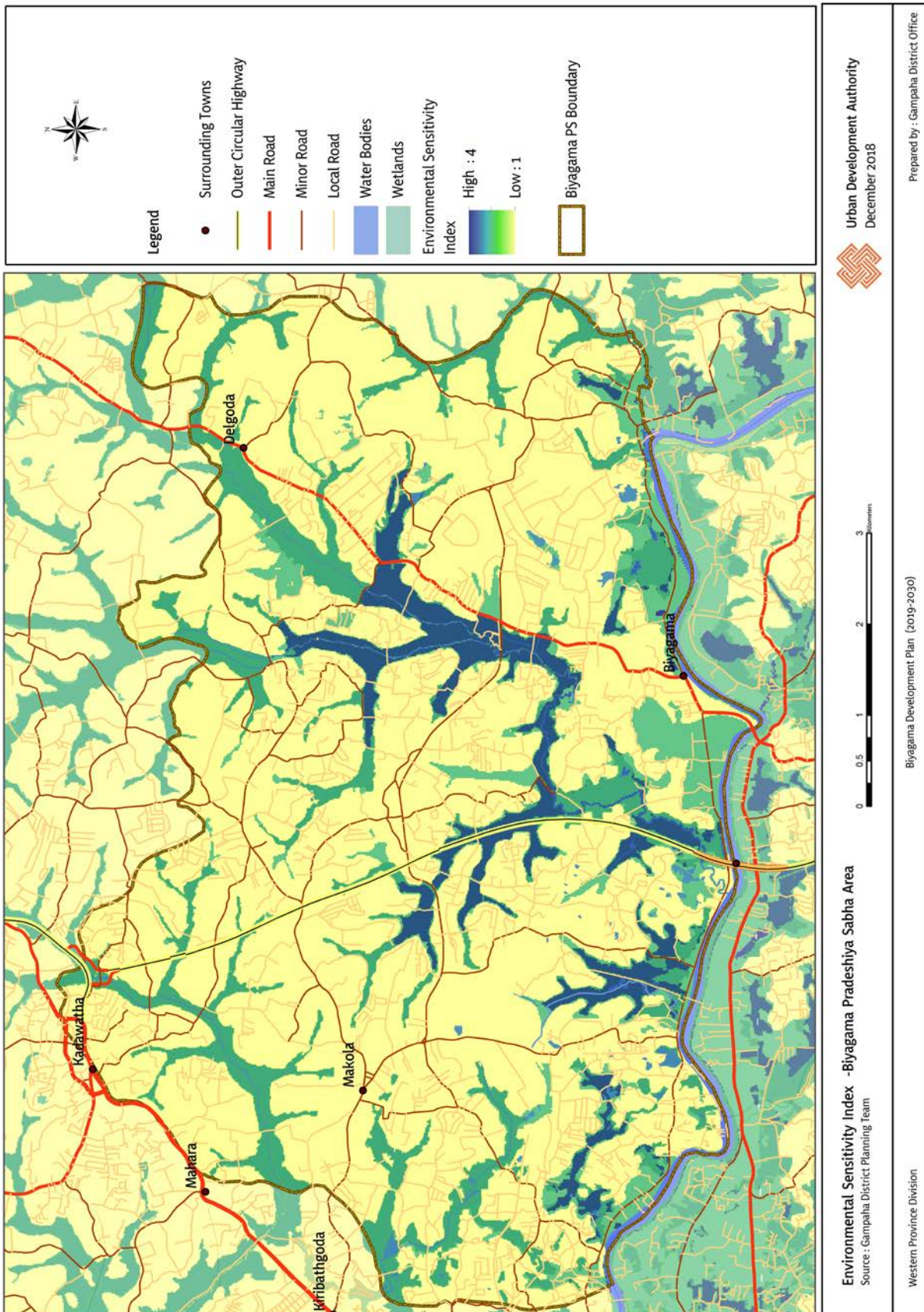
Annexure 10: Abandoned Paddy Analysis - Biyagama Agrarian Services Department

GN Division	Total Paddy Land Extent (Ha)	Continuously Cultivated (Ha)	Abandoned Paddy - Can be Cultivated again (Ha)	Abandoned Paddy - Short term use (Ha)	Other Abandoned Paddy (Ha)	Total Paddy - Cultivated 2017/2018 (Ha)
Siyabalape South	44.96	34.92	10.04	0	0	28.45
Delgoda	41.68	30.78	10.9	0	0	26.23
Siyabalapewatta	18.54	18.04	0	0.5	0	18.04
Daranagama	46.21	44.44	0.59	0	1.18	26.77
Kammalwatta	34.86	32.43	1.34	1.09	0	17.99
Meegahawatta East	20.13	20.13	0	0	0	17.41
Yatihena	29.29	24.08	2.09	1.21	1.91	19.15
Kanduboda West	11.33	10.34	0.8	0.19	0	4.66
Walgama East	34.01	25.06	8.05	0	0.9	11.47
Walgama West	5.61	0	1.5	4.11	0	0.6
Ulahitiwala	8.89	8.39	0.45	0.05	0	8.59
Malwana	3.45	0.1	0	0	3.35	3.45
Yabaluwa South	8.24	0	0	0	8.24	0
Yabaluwa North	4	0	0	0	4	0
Biyagama South	19.34	1.1	0	0	18.24	1.1
Biyagama West	24.7	0	0	0	24.7	0
Biyagama East	6.86	0	0	0	6.86	0
Biyagama North	27.26	15.92	3	3	5.34	3.2
Mabima East	24.38	4.13	14.18	2.03	4.04	4.53
Mabima West	31.43	3.69	12.56	4.26	10.92	4.09
Heiyanthuduwa South	43.34	0	6.48	0	36.86	0
Heiyanthuduwa West	27.04	9.43	3.63	0	13.97	0.91
Pattivila North	8.34	0	0	1	7.34	0
Pattivila South	7.89	0	0	1	6.89	0
Meegahawatta West	18.33	17.07	0	1.26	0	13.12
Siyabalape North	17.6	15.88	1.72	0	0	8.36
Heiyanthuduwa East	15.18	11.84	0	3.34	0	7.69
Heiyanthuduwa North	14.17	12.15	0.2	1.82	0	5.8
Thalwatta	11.74	0	.02	0	11.74	5.26
Bollegala	17.01	0	0	0	17.01	0

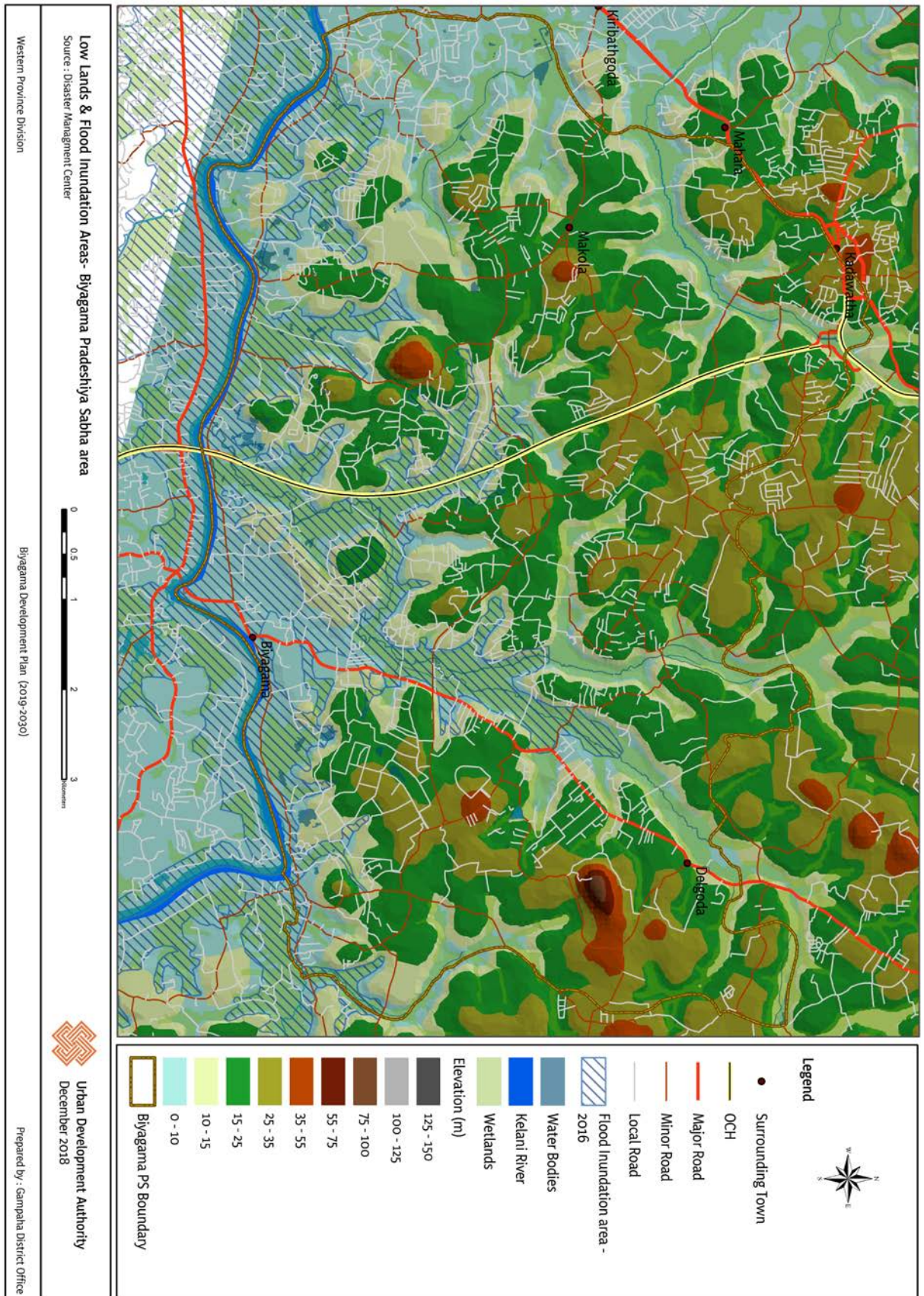
<i>GN Division</i>	<i>Total Paddy Land Extent (Ha)</i>	<i>Continuously Cultivated (Ha)</i>	<i>Abandoned Paddy - Can be Cultivated again (Ha)</i>	<i>Abandoned Paddy - Short term use (Ha)</i>	<i>Other Abandoned Paddy (Ha)</i>	<i>Total Paddy - Cultivated 2017/2018 (Ha)</i>
<i>Makola North Ihala</i>	8.71	6.36	1.94	0	0.41	5.05
<i>Mawaramandiya</i>	11.69	8.13	3.46	0	0.1	3.77
<i>Sapugaskanda</i>	13.09	9.68	1.31	0	2.1	6
<i>Makola South Ihala</i>	18.44	14.92	2.59	0.55	0.38	6.49
<i>Ihala Biyanvila North</i>	2.4	0	0	0	2.4	0
<i>Pahala Biyanvila East</i>	16.67	11.23	5.44	0	0	12.85
<i>Pahala Biyanvila Central</i>	3.3	2.9	0.4	0	0	1.4
<i>Pahala Biyanvila West</i>	23.67	21.17	2.5	0	0	8
<i>Makola North Pahala</i>	24.53	18.48	5.59	0	0.46	6.93
<i>Makola North Central</i>	25.97	20.01	5.29	0.17	0.5	10.3
<i>Gonawala East</i>	6.88	0	0	2	4.88	0
<i>Gonawala Middle</i>	32.91	0	0	4.67	28.24	0
<i>Gonawala West</i>	20.45	0	0	2.67	17.78	0
<i>Pamunuwila</i>	46.58	0	0	0	46.58	0
<i>Galedanda</i>	16.6	0	0	0	16.6	0
<i>Makola South Pahala</i>	15.72	7.94	5.26	0	2.52	5.71
<i>Akurumulla</i>	20.8	19.15	1.65	0	0	16.69
<i>Kanduboda East</i>	12.96	12.08	0.88	0	0	9.41
<i>Ihala Biyanvila Central</i>	22	19.3	2.7	0	0	20.3
Total	969.18	523.42	116.74	36.74	294.7	349.77

Source : Biyagama Agrarian Services Department, 2018

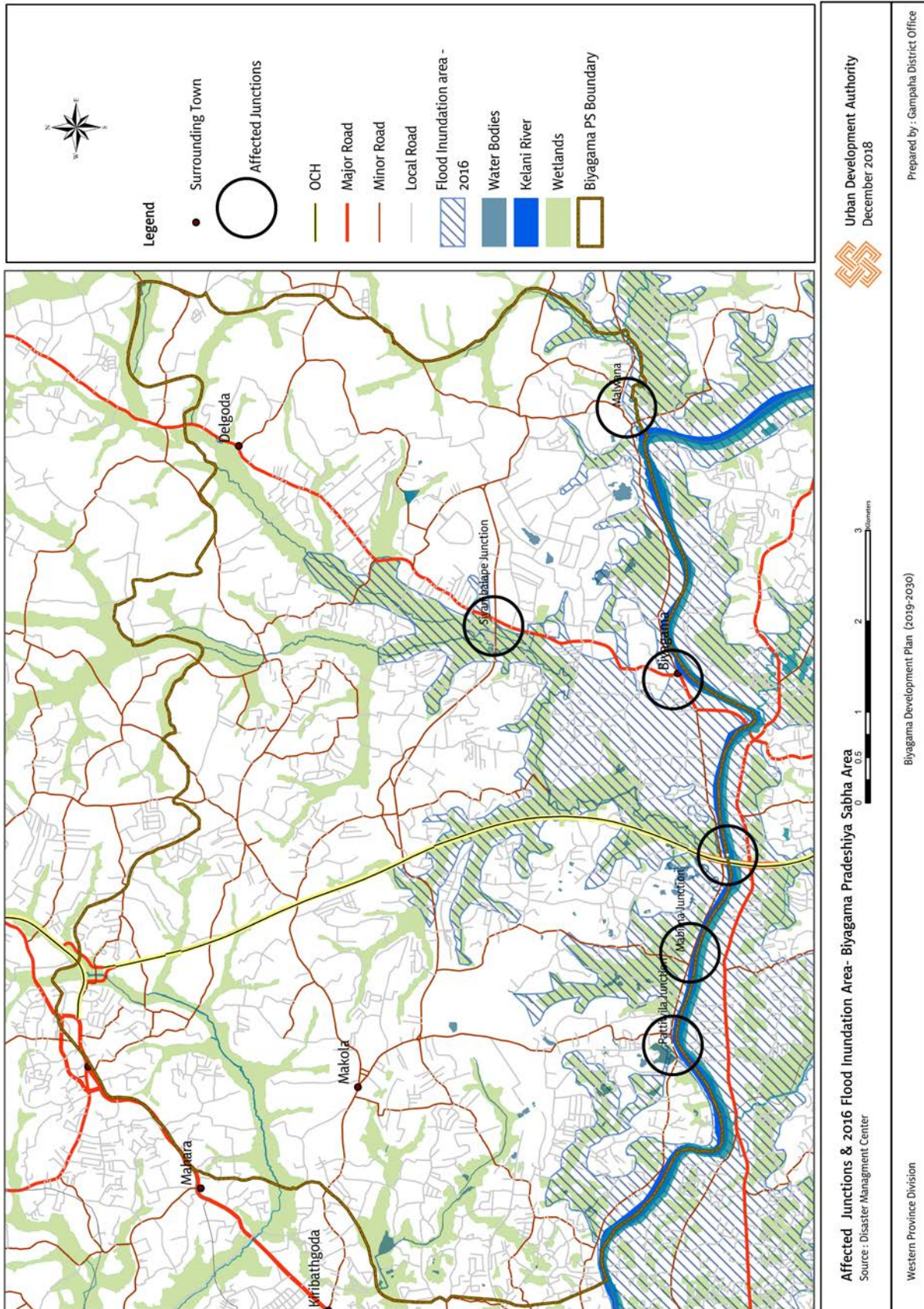
Annexure 11. Environment Sensitivity Index



Annexure 12. Low Lands & 2016 Flood Inundation Areas



Annexure 13. Affected Junctions, Low Lands & 2016 Flood Inundation areas



Annexure 14. Stakeholder Meeting - Analysis Report

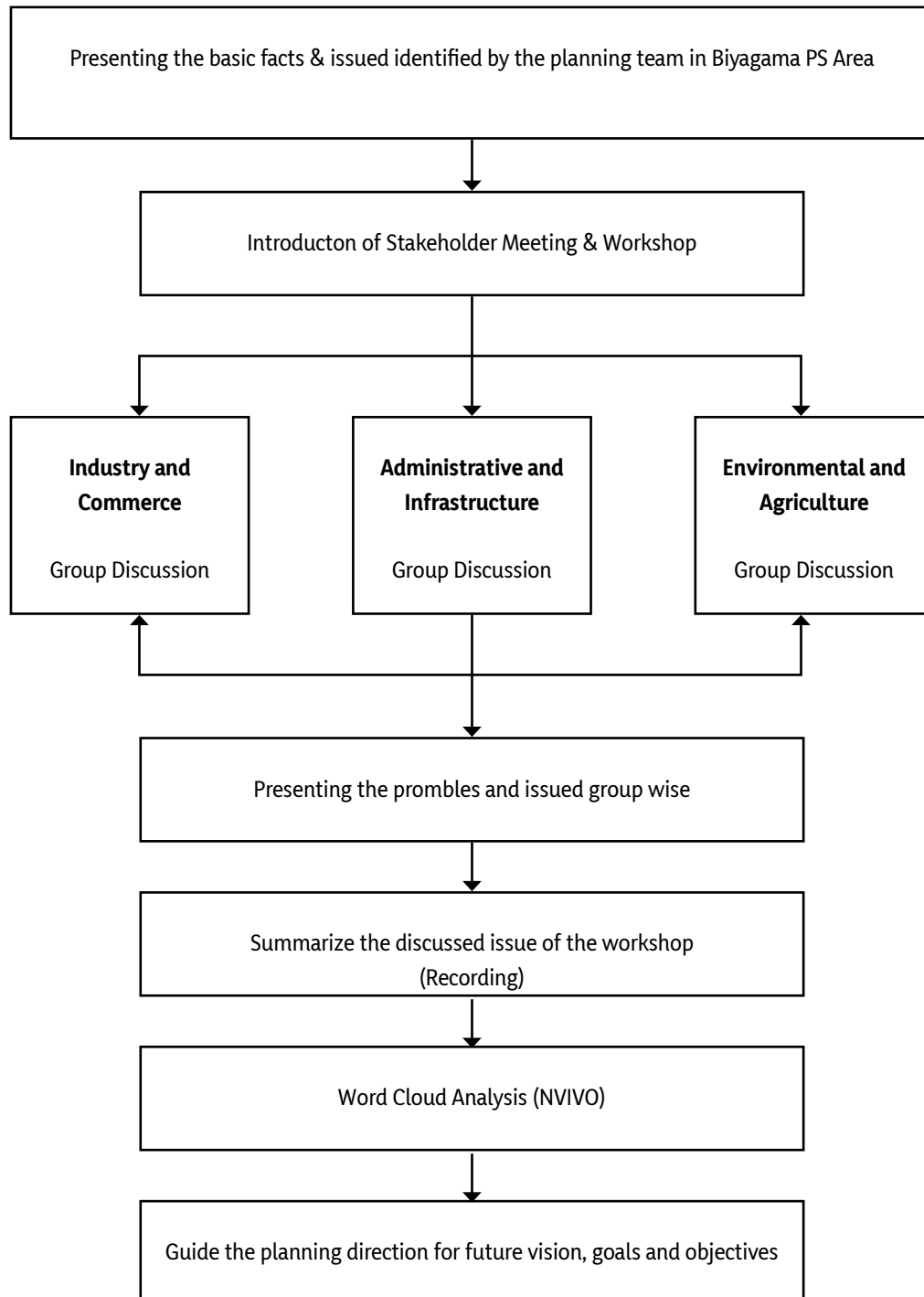
**Stakeholder Meeting – Biyagama Urban Declared Area
Urban Development Authority**



2017/11/23

**NVIVO Analysis
Development Planning
Division**

Stakeholder Meeting – Implementation Mechanism



Group 01. Industry & Commerce

- All the land parcels of Biyagama EPZ accomadated with industrial enterprises & no spaces for new investors.
- Establish a new industrial estate for small scale & minor industries.
- Delaying the recommendations of industrial related developments.
- Establish a separate expressway access road for Biyagama EPZ.
- Expand the industrial related financial & banking facilities.
- Establish multi-purpose buildings for all the sub town centers of the area.
- Create new industrial areas for export crops with facilities.
- Improve the existing road network for freight transportation.
- Reconstruct the Biyagama - Kelaniya Rail track.
- Recommend the warehouses closer to the access roads & separate from the residential areas.
- Create a zoning mechanism for industrial areas. (Mabima Area)
- Create a pipe system for treated industrial waste water discharge.
- Create a proper mechanisam for industrial waste management.
- Discourage the residential developments closer to the industrial areas.



Industry & Commerce group mainly highlighted the economic background the industrial related issues of the area

Group 02. Administrative & Infrastructure facilities

01. Water Supply

- Declare a service line either sides of main roads.
- Water conservation mechanism should be deriving from the planning stage.
- Improvement of pipe - born water system.
- Create a proper waste water discharge system.
- Establish a sewerage disposal system for high commercial activities distributed area.

02. Electracity & Telecommunication

- Need the information of the projects within the planning stage.
- Declare a service line either sides of main roads.

03. Road Network

- Development of main road network of the area.
- Develop main nodes of the area. (Delgoda, Makola, Udupila, Waduwegama)
- Introduce drainage system for all roads & create a mechanism to dispose the water into Kelani river.
- Declare the regulations for canal reservations of the area.
- Road developments of Mabima - Makola, Udupila-Makola & Sapugaskanda - Pattiwila.
- Develop Pahuruwela road as an alternative road.
- Develop the railway line from the Sapugaskanda to Biyagama EPZ area.

04. Education Facilities

- Establish an auditorium with all facilities.

05. Health Facilities

- Establish a hospital complex with all the facilities.
- Establish maternity clinic centers with facilities
- Establish a recycling center of solid waste in Biyagama PS Area.

06. Law & Peace

- Establish a new police complex for Meegahawatta.
- Facilitate parking areas.

07. Housing

- Facilitate middle income housing.
- Increase the hostel facilities of Biyagama EPZ.
- Resettlements for river & railway reservations areas.

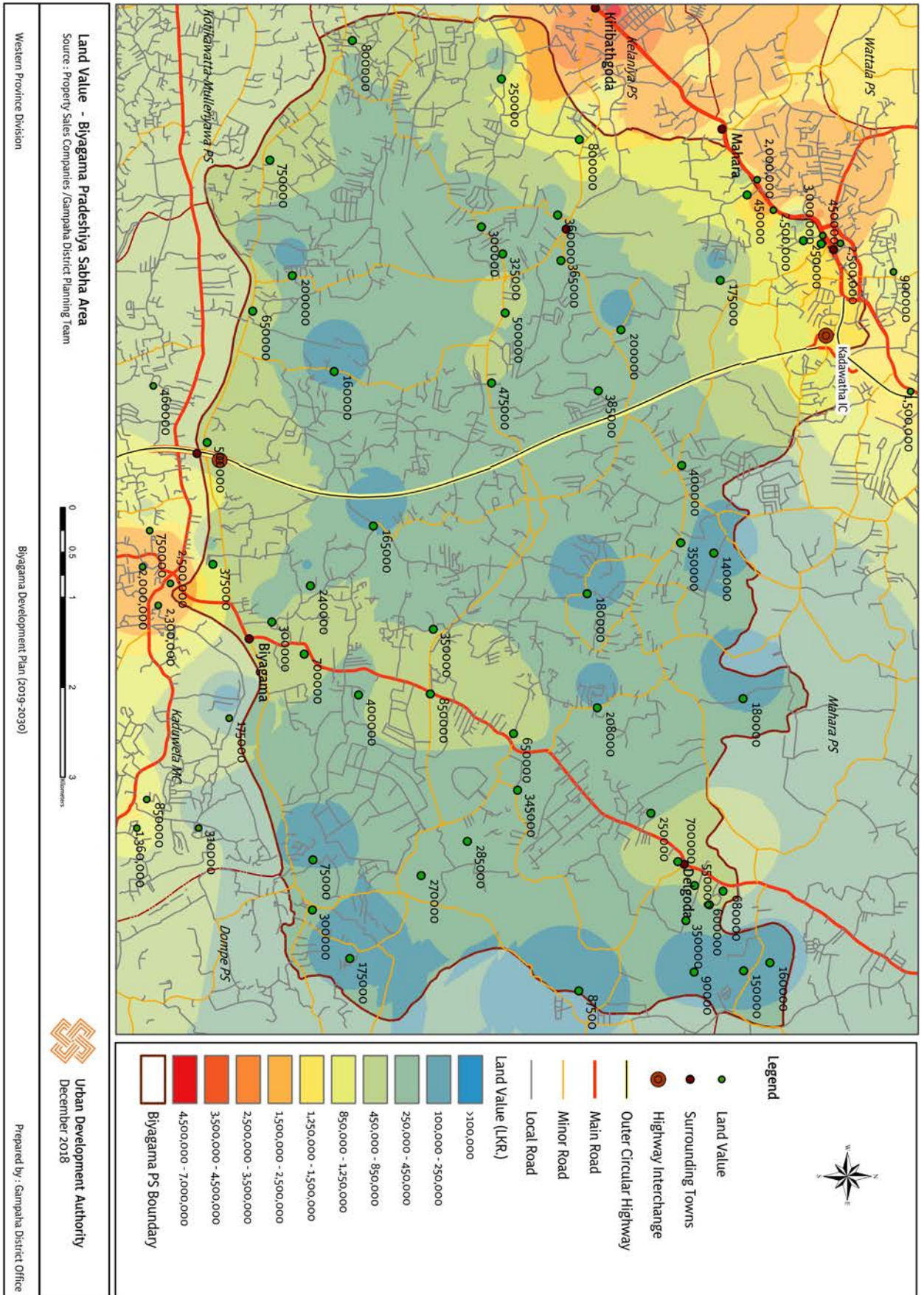


Administrative & Infrastructure group mainly highlighted the public urban services & its related issues.

Group 03. Environment & Agriculture

- Create a zoning mechanism for environmental sensitive areas & agricultural areas
- Development promotion without blocking the canal network.
- Create a proper mechanism for decrease the sub divisions of other plantation lands.
- Construct walls for river flood mitigation.
- Remove the settlements & industries from the 15m Kelani river reservation.
- Identify the water retention areas & discourage to use those areas for other purposes.
Ex: Highly sensitive area of Raggahawatta canal area.
- Discourage the industrial developments within residential areas.
- Separate the industrial uses with special zones.
- Discourage the industrial developments within sensitive environmental areas.
- Establish green buffers within industrial zones. Ex: Spaugaskanda oil refinery area & Biyagama EPZ.
- Establish a waste water treatment plant inco-operating with responsible government agencies.
- Establish open recreation spaces & linear parks.
- Use granite extraction & bricks making pits for inland fishing.
- Create special agro-industrial areas. Ex: Pine apple/Rambutan
- Consideration of mix residential ares for small scale & minor industrial development promotions.
- Low land fillings should be following the regulations & proper mechanism to avoid the flood senarios.
- Present industrial developments are not based on a proper zoning mechanism & that led to the more public complaints.
- Issues related to the treated industrial waste water discharge mechanisams.
- Ex: Raggahawatta Canal
- Waste water discharge mechanism for residential areas.

Annexure 15. Land Values of Biyagama & Surrounding areas



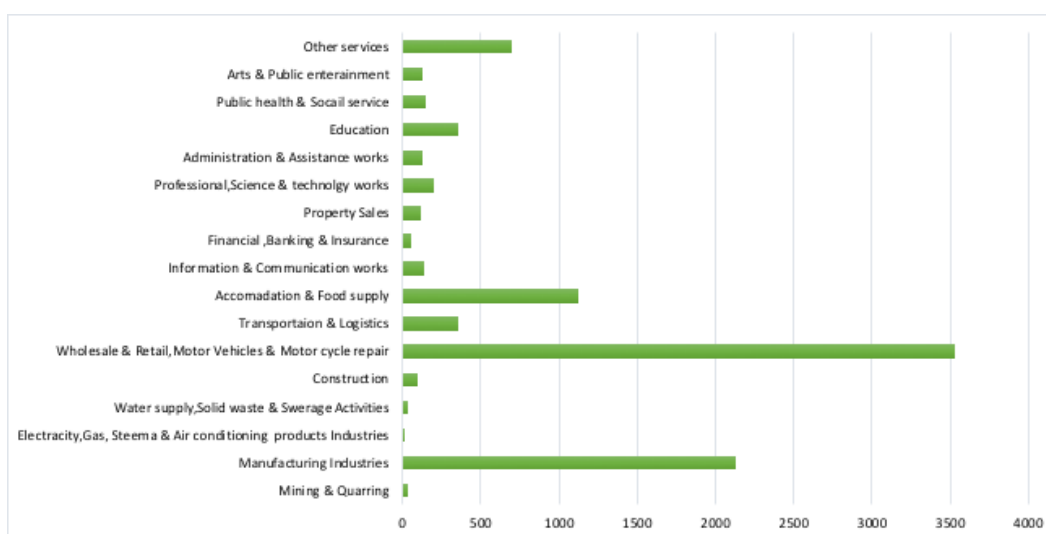
Annexure 16. Comparision of increment of labour force & industries by DS Divisions

DSD	1998 (Status)	Number of Industrial units (1985)	No of People employed (1985)	No of Industrial units (1993)	No of People employed (1993)
Gampaha	PU	10	802	72	3488
Minuwangoda	R	12	2025	9	1054
Ja Ela	C	34	3776	136	22672
Wattla	C	24	1646	121	13531
Weke (Dompe)	R	10	270	8	2108
Mahara	PU	122	2250	31	3534
Kelaniya	C	19	1763	104	13997
Divulapitiya	R	25	2140	12	250
Katana	C	18	1450	149	71289
Mirigama	R	8	589	23	379
Attanagalle	R	13	818	37	4735
Negombo	C	16	2501	62	6839
Biyagama	PU	7	522	60	34059

C - Core / PU- Peri Urban / R – Rural

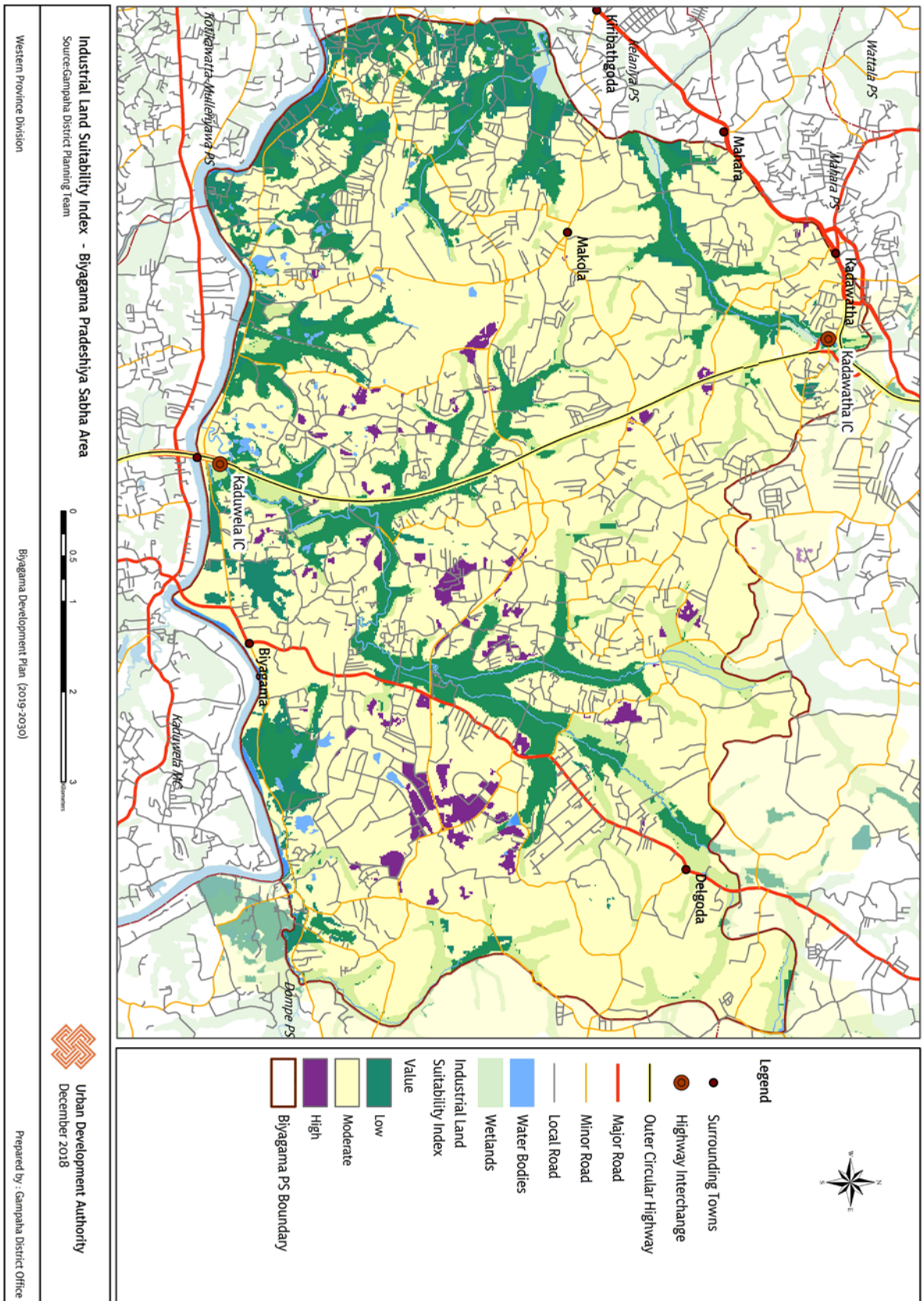
Source: UDA,1998 / The Peri-Urban Interface -Approaches to Sustainable Natural and Human Resource Use (Chapter 12 - Peri-Urban Development in Gampaha District, Sri Lanka by Nimal Dangalle, Anders Narman)

Annexure 17. Economic sector wise employment distribution - Biyagama PS Area

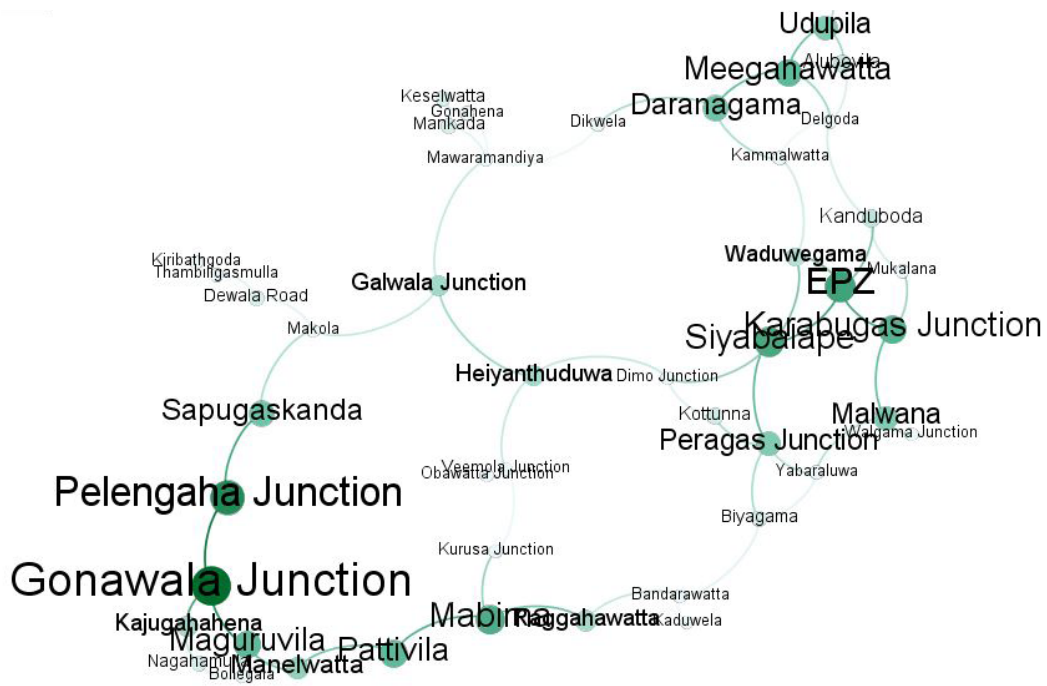


Source : Draft Resource Profile -2017, Biyagama PS Area

Annexure 18. Industrial Land suitability Index



Annexure 19. Analysis of Connective Nodes of Biyagama PS Area



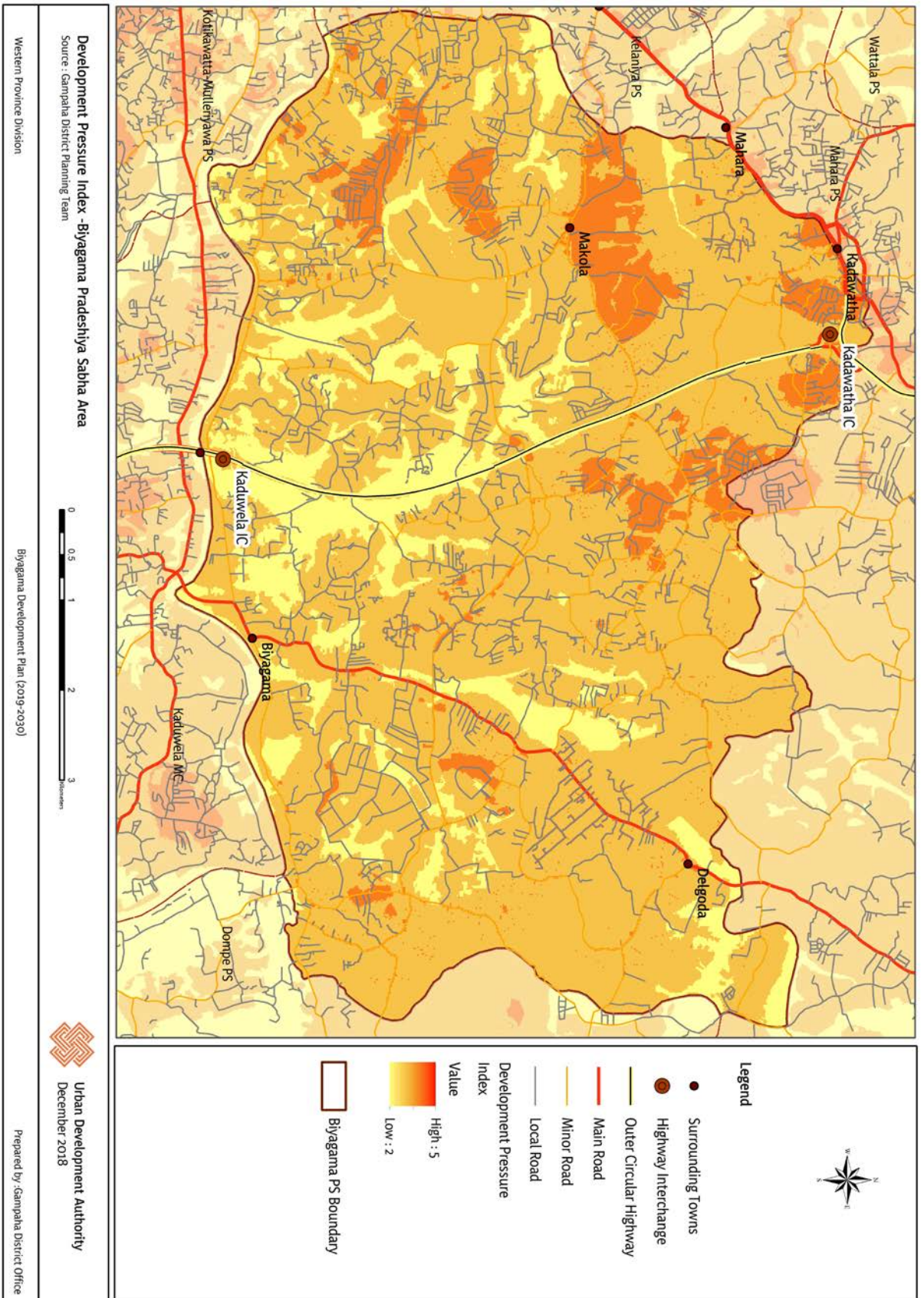
Source : Gampaha District Planning Team, 2017

Annexure 20. Growth of the Siyabalape Junction

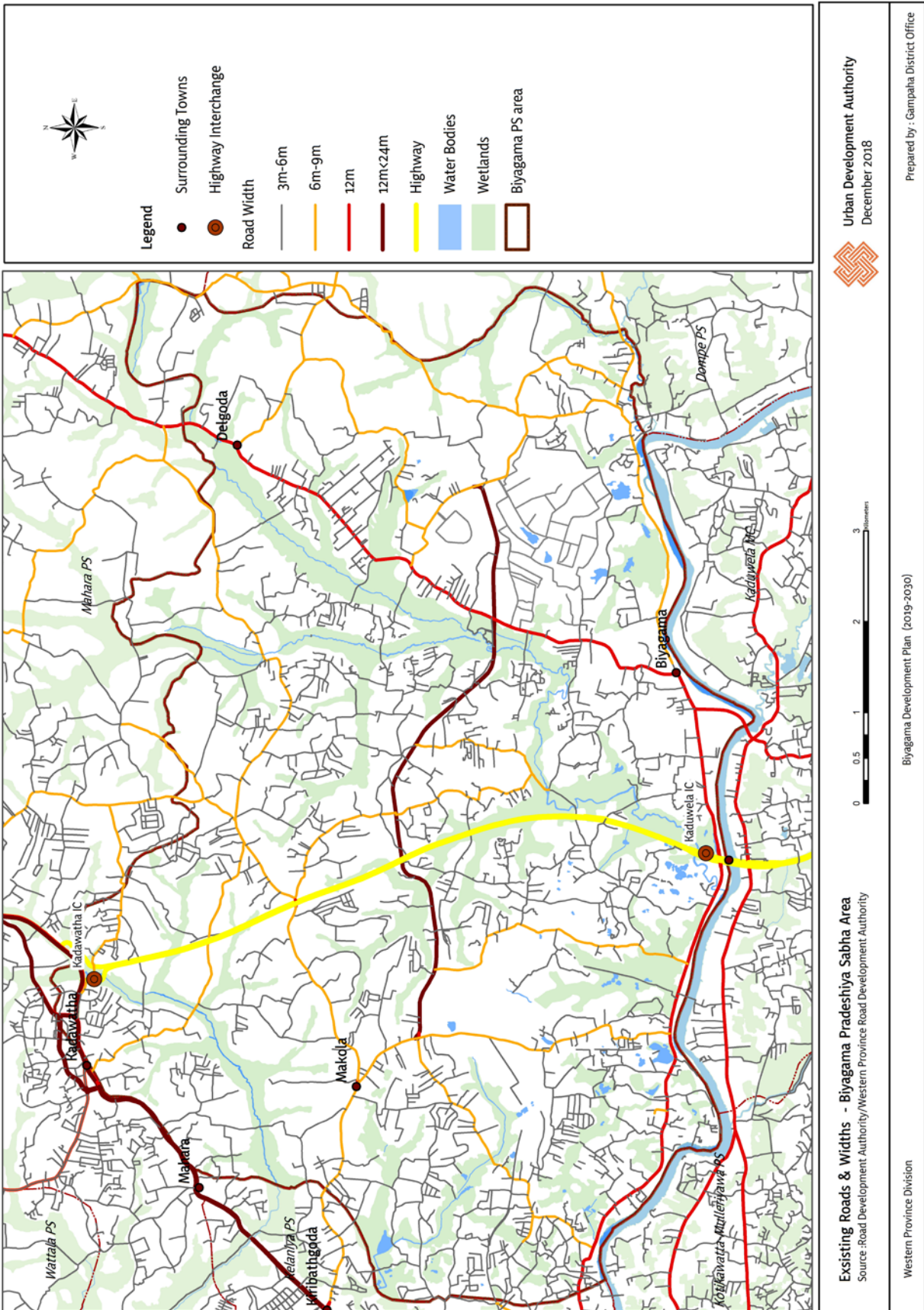


Source : GoogleEarth – Satelite Images 2004/2010/2013/2017

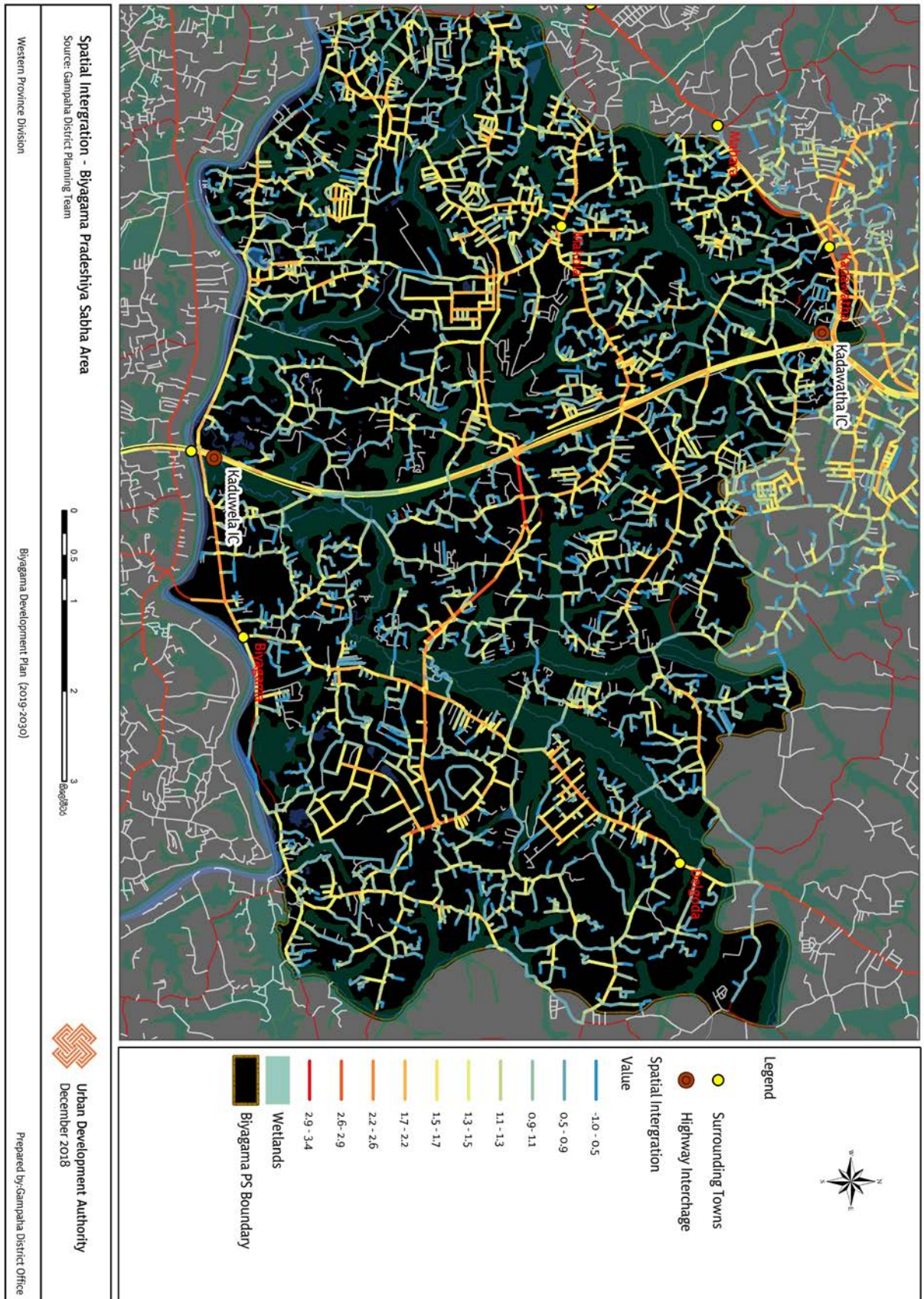
Annexure 21. Development Pressure Index



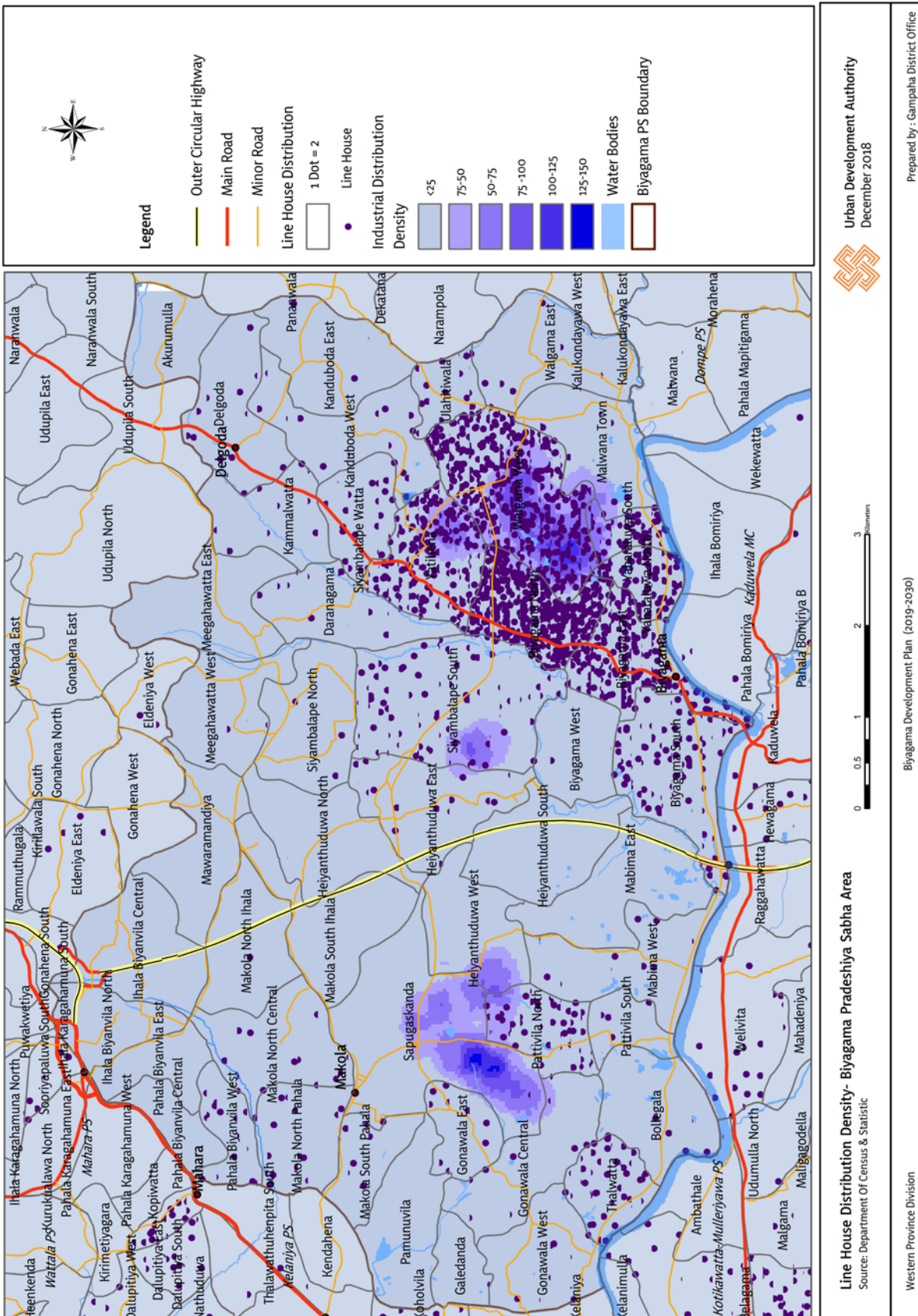
Annexure 22. Existing Road Network & Internal Road Widths of Biyagama PS Area



Annexure 23. Spatial Integration of Road Network in Biyagama PS Area



Annexure 24. Line House Distribution Density of Biyagama PS Area

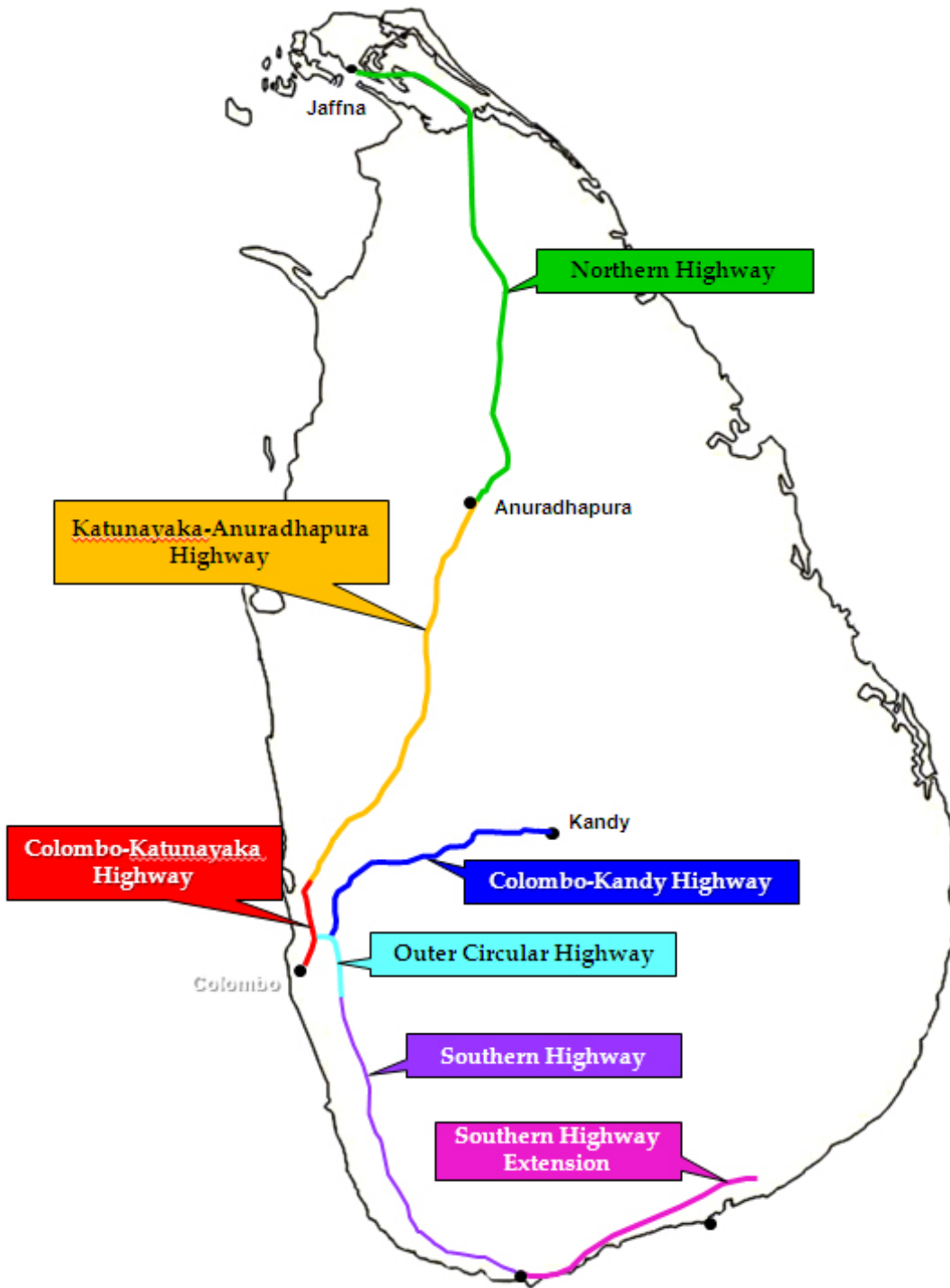


Annexure 25. 3K Area Development Project



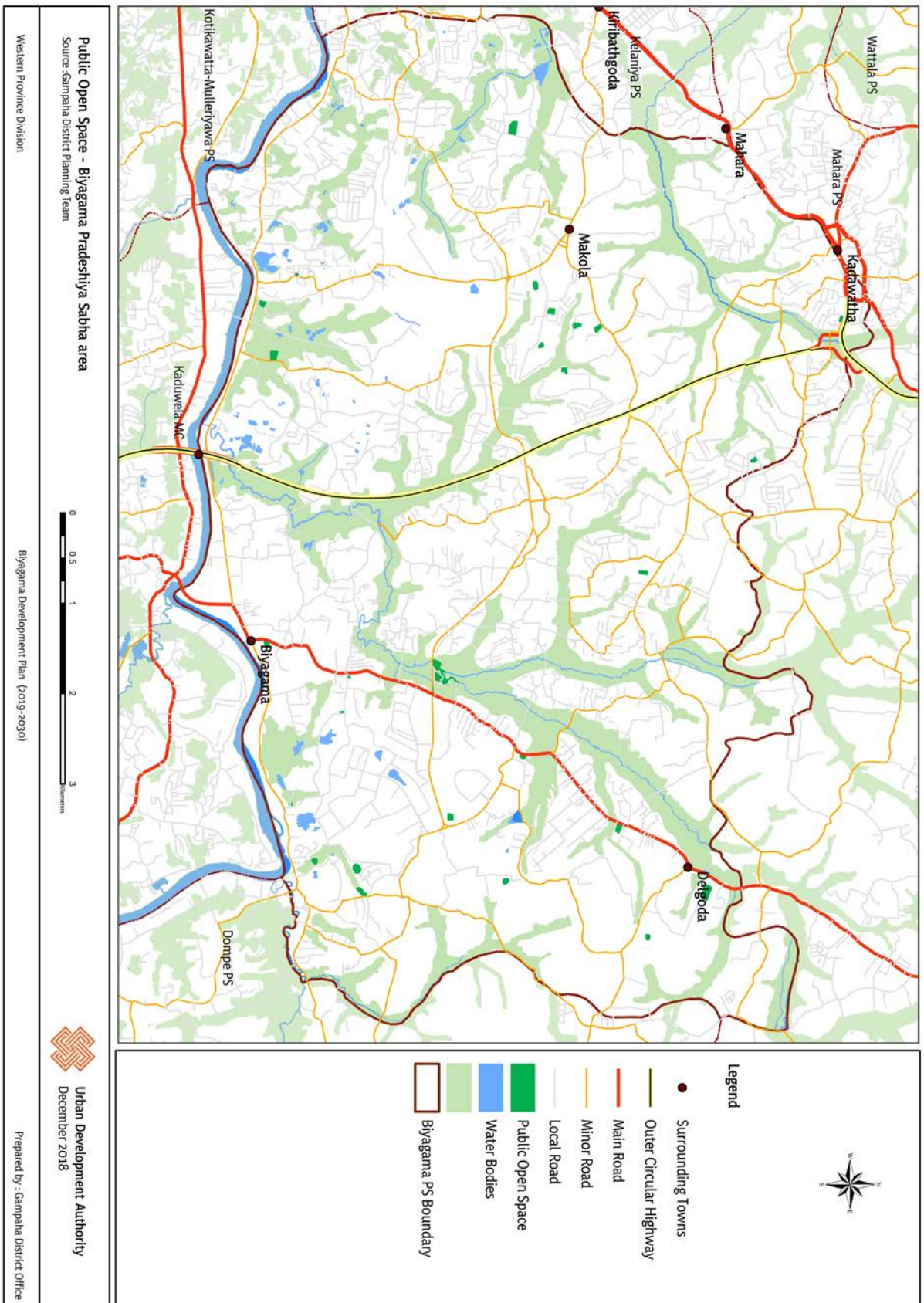
Source : CoMTrans - Urban Transport Master Plan ,2004

Annexure 26. Proposed Expressway Network of Sri Lanka

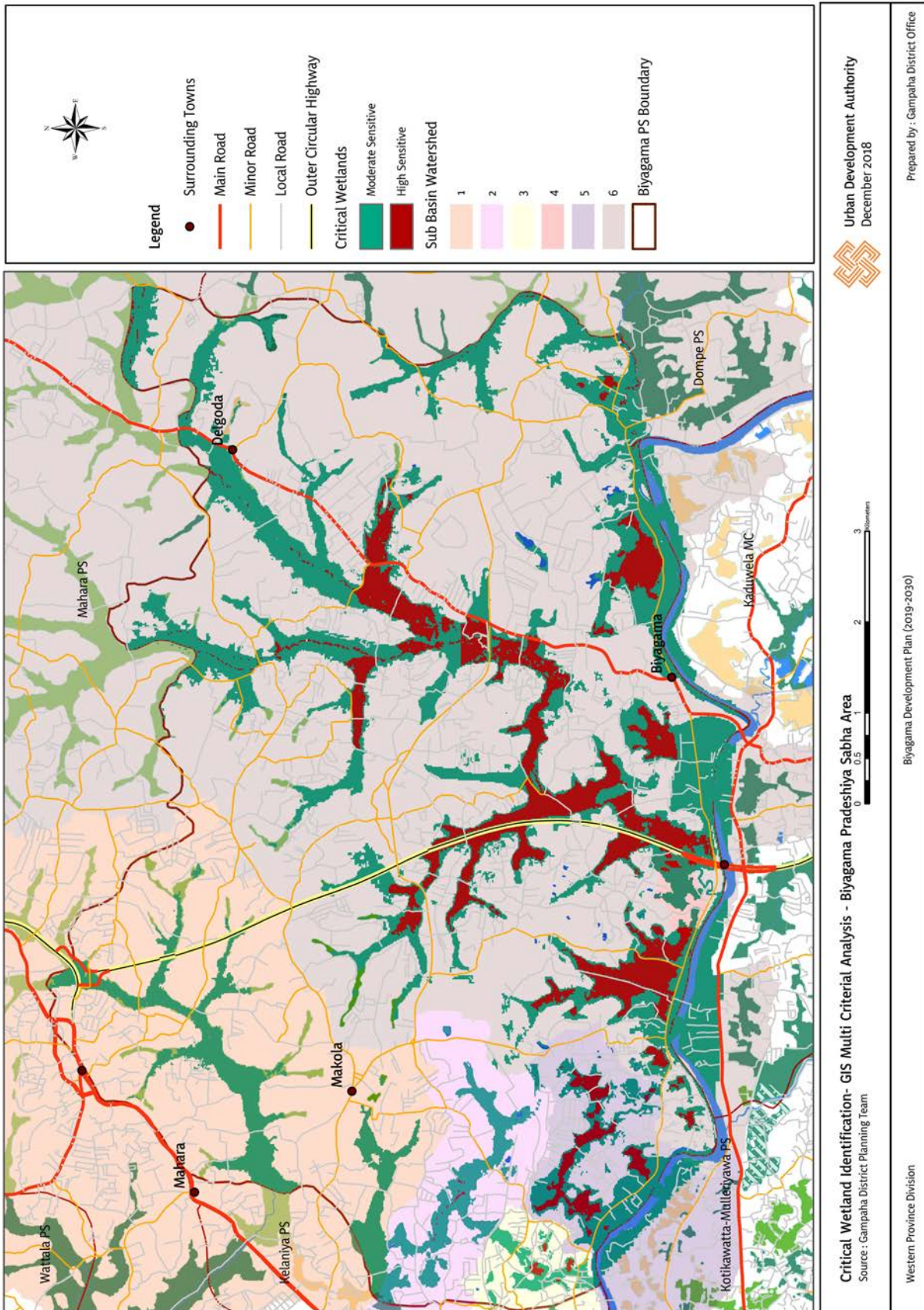


Source : Civil Engineering Design & Construction Website, 2012

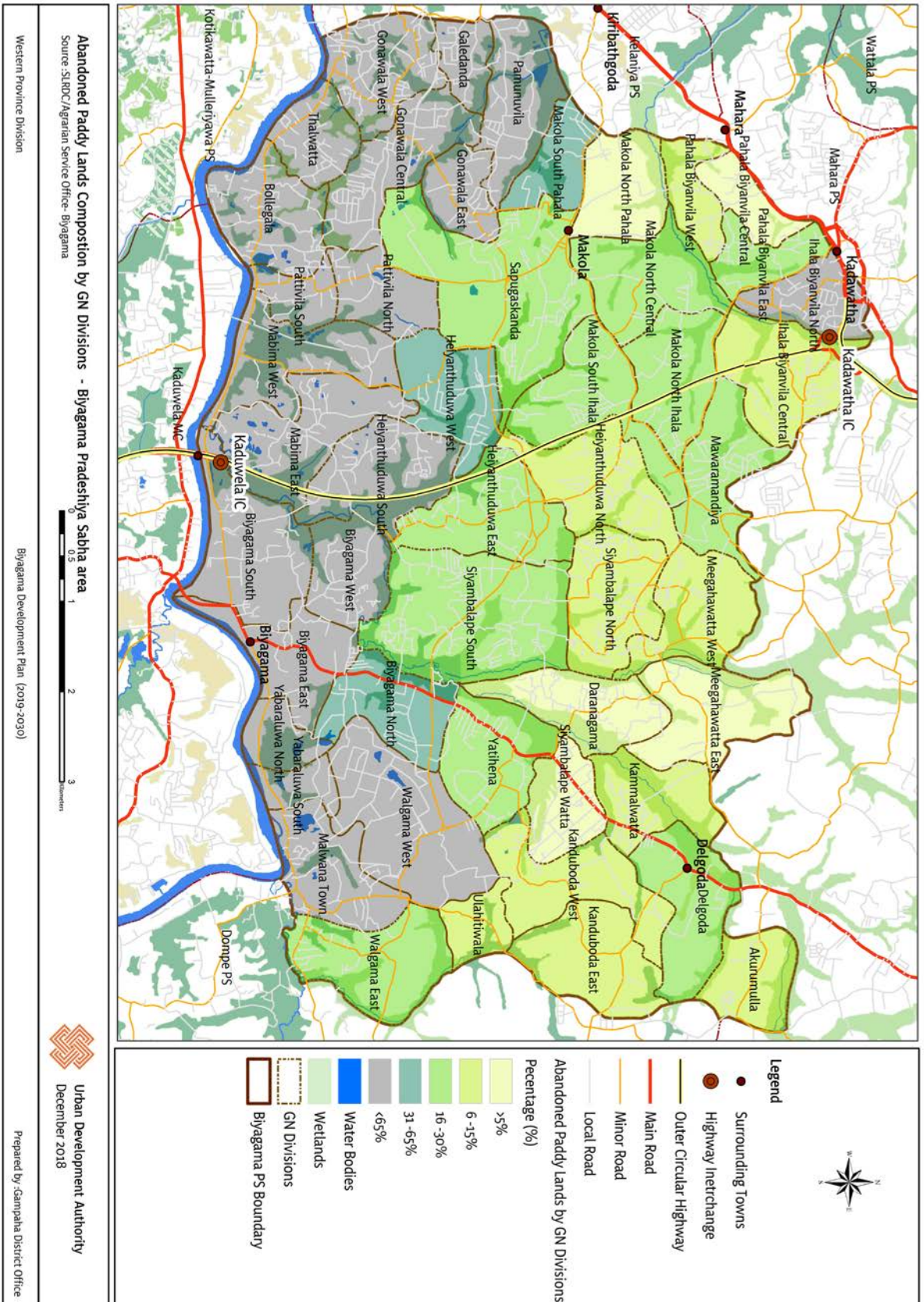
Annexure 27. Public Open Recreation Spaces of Biyagama PS Area



Annexure 30. Critical Wetland Identification – GIS Multi Criterial Analysis



Annexure 31. GN Division Wise Abandoned Paddy Composition



Annexure 32. Assumptions of Population Prediction in 2030

1. Assumed the population growth rate of these zones as 1.7% which is based on the median growth rate of following GN divisions & will expect the positive impact from the proposed transport sector related projects within & closer to these density zones.

Zone number	Zone	GN Division	Population 2001	Population 2012	Natural growth rate	Population 2017	Population 2030	Expected population within zone
Zone 1	High Dense Urban Transit Zone	Biyawila Central	4359	5003	0.01378	5434	6808	23940
		Ihala Biyawila North	3718	3407	-0.008735	3233	4051	
		Pahala Biyawila Central	2072	2375	0.013648	2578	3229	
		Pahala Biyawila North	2551	2758	0.007802	2890	3621	
		Pahala Biyawila West	4297	4708	0.009135	4973	6231	
Zone 2	High Dense Urban Service Zone	Heiyanthuduwa North	4285	5516	0.025253	6418	8041	38766
		Makola North Ihala	3108	3519	0.01242	3791	4750	
		Makola south Ihala	4690	4856	0.003478	4958	6212	
		Mawaramandiya	4887	5733	0.015966	6309	7905	
		Meegahawatta West	2006	2787	0.032882	3395	4253	
		Siyabalape North	4499	5425	0.018716	6070	7605	
Zone 3	High Dense Commercial Zone	Makola North Central	5841	6682	0.013452	7244	9075	25145
		Makola North Pahala	4837	5591	0.014486	6099	7641	
		Maakola South Pahala	2651	3109	0.015936	3421	4286	
		Sapugaskanda 1	2929	3160	0.007592	3307	4143	
		Maakola North Pahala	4837	5591	0.014486	6099	7641	

08. Moderate Dense Industrial Zone - I have considered the median growth rate of that zone & Moderate Dense Industrial Zone - II has considered the 1.4% growth rate. GN Divisions that having minus growth rate continues as it is.

Zone number	Zone	GN Division	Population 2001	Population 2012	Natural growth rate	Population 2017	Population 2030	Expected population within zone
Zone 4	Moderate Dense Industrial Zone - I	Biyagma North_1	1870	2011	0.007253	2100	2414	38494
		Biyagama North	5705	5277	-0.007799	5036	4550	
		Biyagama South_1	1488	1656	0.010731	1766	2031	
		Biyagama West	1996	2879	0.03663	3587	4124	
		Daranagama_1	801	1370	0.053671	1890	2173	
		Heiyanthuduwa North	3678	4649	0.023428	5351	6152	
		Siyambalape South	4707	6119	0.026235	7162	8234	
		Walgama West	6195	5025	-0.020932	4432	3376	
		Yatihena	4272	4554	0.006392	4732	5440	
Zone 5	Moderate Dense Industrial Zone - II	Sapugaskanda_1	2929	3160	0.007592	3307	4018	52908
		Galedanda	2251	2550	0.012472	2748	3339	
		Gonawala Central	3963	5097	0.025165	5928	7202	
		Gonawala North	3369	4081	0.019173	4579	5563	
		Gonawala	3822	3990	0.004302	4094	4974	
		Heiyanthuduwa South	1565	2342	0.040312	2983	3624	
		Heiyanthuduwa West	2199	2180	-0.000868	2169	2144	
		Mabima North_1	1781	2220	0.022015	2533	3078	
		Maabima West_1	1747	2180	0.022123	2489	3025	
		Pamunuwila	4815	5593	0.014978	6119	7434	
		Pattiwila North	1808	2048	0.012464	2207	2681	
		Thalwatta I	1249	1632	0.026716	1915	2327	
		Pattiwila West	2411	2694	0.011099	2880	3498	

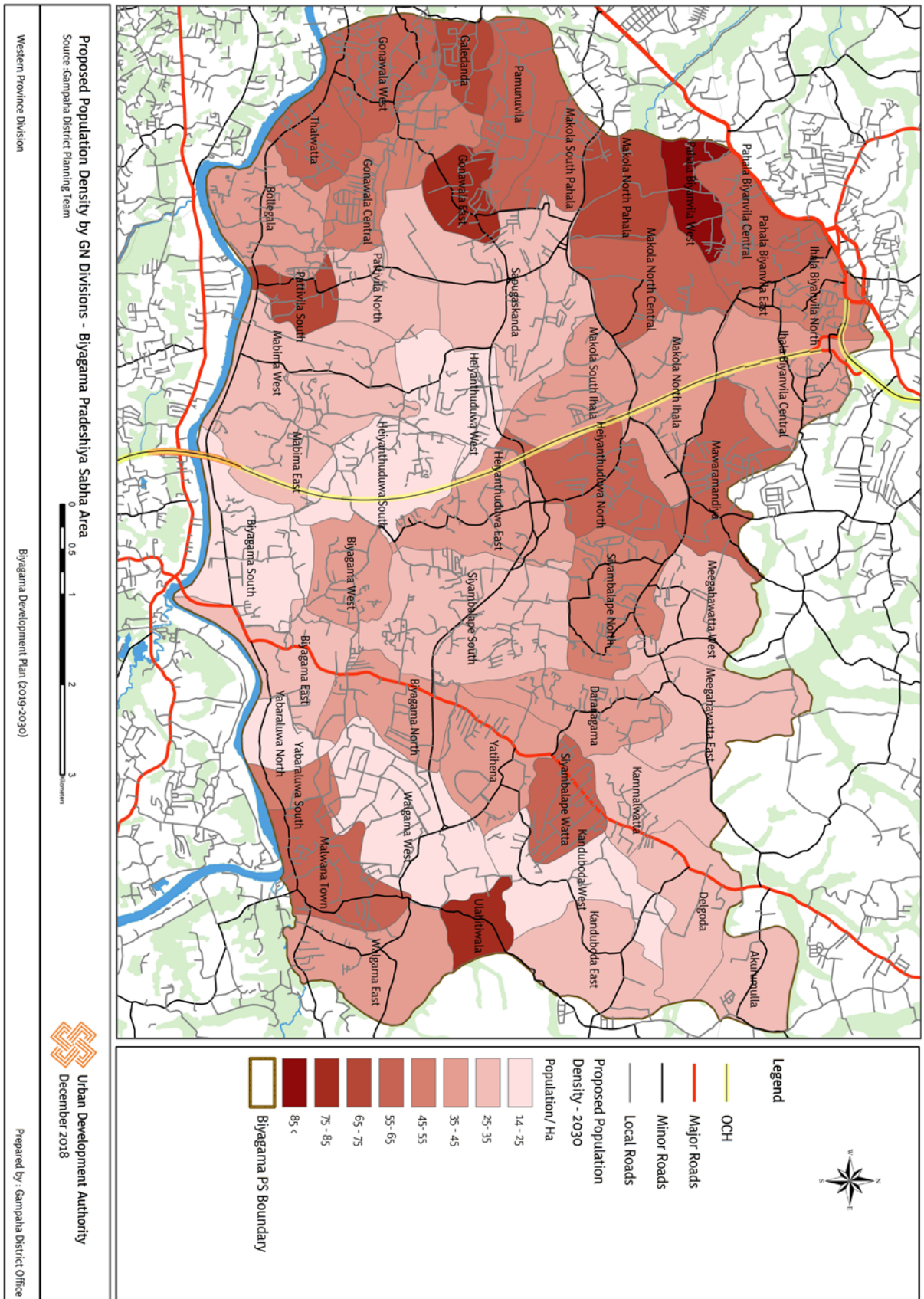
09. Proposed moderate dense urban service & commercial development promotion zones based on the 1.6% of average growth rate for the population predictions.

Zone number	Zone	GN Division	Population 2001	Population 2012	Natural growth rate	Population 2017	ජනගහනය 2030	Expected population within zone
Zone 6	Moderate Dense Urban Service Zone	Akurumulla	1421	1755	0.021111	1992	2464	29489
		Daranagama_II	801	1370	0.053671	1890	2338	
		Delgoda	2098	2516	0.018169	2806	3471	
		Kammalwatta	1967	2627	0.028933	3125	3865	
		Kanduboda south	1708	2829	0.05046	3829	4737	
		Kanduboda west	1860	2309	0.021624	2629	3252	
		Meegahawatta east	2048	2679	0.026858	3147	3893	
		Siyambalapewatta	3306	3965	0.018177	4422	5470	
Zone 7	Moderate Dense Local Business Zone	Malwana town	4771	5361	0.011659	5749	7112	17567
		Ulahitiwala	2001	2705	0.030145	3241	4009	
		Walgama south	2915	4191	0.036307	5211	6446	

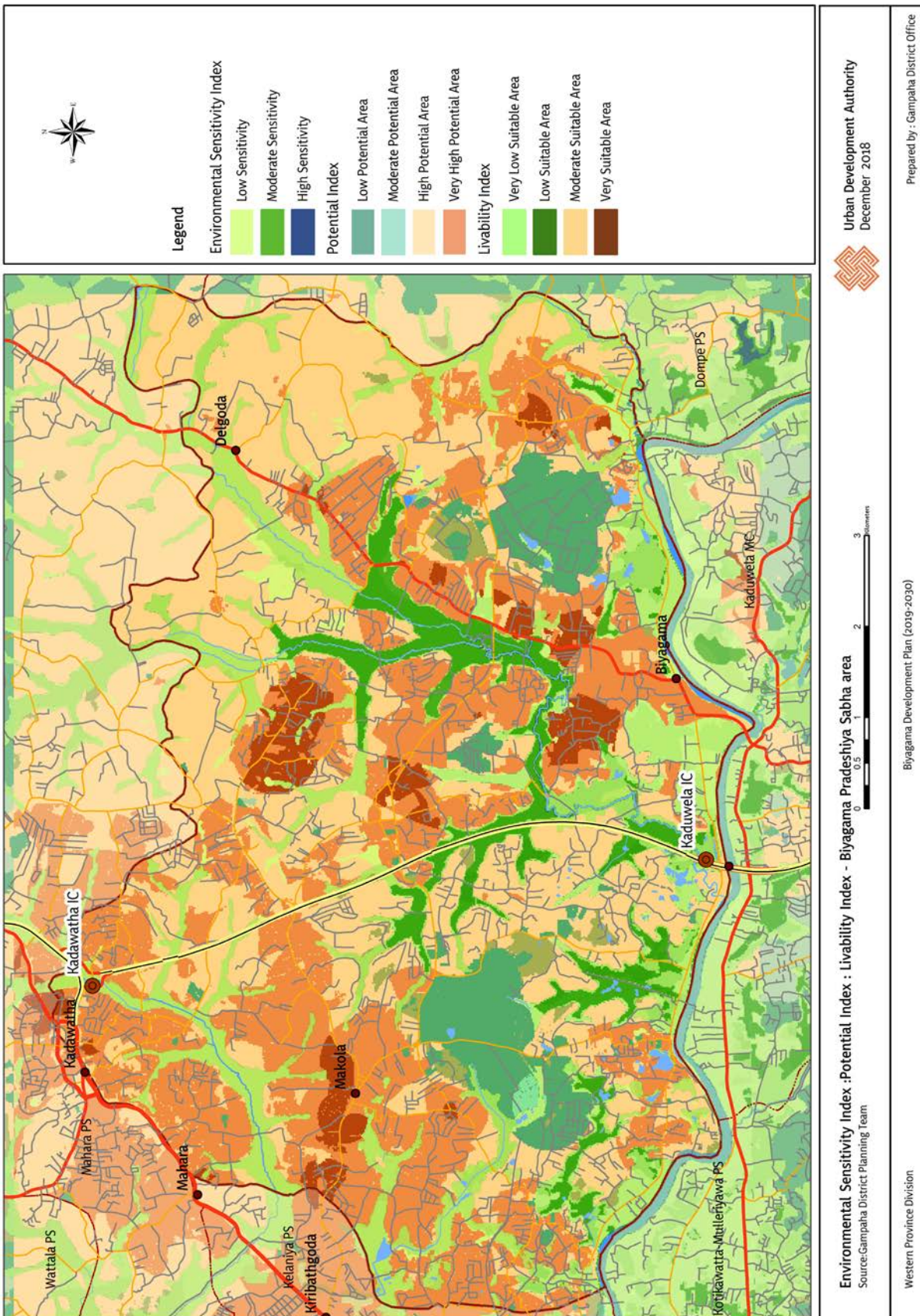
10. High environmental sensitive areas are expecting to develop as low dense development areas & this zone considered the natural growth rate of 1.4% for the population predictions.

Zone number	Zone	GN Division	Population 2001	Population 2012	Natural growth rate	Population 2017	Population 2030	Expected population within zone
Zone 8	Low Dense Special Development Zone	Biyagama South_II	1488	1656	0.010731	1766	2135	19827
		Bollegala	3242	3920	0.01899	4393	5311	
		Gonawala West_II	1911	1995	0.004302	2047	2475	
		Mabima East_II	891	1110	0.022015	1267	1532	
		Mabima West_II	874	1090	0.022123	1245	1505	
		Thalwatta_II	1249	1632	0.026716	1915	2315	
		Yabaruwa North	2315	1860	-0.021883	1631	1227	
		Yabaruwa South	2086	2076	-0.000481	2070	2057	
		Biyagama East_II	935	1005	0.00722	1049	1269	

Annexure 33. Proposed Population Density of 2030



Annexure 34. Overlapped Result of the Liveability Index, Potential Development Analysis & Environmental Sensitivity Index



Annexure 35. Emergency Regulations under the Public Security Ordinance



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අති විශේෂ

අංක 1499/24 – 2007 මැයි 30 වැනි බදාදා – 2007.05.30

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කොළඹ දී ය.

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1. මේ නියෝග 2007 අංක 1 දරන හදිසි අවස්ථා (ඉන්ධන ගබඩා කිරීමේ අධි ආරක්ෂිත කලාප) නියෝග නමින් හඳුන්වනු ලැබේ.
2. මේ නියෝගවල උපලේඛනයේ පිළිවෙලින් “අ” කොටසෙහි (කොළොන්නාව) “ආ” කොටසෙහි (මුතුරාජවෙල) “ඇ” කොටසෙහි (පුදුගස්කන්ද) සහ “ඈ” කොටසෙහි (මරුගොඩවත්ත) විස්තර කර ඇති එක් එක් ප්‍රදේශය මේ නියෝගවල කාර්ය සඳහා “ඉන්ධන ගබඩා කිරීමේ” අධි ආරක්ෂිත කලාපය යනුවෙන් ප්‍රකාශයට පත් කරනු ලැබිය යුතු ය.
3. ජනාධිපතිවරයා විසින් මේ නියෝගවල කාර්ය සඳහා නිසි බලධරයකු ලෙස යම් තැනැත්තකු නමින් හෝ ධුරයෙන් පත්කරනු ලැබිය හැකි අතර එම නිසි බලධරයා මෙම නියෝග ක්‍රියාත්මක කිරීම සඳහා වගකිව යුතු වන්නේ ය.
4. පවතින ආරක්ෂක තත්ත්වය සැලකිල්ලට ගනිමින් 2 වැනි නියෝගය මගින් ප්‍රකාශයට පත් කරන ලද ඉන්ධන ගබඩා කිරීමේ අධි ආරක්ෂිත කලාපය තුළ පිහිටි අති හතලිහට (40) තොරතුරු උසකින් යුතු වූ ගොඩනැගිල්ලක හෝ ව්‍යුහයක හෝ ඒ ගොඩනැගිල්ලේ හෝ ව්‍යුහයේ යම් හඳුනාගත් කොටසක් තුළ සිදු කරනු ලබන ක්‍රියාකාරකම් ආරක්ෂා කිරීම පිණිස විශේෂ ආරක්ෂක පියවර ගැනීම අවශ්‍ය බව නිසි බලධරයාගේ මතය වන්නේ නම්, ඔහු විසින් නියමයක් මගින් -
 - (අ) යම් ඉන්ධන ගබඩා කිරීමේ අධි ආරක්ෂිත කලාපයක් තුළ පිහිටි ගොඩනැගිල්ල හෝ ව්‍යුහය හෝ එහි යම් කොටසක් “නිශ්චිත ගොඩනැගිල්ලක්” ලෙස හඳුනා ගැනීම ;

“ ඇ ” කොටස

මරුගොඩවත්ත ඉන්ධන ගබඩා කිරීමේ අධි ආරක්ෂිත කලාපය සංයුක්ත වන ප්‍රදේශය

මරුගොඩවත්ත ඉන්ධන ගබඩා කිරීමේ අධි ආරක්ෂිත කලාපය, ඉන්ධන ගබඩා කිරීම සඳහා භාවිත කරනු ලබන්නා වූ ද, මරුගොඩවත්ත පිහිටියා වූ ද, භූමි ප්‍රදේශයෙන් සංයුක්ත වන අතර, එම ප්‍රදේශයට මායිම් පහත දැක්වෙන පරිදි වේ :

- උතුර : වැල්ලම්පිටිය පොලිස් කොට්ඨාසයේ කැලණි නදී ගම පිහිටි ඇල සහ දුම්රිය මාර්ගය යා කරමින් අදින ලද දළ රේඛාවකින් ;
- නැගෙනහිර : වැල්ලම්පිටිය පොලිස් කොට්ඨාසයේ කැලණි නදී ගම සිට ගෝතමී හදිය දක්වා අදින ලද රේඛාවකින් ;
- දකුණ : ගෝතමී මාවත, ඇල සහ දුම්රිය මාර්ගය සම්බන්ධ කරමින් ගෝතමී හන්දියේ සිට අදින ලද රේඛාවකින් ;
- බස්නාහිර : එහි සිට ඇල සහ දුම්රිය මාර්ගය දිගේ ග්‍රැන්ඩ්පාස් පොලිස් කොට්ඨාසය දක්වා ;

II වැනි උපලේඛනය

(6 වැනි නියෝගය)

I වැනි නිරූප කලාප	II වැනි නිරූප අවසරලත් කාර්යයන්	III වැනි නිරූප කොන්දේසි
<p>කලාප I පිරිපහදු සීමාවෙන් මීටර 100 ක් දක්වා දීර්ඝ කරනු ලැබ ඇත.</p>	<p>තෙල් පිරිපහදුවට අදාළ කටයුතු හැර මෙම කලාපයේ කිසිදු සංවර්ධන කටයුත්තකට අවසර නොදිය යුතු ය.</p>	<p>කලාපය තුළ ඇති සියලුම ගොඩනැගිලි උසින් අඩු දහනකක් (17)ක් නොඉක්මවිය යුතු ය. තනි තනිව ගෙවල්වලට සීමා විය යුතුයි.</p> <p>පවතින සංවර්ධන කටයුතු ඒ ආකාරයෙන්ම පවත්වා ගැනීමට ඉඩ දෙන අතර, පවතින ගොඩනැගිලිවලට කිසිදු එකතු කිරීමක්, වෙනස් කිරීමක් අලංකාරණය කිරීමක් හෝ අලුත්වැඩියාවක් සිදු කිරීමට අවසර නොදිය යුතු ය.</p>
<p>කලාප II මීටර 100 සීමාවේ සිට තවත් මීටර 100ක් දක්වා දීර්ඝ කරනු ලැබේ. මේ කලාපයේ බාහිර සීමාව පිරිපහදුවේ සීමාවේ සිට මීටර 200ක් දුරින් පිහිටා තිබිය යුතු ය.</p>	<p>බියගම ප්‍රාදේශීය සභාව සඳහා නාගරික සංවර්ධන අධිකාරිය විසින් පිළියෙල කොට ඇති බියගම ප්‍රාදේශීය සභාවේ කලාපකරණය සැලැස්මේ නිශ්චිතව සඳහන් වූ ද, එකී සභාවේ සීමාව තුළ ක්‍රියාත්මක කළ හැකි වූ ද, නේවාසික, වාණිජ සහ කර්මාන්ත කලාපය තුළ ක්‍රියාත්මක කළ හැකි සියලු අවසරලත් කාර්යයන්</p>	<p>කලාපය තුළ ඇති සියලුම ගොඩනැගිලි උසින් අඩු දහනකක් (17)ක් නොඉක්මවිය යුතු ය. තනි තනිව ගෙවල් වලට සීමා විය යුතුයි.</p> <p>වහලය මුදුනේ උයන්, කොන්ක්‍රීට් ස්ලැබ් හෝ වහලවල් හෝ වෙනත් කිසිදු පැනලි වහලවල් සඳහා අවසර නොදිය යුතු ය.</p> <p>මේ ගොඩනැගිලිවල ආලින්ද, දොරවල් සහ ජනේල වැනි කවුළු ආදිය පිරිපහදුවට මුහුණලා තිබීමට අවසර නොදිය යුතු ය.</p> <p>අධි ආරක්ෂක කලාපය තුළ මාර්ගයේ වාහන නවතා තැබීමට අවසර නොදිය යුතු ය.</p>
<p>කලාප III මීටර 200 සීමාවේ සිට තවත් මීටර 100ක් දක්වා දීර්ඝ කරනු ලැබේ. මේ කලාපයේ බාහිර සීමාව පිරිපහදු සීමාවේ සිට මීටර 300ක් දුරින් පිහිටා තිබිය යුතු ය.</p>	<p>බියගම ප්‍රාදේශීය සභාව සඳහා නාගරික සංවර්ධන අධිකාරිය විසින් පිළියෙල කොට ඇති බියගම ප්‍රාදේශීය සභාවේ කලාපකරණය සැලැස්මේ නිශ්චිතව සඳහන් වූ ද, එකී සභාවේ සීමාව තුළ ක්‍රියාත්මක කළ හැකි වූ ද, නේවාසික, වාණිජ සහ කර්මාන්ත කලාපය තුළ ක්‍රියාත්මක කළ හැකි සියලු අවසරලත් කාර්යයන්.</p>	<p>කලාපය තුළ ඇති සියලුම ගොඩනැගිලි උසින් අඩු විසිඅටක් (28) ක් නොඉක්මවිය යුතු ය. තවදුරටත් ගෙවල්වලට සීමා විය යුතු යි.</p> <p>වහලය මුදුනේ උයන් කොන්ක්‍රීට් ස්ලැබ් හෝ වහලවල් හෝ වෙනත් කිසිදු පැනලි වහලවල් සඳහා අවසර නොදිය යුතු ය.</p> <p>මේ ගොඩනැගිලිවල ආලින්ද, දොරවල් සහ ජනේල වැනි කවුළු ආදිය පිරිපහදුවට මුහුණලා තිබීමට අවසර නොදිය යුතු ය.</p> <p>අධි ආරක්ෂක කලාපය තුළ මාර්ගයේ වාහන නවතා තැබීමට අවසර නොදිය යුතු ය.</p>

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Annexure 36. Existing Public Open Recreation Spaces of Biyagama PS Area

No	Category of Park /Playground	Extent (ha)	Existing Use	GN Division/ Location
	Existing Pocket Parks (EPP)			
1.	EPP1	0.1	Play Ground	Malwana
2.	EPP2	0.1	Play Ground	Yabaraluwa
3.	EPP3	0.2	Colombahenawatta Play Ground	Biyagama North
4.	EPP4	0.2	Lovely Play Ground	Biyagama North
5.	EPP5	0.1	Open Space	Meegahawatta
6.	EPP6	0.1	Open Space	Meegahawatta
7.	EPP7	0.1	Open Space	Siyambalape North
8.	EPP8	0.1	Open Space	Peragashandiya
9.	EPP9	0.1	Open Space	Bandarawatta
10.	EPP10	0.1	Open Space	Biyagama
	Sub Total	1.2		
Existing Mini Park (EMP)				
11.	EMP1	0.7	Colombahenawatta Play Ground	Malwana
12.	EMP2	0.2	Play Ground (Pattiwila Housing Complex)	Pattiwila
13.	EMP3	0.6	Mahawatta Play Ground	Bollegala
14.	EMP4	0.6	Siyambalape School Playground - Kammalwatta	Mabima West
15.	EMP5	0.4	Play Ground	Mawaramandiya
16.	EMP6	0.4	Al –Musthapa Play Ground	Yatihena
17.	EMP7	0.5	Biyagama EPZ Play Ground	Walgama
18.	EMP8	0.4	Play Ground	Pradeegama
19.	EMP9	0.2	Play Ground	Biyawila
	Sub Total	4.0		
Existing Local Parks (ELP)				
20.	ELP1	1.6	Biyagama EPZ Play Ground	Malwana
21.	ELP2	1.2	Rakshapana Mosque Play Ground	Malwana
22.	ELP3	1.4	Delgoda Public Ground	Delgoda
23.	ELP4	1.3	Wakkadawela Play Ground	Mabima West
	Sub Total	5.5		
Existing Linear Park (ELiP)				
12.	ELiP1	1.0	Siyambalape Walking Path	Siyambalape
	Sub Total	1.0		
	Total	11.7		

Source : Environment and Landscape Division, 2018

Annexure 36. Existing Public Open Recreation Spaces of Biyagama PS Area

No	Category of Park / Playground	Extent (ha)	Existing Use	Proposed Use	GN Division/Location
	Proposed Pocket Parks (PPP)				
1.	PPP1	0.08	From Land 10%	Pocket Park	Kanduboda
2.	PPP2	0.10	From Land 10%		Ranwimana
3.	PPP3	0.08	From Land 10%		Delgoda
4.	PPP4	0.09	From Land 10%		Siyambalape West
5.	PPP5	0.03	From Land 10%		
6.	PPP6	0.02	From Land 10%		
7.	PPP7	0.08	From Land 10%		Bandarawaththa
8.	PPP8	0.15	From Land 10%		Gonawala West
9.	PPP9	0.10	From Land 10%		Heritage City – Play ground of Land Sale site
10.	PPP10	0.10	From Land 10%		Makola
11.	PPP11	0.16	From Land 10%		Makola
12.	PPP12	0.15	From Land 10%		Makola
	Total	1.1			
Proposed Mini Parks (PMP)					
13.	PMP1	0.2	Open Land	Mini Park	Akurumulla
14.	PMP2	0.3	Open Land		Makola
15.	PMP3	0.37	Open Land		Makola North Central
16.	PMP4	0.51	Open Land		Heiyanthuduwa North
	Total	1.4			
Proposed Linear Parks (PLi.P)					
17.	PLi.P1	0.1	Yatihena Tank Reservation	Linear Park	
18.	PLi.P2	71.0	Kelani River Reservation (60m)	Linear Park	
19.	PLi.P3	57.0	Raggahawatta Canal Reservation (40m)	Linear Park	
20.	PLi.P4	46.0	Raggahawatta Canal Reservation (20m)	Linear Park	
21.	PLi.P5	15.0	Biyawila Canal Reservation (20m)	Linear Park	
22.	PLi.P6	13.6	Gonawala Wetland Environs	Linear Park	Gonawala Eastern Central
23.	PLi.P7	0.43	Meegahawatta Paddy Field	Linear Park	Meegahawatta West
24.	PLi.P8	12	Siyambalape Paddy Field	Linear Park	Siyambalape South, Biyagama North, Daranagama
25.	PLi.P9	0.73	Paddy Land and Canal Reservation	Linear Park	Heiyanthuduwa North
	Total	215.9			
	Sub Total	218.4			

Source : Environment and Landscape Division, 2018

Annexure 38. Strategic Projects & Priority Mechanism

Category	Project Title	Concept Plan	Social Value	Environmental Value	Time & Funding	Total	Priority Level	
A. Industrial Economy Plan								
<i>Central Investment Corridor Development Strategy</i>								
Road Development & Improvement	1. Develop Gonawala-Sapugaskanda Road with four lanes	9	7	5	9	30	1	
	2. Develop Karabugas Junction- Yatihena Road with four lanes	9	7	5	9	30	1	
	3. Nagahamula Junction Industrial Nodal Development	9	7	5	9	30	1	
	4. 04.Karabugas Junction Industrial Nodal Development	9	7	5	9	30	1	
	5. Develop Gonawala - Koholvila Road with two lanes	3	5	5	7	20	3	
	<i>Local Industrial Collector Development Strategy</i>							
	6. Develop Biyagama - Colombo Road with four lanes	9	7	5	9	30	1	
	7. Develop Pattiwila - Makola Road with four lanes	7	7	5	7	26	2	
	8. Develop Mabima Road with four lanes	9	7	5	9	30	1	
	9. Develop Thai Temple Road with two lanes	7	7	5	7	26	2	
	10. Develop Dimo Road with four lanes	9	7	5	7	28	2	
	11. Develop Jayanthi Mawatha with two lanes	9	9	5	7	30	1	
	12. Develop Malwana - Dompe Road with four lanes	9	9	5	7	30	1	
13. Biyagama - Kosgama Railway Project	9	7	5	3	24	3		
<i>Plug & Play Industrial Parks Strategy</i>								
Investment Attraction & Economic Development	14. Develop Sapugaskanda Plug & Play Industrial Park – I	9	7	5	9	30	1	
	15. Develop Sapugaskanda Plug & Play Industrial Park – II	9	7	5	9	30	1	
	16. Develop Plug & Play Industrial Park in Dimo Industrial Cluster Area	9	7	5	7	28	2	
	17. Industrial Oriented Smart Business Centre Development Project	9	9	5	5	28	2	
<i>Riverfront Productive Tracts Strategy</i>								
Environment & Social Benefits with Local Economy Enhancement	18. Malawana Fabric & Commercial Riverfront Corridor Development Project	9	9	9	3	30	1	

B. Environment Conservation & Management Plan							
	19. Malawana Sambawela Canal Restoration Project & Riverfront Park Development Project	9	9	9	3	30	1
	20. Tree strips development along the local industrial collector roads	7	5	9	7	28	2
	21. Siyambalape Wetland Park Development Project	9	7	9	5	30	1
	22. Mawaramandiya Linear Park Development Project	9	7	9	5	30	1
	23. Yatihena Tank & Surroundings Park Development Project	9	7	9	5	30	1
C. Infrastructure Development Plan							
C.1 Road and Transportation Plan							
	24. Develop Mankada Road with four lanes	9	7	5	7	28	2
	25. Develop Mawaramandiya - Makola road for four lanes	9	7	5	7	28	2
	26. Develop Kanduboda Tank Road with two lanes	9	9	5	5	28	2
C.2 Swerage & Waste Water Management Plan							
	27. Biyagama Technological Waste Water Treatment Plant Project	9	7	9	5	30	1
	28. Sapugaskanda Waste Water Treatment Project	9	5	9	3	26	2
C.3 Solid Waste Management Plan							
	29. Establish a Solid Waste Sorting Centre	5	7	7	7	26	2
C.4 Water Supply Plan							
	30. Develop the Mabima Water Treatment Plant	9	9	5	3	26	2
C.5 Service Management Plan							
	31. Siyambalape Hospital Development Project	7	7	3	3	20	3
	32. Siyambalape Skill Up-gradation Centre Development Project	7	7	3	3	20	3
	33. Biyagama Hostel Facilities Development Project	7	9	5	3	24	3
C.6 Urban Services Improvement Plan							
Urban Service Centers Improvement for Residential & Commuting Population	34. Mawaramandiya Town Centre Development Project	9	9	5	7	30	1
	35. Delgoda Town Centre Development Project	9	9	5	7	30	1
	36. Makola Town Centre Development Project	9	9	5	7	30	1
	37. Makola Middle Income Housing Project	7	9	5	3	24	3
	38. Kadawatha Public Market Development Project	9	9	5	3	26	2

Source : Gampaha District Planning Team, 2017

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