DRAFT FINAL REPORT

ACTION AREA PLAN

BAKALIA AND CHAR BAKALIA

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PREPARATION OF CHATTOGRAM METROPOLITAN MASTER PLAN

Prepared in Association with

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ACTION AREA PLAN: BAKALIA AND CHAR BAKALIA

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EXECUTIVE SUMMARY

The Bakalia and Char Bakalia Action Area Plan (AAP) is a comprehensive urban planning document crafted as a core component of the Chittagong Metropolitan Master Plan (CMMP). Designed to be implemented over the next 10 to 20 years, it serves as a formal Development Plan Document (DPD), focusing on the transformation of Bakalia and Char Bakalia into dynamic, inclusive, and environmentally sustainable urban environments. The overarching goal of this plan is aligned with the broader vision of the CMMP—to enhance socio-economic opportunities while preserving the rich cultural and environmental heritage of Chattogram. The AAP is not merely a policy guideline for future planning permissions; rather, it is a bold, action-driven blueprint rooted in partnerships between the public and private sectors, committed to fostering holistic urban regeneration.

Geographically, the planning area encompasses two distinct zones: Bakalia, a densely populated urban settlement covering approximately 327.51 acres on the eastern side of the Karnaphuli Bridge connecting road, and Char Bakalia, a relatively underutilized landmass situated across the eastern bank of the Karnaphuli River within Boalkhali Upazila, which covers around 406.56 acres. Combined, these two areas represent roughly 715 acres of strategic urban land that holds immense potential for sustainable development but currently faces significant challenges that impede growth and livability.

The existing conditions in both areas are characterized by a series of critical urban challenges. Bakalia, for instance, is a low-income area plagued by haphazard and unregulated development, largely driven by a surge in illegal rental housing. This has resulted in inadequate urban infrastructure, most notably a poor internal road network marked by narrow access roads and severe traffic congestion. These physical limitations are compounded by inefficient land use, a lack of rear plot development, and the absence of a coherent planning structure. Environmental vulnerabilities, especially seasonal flooding caused by insufficient drainage systems, exacerbate the residents' difficulties. Additionally, Bakalia has been identified as a hotspot for criminal activity, and the dominance of informal markets creates safety hazards and adds to the area's chaotic conditions.

Char Bakalia, although less developed, faces equally pressing challenges. It remains inaccessible by formal transportation, relying exclusively on informal boat services. The area's potential has long been overlooked, and it suffers from high flood and river erosion risks, limiting investment and public interest. Despite its limitations, Char Bakalia holds promise as a green and leisure destination, with the AAP envisioning its transformation into the "first natural park of Chittagong" and an iconic destination that could significantly enhance the city's tourism appeal.

Beyond these location-specific issues, both areas share broader urban challenges that reflect the larger problems of Chattogram city. The Karnaphuli River, which flows between Bakalia and Char Bakalia, is a critical natural and economic resource suffering from extensive environmental degradation. Illegal encroachments, waste dumping from industrial and informal settlements, and unchecked pollution threaten the river's health, ecological balance, and navigability. The city also faces an acute shortage of public amenities, community facilities, and green open spaces. Environmental threats like hill cutting and industrial pollution, particularly from brick kilns and unregulated small-scale industries, pose additional risks that urgently need to be addressed.

In light of these challenges, the AAP articulates a vision for an integrated, dynamic, and resilient urban future, where commercial growth, residential stability, and recreational opportunities coexist in harmony with environmental stewardship. This vision is underpinned by several strategic objectives. Firstly, the plan emphasizes economic revitalization by attracting investment, business development, and tourism. Secondly, it aims to upgrade infrastructure to reduce traffic congestion, improve connectivity, and provide essential services. Thirdly, it integrates sustainability and environmental resilience into the fabric of urban development, focusing on green infrastructure and the conservation of natural ecosystems. Fourthly, it advocates for social inclusion, ensuring equitable access to housing, services, and amenities across all income groups. Lastly, it promotes cultural and recreational vibrancy by creating engaging public spaces and preserving the area's heritage.

The proposed interventions in the AAP span across multiple sectors. For recreation and tourism, Char Bakalia is envisioned as a premier eco-tourism hub. Facilities like an eco-resort, safari park, forest ecosystem, and water-based recreational sites are proposed, alongside a cable car service connecting it with Bakalia. This development is complemented by a strategy to boost Bakalia's recreational offerings, including urban parks, butterfly gardens, and a riverside amusement zone near Kalpalok Residential Area.

In terms of urban development and housing, the plan proposes expanding planned residential areas that accommodate diverse income groups while enforcing modern urban design principles such as open spaces, building setbacks, and footpaths. It seeks to upgrade informal settlements through land readjustment and site-and-services models, ensuring fair compensation for existing landowners. Special attention is given to managing slum areas and integrating them into the formal urban system. Building height regulations will be tailored to prevent overcrowding in already congested areas and to encourage vertical development in suitable zones.

The commercial and industrial development strategy includes the creation of vibrant commercial corridors, particularly in high-traffic junctions like Bahadderhat and the Shah Amanat Bridge approach. Industrial activities will be reorganized in designated zones such as the Kalurghat Planned Industrial Area and Bolirhat, with efforts to modernize operations, reduce pollution, and create visitor-friendly infrastructure. Informal markets will be restructured, and major khals like Chaktai will be rehabilitated to support warehousing and logistics.

On the infrastructure front, one of the plan's keystones is the proposed construction of a 200-foot-wide embankment-cum-road along the Karnaphuli River, aimed at flood control and traffic flow improvement. The internal transportation network will be upgraded through a grid-based road system with dedicated bus bays, ensuring connectivity and safety. The drainage strategy involves the rehabilitation of major khals, the construction of new khals, flood storage ponds, and the creation of green buffer zones to prevent encroachment and preserve natural water flows.

Environmental protection is a cross-cutting priority. Proposed interventions include the creation of mangrove forests along the river, the designation of green urban blocks, and the establishment of pollution control measures like industrial waste treatment plants. The Halda River, noted for its ecological significance as a breeding ground for indigenous carp species, is recognized as a Special

Ecological Zone, with strict limitations on development activities such as brickfields and sand mining. The plan also calls for the preservation of cultural landmarks, including the Borua Para area, home to ethnic minority communities and important religious sites.

The implementation framework is designed to ensure phased development, accountability, and stakeholder collaboration. It is divided into short and medium term actions, coordinated by the Chattogram Development Authority (CDA), which will oversee implementation through development controls and coordination with other governmental bodies, the private sector, and community stakeholders. Key institutional partners include the Chittagong City Corporation (CCC), the National Housing Authority (NHA), private investors, NGOs, and local communities. The plan anticipates various challenges such as the relocation of illegal settlements, managing development in the high liquefaction zones of eastern Bakalia, and mitigating heavy traffic around key transport nodes like Bashir Circle.

To maintain alignment with strategic objectives, a robust monitoring and evaluation mechanism is included, utilizing Key Performance Indicators (KPIs) to track progress in infrastructure delivery, environmental quality, social equity, and economic vitality. This framework will enable adaptive management, ensuring that projects remain on track and responsive to changing conditions and community needs.

In summary, the Bakalia and Char Bakalia AAP is a forward-thinking, action-oriented plan that seeks to transform two critically important areas of Chattogram into exemplary urban zones. By addressing complex urban challenges and capitalizing on local opportunities, the plan aims to build a future that is not only livable and economically robust but also environmentally sound and socially inclusive. If successfully implemented, this plan will serve as a model for sustainable and integrated urban development in Bangladesh and the broader South Asian region.

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1. INTRODUCTION AND STRATEGIC CONTEXT

The Bakalia and Char Bakalia Action Area Plan (AAP) is a crucial strategic document designed to guide the comprehensive development and revitalization of a key zone within the Chattogram Metropolitan Area (CMA), As an area-specific, micro-level plan, the AAP translates the higher-level vision of the Chittagong Metropolitan Master Plan (CMMP) into actionable outcomes, focusing on transforming a strategically important, yet critically challenged, portion of the city.

1.1 BACKGROUND OF THE PROJECT

1.1.1 THE AAP AS A FORMAL DEVELOPMENT PLAN DOCUMENT (DPD)

The Action Area Plan (AAP) serves as a formal Development Plan Document (DPD), representing the third and final stage of the composite planning process for the Chittagong Metropolitan Master Plan (CMMP). Its primary function is to define the statutory planning policy for how a specific urban area will undergo transformation over a significant period, typically ranging from 10 to 20 years. The AAP moves beyond mere policy setting to proactively drive and coordinate regeneration initiatives through collaborative partnerships involving both public and private sectors. This approach is intended to maximize social and economic opportunities while creating a modern, sustainable community model.

1.1.2 AAP AS A PILOT PROJECT FOR CMMP

The Chattogram Metropolitan Master Plan (CMMP) was prepared by the Chittagong Development Authority (CDA) between 1992 and 1995 with support from UNDP/UNCHS and the Government of Bangladesh (GoB), receiving government approval in 1999, Within the framework of the CMMP, the Bakalia and Char Bakalia AAP holds particular significance as it has been designated as a Pilot Project.

The area was selected as one of three priority pilot projects, categorized as "Zone 1" and initially identified as a "Low Density area inside CCC". This strategic selection emphasizes the intention to use Bakalia as a model for future urban transformation. The methodologies and strategies employed here will be assessed for their effectiveness before broader application across the Chattogram Metropolitan region.

1.1.3 NEED FOR THE BAKALIA AND CHAR BAKALIA AAP

The development of the Bakalia and Char Bakalia AAP is necessitated by a series of acute urban and environmental challenges that currently impede livability and growth:

- **Haphazard Development and Inadequate Infrastructure:** Bakalia is characterized by haphazard and unregulated development driven largely by illegal rental housing, resulting in an inadequate internal road network, inefficient land use, and an absence of a coherent planning structure.
- **Environmental Vulnerability:** The area suffers from severe waterlogging due to poor drainage conditions, encroachment, and siltation of khals. Char Bakalia is further threatened by a high vulnerability of flood and river erosion. Development in eastern Bakalia is complicated by its classification as a high liquefaction zone.
- **Socio-Economic Challenges:** Bakalia is currently identified as a "hub of crime", requiring transformation into a planned, safe community. Additionally, the proliferation of slums and squatter areas needs comprehensive improvement or relocation strategies.
- **River Degradation:** The Karnaphuli River, a critical resource, is suffering from extensive environmental degradation due to illegal encroachments and direct waste dumping from industries and informal settlements, deteriorating its navigability.

The AAP is required to articulate opportunities for radical change, coordinate investment, and proactively implement solutions to these fundamental challenges over the next 15 years.

1.2 CONTEXT WITHIN THE CHITTAGONG METROPOLITAN MASTER PLAN (CMMP)

The Bakalia and Char Bakalia AAP is structured within the three-tiered planning hierarchy established by the CMMP, ensuring vertical alignment across strategic, urban, and local planning levels.

1.2.1 RELATIONSHIP TO STRUCTURE PLAN (1995–2015)

The Structure Plan (1995-2015), the highest tier of the CMMP, established the strategic policies for development. The AAP directly implements this strategic vision. Key policies influencing this plan include:

- **Expansion Area Designation:** The Structure Plan identified Bakalia as one of the three expansion areas of the city, signalling its strategic importance for accommodating Chittagong's projected population growth and economic activity.
- **Policy Mandates:** The Structure Plan mandates policies across twelve sectors, including economic development (ECN), housing (HOU), flood control and drainage (FCD), and urban land development (ULD). The specific proposals in the AAP regarding drainage improvement, planned housing for all income groups, and commercial revitalization are derived from these higher-level policy mandates.

1.2.2 RELATIONSHIP TO URBAN DEVELOPMENT PLAN (1995–2005)

The Urban Development Plan (UDP) (1995–2005) provided the broad framework for development promotion, control, and coordination. The UDP specifically recognized the critical planning issues that the AAP is tasked with resolving:

- **Flood and Surge Vulnerability:** The UDP highlighted the area’s susceptibility to seasonal flooding and cyclonic surges from the Karnaphuli River. This necessitates the AAP’s key structural proposal for an embankment-cum-road.
- **Road and Drainage Deficits:** The UDP recognized the "haphazard development of urban fringe areas" with narrow and irregular road networks and emphasized the need for adequate space for road and drainage networks as a prerequisite for urban development.

1.2.3 ALIGNMENT WITH DETAILED PLANNING ZONE DPZ-04

The entire planning area of the CMMP is sub-divided into 12 Detailed Planning Zones (DPZ). The Bakalia and Char Bakalia area is situated within the larger planning designation of DPZ-04, known as Bakalia-Chandgaon. This DPZ encompasses a total area of 8,092 acres, spanning across the Chandgaon and Bakalia Thanas. The AAP functions as a detailed, micro-level development proposal (Zone 1 Pilot Project) within this larger zonal planning framework, ensuring that local interventions are harmonized with broader zonal and metropolitan objectives.

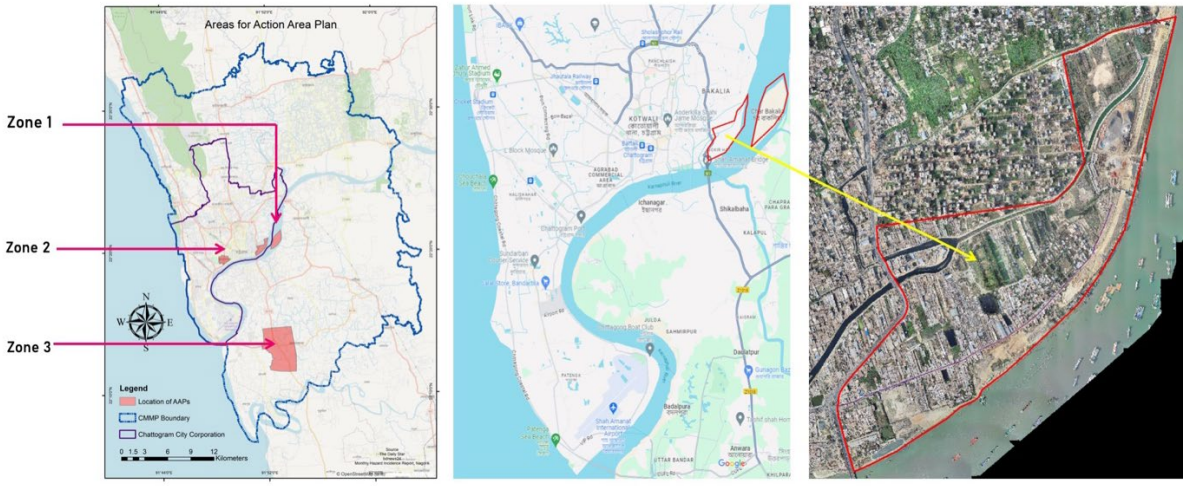

Figure 1: Action Area Plan Boundary for Bakalia and Char Bakalia (Zone-1)

1.3 PROJECT AREA DEFINITION

1.3.1 LOCATION AND ADMINISTRATIVE BOUNDARIES

The Action Area Plan focuses on Bakalia and Char Bakalia, which together constitute Zone 1 of the CMMP pilot projects. The zone is situated to the east of the central city and is located within the administrative jurisdiction of Chandgaon and Bakalia Thanas.

Administrative Boundaries (DPZ-04): The broader DPZ-04 boundary is defined by the Karnaphuli River (on the east and south), the Halda River (on the upper eastern portion), and several key roads to the west, including the Nawab Sirajuddowla road. The area encompasses seven wards of the Chittagong City Corporation (CCC): Ward 4, 5, 6, 17, 18, 19, and 35.

Figure 2: Accessibility to Bakalia

Key Access Points: Existing major road access is provided by the entrance road from Bashir Circle (Shah Amanat Bridge Circle). The ongoing construction of the embankment road is expected to become the primary connecting road for the area in the future. Notably, Char Bakalia currently lacks any roadway or formal waterway access.

1.3.2 AREA COVERED BY AAP

The total area targeted by the Bakalia and Char Bakalia AAP is approximately **715 acres**. This area is divided into two distinct geographical components:

- **Bakalia:** Situated on the western bank (eastern side of the Karnaphuli bridge connecting road), covering approximately 327.51 acres (or 327.7071915 acres).
- **Char Bakalia:** Located on the eastern bank of the Karnaphuli River under Boalkhali Upazilla, covering approximately 406.56 acres (or roughly 390 acres).

The AAP represents a detailed intervention for this critical sub-section of DPZ-04, balancing the transformation of the densely populated Bakalia with the development of the underutilized Char Bakalia as a potential "first natural park of Chittagong".

1.4 CHAPTER SUMMARY AND IMPLICATIONS

The Bakalia and Char Bakalia Action Area Plan is fundamentally an action-driven blueprint for urban regeneration, positioned within the comprehensive planning hierarchy of the Chittagong Metropolitan Master Plan.

Its strategic context is defined by the urgent necessity to address profound, long-standing urban issues—including severe waterlogging, haphazard development, high crime rates, and river degradation—within an area previously identified by the Structure Plan (1995-2015) as a key expansion zone. By functioning as a pilot project within DPZ-04, the AAP must deliver specific, measurable outcomes in a geographically critical area covering approximately 715 acres. The plan's successful implementation, particularly the core structural proposals such as flood defenses and the proposed new road network, is paramount not only for transforming Bakalia and Char Bakalia into a vibrant, eco-friendly, and dynamic destination but also for establishing a transferable model for sustainable, integrated urban development across the broader Chattogram Metropolitan region.

2. VISION, OBJECTIVES AND SCOPE

The Bakalia and Char Bakalia Action Area Plan (AAP) is a comprehensive urban planning document designed as a formal Development Plan Document (DPD) within the broader framework of the Chittagong Metropolitan Master Plan (CMMP). This chapter establishes the guiding philosophy for the transformation of the action area over the next 10 to 20 years. It outlines the overarching vision, defines the strategic objectives necessary to address existing challenges, and details the key urban development principles that will govern land use, built form, and environmental practices across Bakalia and Char Bakalia.

2.1 SCOPE OF THE ACTION AREA PLAN

The scope of the Bakalia and Char Bakalia AAP is comprehensive, establishing the legal, aesthetic, and functional framework for development, redevelopment, conservation, and control within the project boundaries.

2.1.1 DETAILED DEVELOPMENT PROPOSALS

The AAP functions as an area-specific, micro-level development plan explicitly designed for execution in the form of concrete projects. Its scope is to formulate development proposals in such detail as appropriate to the policies of the Structure Plan (SP) and the guidelines of the Urban Area Plan (UAP). This granularity includes:

- Allocating specific zones for residential areas categorized by density (high, middle, low density, including disadvantaged groups), complete with indications of Floor Area Ratio (FAR).
- Allocating zones for industrial uses (heavy, light, service) and commercial uses (blocks, mixed-use), ensuring adherence to environmental acts, rules, and guidelines.
- Providing area-specific development policies for upgrading, redevelopment, new area development, conservation, and protection.

2.1.2 BASIC URBAN DESIGN FRAMEWORK

A primary aspect of the scope is defining the aesthetic and functional quality of the future urban environment. This includes:

- Providing a basic urban design framework that prioritizes functional and aesthetic quality.
- Exercising control over architectural features, elevations, and frontages of buildings and structures.
- Applying zoning regulations to regulate location, preservation of heritage, Floor Area Ratio (FAR), and building types within each zone, while also outlining allowable deviations.
- Ensuring planning principles/standards, gross/net densities, and guidelines for future development and development control are followed.

2.1.3 COORDINATION OF REGENERATION INITIATIVES

The AAP is not merely a regulatory document; its scope is explicitly action-driven. It is designed to proactively deliver and coordinate regeneration efforts through partnerships between the public and private sectors.

- The plan provides clarity and security regarding future development for both inhabitants and investors.
- It ensures planning activities align with a broader metropolitan framework, acting as a roadmap for significant change or conservation.
- Furthermore, conducting environmental impact analyses (EIA) for all proposed DAP components is a mandatory part of the scope.

2.2 VISION FOR BAKALIA AND CHAR BAKALIA

The overarching vision of the Bakalia and Char Bakalia AAP is to transform the area into a dynamic, inclusive, and environmentally sustainable urban environment. This vision is explicitly aligned with the broader goals of the CMMP, to enhance socio-economic opportunities while simultaneously preserving the rich cultural and environmental heritage of Chattogram.

The desired future is an integrated, dynamic, and resilient urban future, where commercial growth, residential stability, and recreational opportunities coexist in harmony with environmental stewardship. The plan aims to build a future that is not only livable and economically robust but also environmentally sound and socially inclusive, serving as a model for sustainable urban development.

2.2.1 VIBRANT AND DYNAMIC DESTINATION

The vision aims to transform the areas into a vibrant, eco-friendly, and dynamic destination for residents and visitors. This dynamic quality encompasses:

- **Commercial Revitalization:** Transforming haphazard commercial development, such as the Bahadderhat junction, into high-class commercial centers incorporating necessary infrastructure like wide public plazas, adequate parking, and dedicated bus bays.
- **Economic Enhancement:** Planned expansion of economically vital activities, such as the furniture-making hub, integrating facilities for tourism and formal exhibition areas.
- **Connectivity:** Seamlessly blending urban life with new transport and recreational opportunities, such as the proposed cable car service linking Char Bakalia to Bakalia, and improved river ghats.

2.2.2 ECO-FRIENDLY AND PLANNED COMMUNITY MODEL

Environmental stewardship and meticulous planning are central to the vision, ensuring the area's long-term resilience and ecological health.

- **Natural Park Development:** Char Bakalia holds immense potential to become the "first natural park of Chittagong," serving as an iconic destination. This involves designing a forest ecosystem guided by experts (ecologists, botanists, zoologists) to ensure biodiversity and sustainability.
- **Green Infrastructure:** The plan proposes the creation of riverside forests, including mangrove forests on the west bank of Karnaphuli, serving as wildlife sanctuaries and natural defenses against cyclonic storm surges.
- **Planned Growth:** Transforming Bakalia from its current state of unplanned growth and crime into a functional, resilient, and safe "planned community" where commercial growth, residential stability, and recreational opportunities coexist in harmony with environmental stewardship.

2.3 OBJECTIVES OF THE ACTION AREA PLAN

The specific objectives of the Bakalia and Char Bakalia AAP are formulated to systematically address existing urban deficiencies, promote sustainable development, and realize the metropolitan goals established by the CMMP.

2.3.1 ADDRESSING CRITICAL EXISTING ISSUES

A primary objective is to confront and resolve severe urban challenges currently plaguing the area:

- **Flood and Drainage:** Mitigate severe waterlogging resulting from siltation, encroachment of khals, and insufficient drainage systems. The plan specifically notes Sub Zone 3 (between the Karnaphuli River and Rajakhali khal) is affected by regular tidal flooding to depths of 6 to 8 feet.
- **Haphazard Development:** Manage and eliminate the irregular road networks and insufficient urban amenities resulting from the uncontrolled, haphazard development of urban fringe areas.

- **Socio-Structural Issues:** Transform the area from its identification as a "hub of crime" into a safer, planned community. Address the degradation of Karnaphuli River navigation caused by illegal land occupation and direct waste dumping from factories and settlements.
- **Housing and Density:** Alleviate chronic congestion within the Chaktai Commercial Centre and address the widespread presence of slums and squatter areas through strategies for improvement or relocation.

2.3.2 PROMOTING URBAN RENEWAL AND PLANNED REDEVELOPMENT

The AAP aims to catalyze comprehensive urban renewal and ensure growth is equitable and structured:

- **Housing Equity:** Guide the development of new residential areas to accommodate all income groups (High, Middle, and Low Income), proposing a recommended distribution of 50% for Low Income, 40% for Middle Income, and 10% for High Income in new areas.
- **Upgrading Techniques:** Implement innovative planning techniques, such as Land Readjustment and Site and Services Schemes, to upgrade and revitalize existing unplanned residential areas.
- **Commercial Design:** Transform unplanned commercial nodes into high-class commercial centers featuring adequate setbacks and wide public plazas.
- **Institutional Improvement:** Upgrade and revitalize dilapidated government staff quarters and improve planned residential areas.

2.3.3 ENHANCING INFRASTRUCTURE AND CONNECTIVITY

A core objective is developing a resilient and efficient physical infrastructure network:

- **Major Road Network:** Construct the Embankment-cum-Road along the Karnaphuli River (with a substantial Right-of-Way of 200 to 300 feet) to provide flood protection and enhanced traffic circulation.
- **Grid Connectivity:** Develop an efficient arterial road network arranged in a grid-iron pattern, including new primary and secondary road links, to "open up" the area for development.
- **Waterway Access:** Improve river ghats and Inland Water Transport (IWT).
- **Public Transport:** Introduce dedicated bus bays to organize public transport and manage high passenger demand.

2.3.4 ENSURING ENVIRONMENTAL PROTECTION AND DISASTER RESILIENCE

Environmental stewardship and disaster mitigation are fundamental objectives, particularly given the area’s coastal location and geological vulnerabilities:

- **Drainage Rehabilitation:** Achieve the rehabilitation of major khals which involves fixing bank lines, constructing new khals, and installing silt traps and regulators.
- **Liquefaction Risk Mitigation:** In eastern Bakalia, identified as a high liquefaction zone, a key objective is to ensure that all construction of buildings over two stories high must employ proper structural and architectural design to mitigate safety risks.
- **Ecological Conservation:** Protect the Karnaphuli River from pollution and illegal occupation. Preserve ponds and water bodies of 0.5 acre and above.
- **Green Buffer Zones:** Create green corridors/buffer zones along khals (ranging from 20 ft to 100 ft wide) to improve livability and prevent environmental degradation and encroachment.

2.4 PLANNING APPROACH AND METHODOLOGY

The preparation of the Bakalia and Char Bakalia AAP follows a comprehensive, evidence-based methodology designed to ensure the plan is responsive, integrated, and technically sound.

2.4.1 REVIEW OF HIGHER-LEVEL PLANS AND CONTEXTUAL STUDIES

The AAP is deliberately positioned within a larger planning hierarchy. The methodology commenced with a critical review of predecessor documents and contextual studies:

- **CMMP Foundation:** The plan is prepared based on the policies of the Structure Plan (1995-2015) and the guidelines of the Outline Urban Area Plan (1995-2005).
- **Adaptation:** The methodology involves incorporating necessary modifications where previous recommendations were found unsuitable or where circumstances had changed since the CMMP's approval in 1999.
- **Sectoral Review:** The planning team consulted numerous supporting documents, including the CDA Drainage Master Plan (1995-2015), CWASA Drainage Master Plan (2016-2030), and various environmental acts and policies to ensure integrated solutions.

2.4.2 USE OF GEOGRAPHICAL INFORMATION SYSTEM (GIS) BASED DATA BANK

A fundamental component of the planning methodology is the development and utilization of detailed spatial data.

- **Data Bank Objective:** A core objective of the DAP process is providing land use maps, plans, and detailed information at the local level stored within a Geographical Information System (GIS) based data bank.
- **Base Map Production:** This methodology includes the production of updated base maps (at mouza dag level) indicating all existing physical features, a necessity due to the lack of updated physical survey maps at CDA.
- **Decision Support:** The approach mandates recording all information in the GIS database and transferring this skill to CDA technical staff, ensuring the data can be used effectively for day-to-day decision-making and continuously updated.

2.4.3 STAKEHOLDER CONSULTATION AND COMMUNITY ENGAGEMENT

To ensure the plan reflects local realities and achieves implementability, extensive stakeholder consultation is mandated.

- **Inclusive Participation:** The overall objective of the DAP is to initiate and implement development through participation. The methodology involves consultation with CDA officials, local community representatives, relevant government and private agencies, and NGOs.
- **Needs Assessment:** Extensive sample socio-economic surveys were conducted to ascertain the existing situation and recommend measures to meet present and future needs.
- **Inter-Agency Coordination:** The planning methodology recognizes that successful implementation requires institutional coordination through a framework such as the proposed Multi-Sectoral Investment Programme (MSIP). The creation of a formal coordination platform involving CDA, CCC, BWDB, and DoE is essential for planning effectiveness.

2.5 CHAPTER SUMMARY AND STRATEGIC IMPLICATIONS

The scope and objectives outlined in Chapter 2 establish the Bakalia and Char Bakalia AAP as a high-priority, action-driven document designed for execution over the next 10 to 20 years. The vision—to create a vibrant, eco-friendly, and dynamic destination—is directly supported by rigorous, measurable objectives addressing the area's triple challenge of haphazard development, critical infrastructure deficit (especially drainage), and environmental decay (Karnaphuli River pollution, liquefaction risk).

Strategic Implications:

- **Investment Priority:** The ambitious objectives, particularly the Embankment-cum-Road and the Char Bakalia Natural Park development, necessitate large-scale, coordinated public sector investment. The implementation timeline (Short Term: 2007-2010; Medium Term: 2011-2015) underscores the urgency to initiate projects based on development potential and problem severity.
- **Regulatory Enforcement:** Achieving the vision hinges on rigorous development control in line with DAP provisions (e.g., FAR, zoning, heritage preservation) and institutional willingness to enforce environmentally compliant measures, such as requiring specific structural designs in liquefaction zones and industrial waste treatment plants.
- **Institutional Mandate:** Success depends on strong organizational capacity, mandating the effective use of the GIS-based data bank and robust coordination between CDA, CCC, and utility providers, to prevent fragmentation of development and service shortfalls.
- **Social Equity:** The explicit objective to accommodate all income groups (50% LI, 40% MI, 10% HI) and address crime and slum/squatter issues ensures the transformation is socially inclusive, aligning with the CMMP's broader goals for equitable growth.

3. BASELINE ANALYSIS: EXISTING CONDITIONS AND KEY ISSUES

This chapter provides a detailed analysis of the existing socio-economic, infrastructural, and environmental conditions within the designated Action Area Plan (AAP) boundary, which is a core component of the Chittagong Metropolitan Master Plan (CMMP). The planning area encompasses approximately **715 acres** of strategic urban land, divided into two distinct geographical zones: the densely populated urban settlement of Bakalia and the relatively underutilized landmass of Char Bakalia. Understanding the current land use profile, existing development patterns, infrastructure deficiencies, and chronic urban challenges is essential for formulating the integrated and sustainable interventions proposed in the AAP.

3.1 EXISTING CONDITION OF BAKALIA

Bakalia is a densely populated urban settlement situated on the eastern side of the Karnaphuli Bridge connecting road. The total planning area designated for Bakalia is 327.51 Acre.

Figure 3: Overview of Existing Structures in Bakalia

3.1.1 LAND USE PROFILE

The existing land use profile of Bakalia shows a mix of residential activity, industrial use, and significant undeveloped and natural land. The breakdown of area distribution reveals the primary categories of land use:

Table 3-1:Existing Land Use Profile of Bakalia

Landuse Type	Area (Acre)
Vacant Land	95.01
Residential	80.82
Waterbody	35.95
Industrial	33.12
Service Activity	25.60
Road	22.66
Mixed Use	10.99
Education and Research	10.45
Open Space and Recreational	5.32
Community Facilities	4.46
Agricultural	1.40
Restricted Area	1.16

Landuse Type	Area (Acre)
Administrative/ Public Service	0.47
Transport and Communication	0.08
Total Area	**327.51**

3.1.2 DEVELOPMENT ASPECTS: DOMINANCE OF RESIDENTIAL, VACANT LAND, AND WATERBODIES

The land use pattern in Bakalia is primarily dominated by three categories: Residential (80.82 acres), Vacant Land (95.01 acres), and Waterbodies (35.95 acres). This dominance clearly indicates a focus on housing, coupled with substantial inherent potential for future development (Vacant Land) and the presence of natural water resources requiring conservation (Waterbodies).

Figure 4: Existing Single Storied Structures in Bakalia

Beyond housing and undeveloped plots, significant areas are dedicated to supporting economic activity, connectivity, and social services. This includes Industrial use (33.12 acres), Roads (22.66 acres), and Service Activities (25.60 acres). Academic, recreational, and livability aspects are supported by Education, Mixed Use, Community Facilities, and Open Spaces, which together total 30.22 acres.

3.1.3 EXISTING STRUCTURES AND GROWTH DIRECTIVES

The existing built environment of Bakalia is characterized by a strong historical pattern of low-rise development, currently undergoing rapid vertical expansion.

Table 3-2: Existing Structures in Bakalia (Data)

Number of Storied	Nos
Single Storied Building	1,882
Two Storied Building	67
Three Storied Building	19
Four Storied Building	6
Five Storied Building	7
Six Storied Building	7
Seven Storied Building	2
Eight Storied Building	2
Ten Storied Building	1

Number of Storied	Nos
Eleven Storied Building	1
Thirteen Storied Building	13

The vast majority of structures are single-storied buildings (1,882), reflecting traditional development patterns and the low-rise nature of the region. However, the area is experiencing significant urbanization, indicated by the emergence of multi-storied buildings, including thirteen 13-storied structures and others up to 11 stories. This shift highlights increased population density and a rising demand for both housing and commercial spaces. While vertical growth facilitates economic opportunities, it simultaneously creates challenges such as resource strain, severe traffic congestion, and environmental concerns, emphasizing the critical need for sustainable urban planning measures.

3.1.4 URBAN CHALLENGES

Bakalia faces a complex array of chronic urban challenges that undermine livability and systematic development:

- **Socio-Economic Focus and Haphazard Development:** Bakalia is defined as a low-income area. It is severely impacted by haphazard and unregulated development, primarily fueled by a surge in illegal rental housing. This lack of planning has resulted in the absence of a coherent planning structure and inefficiency in land use, including a lack of rear plot development.
- **Infrastructure Deficiencies and Congestion:** The area suffers from inadequate urban infrastructure, particularly a poor internal road network characterized by narrow access roads. This deficiency leads directly to severe traffic congestion.
- **Safety and Chaos:** The prevalence of informal markets contributes to chaotic conditions and creates safety hazards. Furthermore, Bakalia has been formally identified as a hotspot for criminal activity.
- **Environmental Vulnerabilities (Flooding):** The area is highly susceptible to seasonal flooding. This vulnerability is a direct result of insufficient drainage systems, which significantly exacerbates difficulties for residents.

3.2 EXISTING CONDITION OF CHAR BAKALIA

Char Bakalia is an underutilized landmass situated across the eastern bank of the Karnaphuli River within Boalkhali Upazila.

Figure 5: Existing Condition of Char Bakalia

3.2.1 LAND USE PROFILE

The total area of Char Bakalia is 406.56 Acre. Its current land use profile is overwhelmingly dominated by undeveloped space, signifying immense potential for planned growth.

Table 3-3: Existing Land Use Profile of Char Bakalia

Landuse Type	Area (Acre)
Vacant Land	385.47
Waterbody	21.10
Total Area	**406.56**

3.2.2 DEVELOPMENT ASPECTS: POTENTIAL FOR SUSTAINABLE ECO-TOURISM

Char Bakalia, due to its unique location adjacent to Bakalia and surrounded by the Karnaphuli River, offers 385.47 acres of vacant land considered ideal for sustainable eco-tourism development.

Key development opportunities include:

- **Eco-Tourism Hub:** The AAP envisions transforming Char Bakalia into the “first natural park of Chittagong” and an iconic destination to significantly boost the city’s tourism appeal.
- **Water-based Recreation:** The 21.10 acres of waterbodies make the area suitable for water-based activities such as boating and kayaking.
- **Eco-Friendly Initiatives:** Its scenic surroundings are perfect for eco-friendly projects, including the development of nature trails, eco-lodges, and recreational tourism facilities.

3.2.3 URBAN CHALLENGES

The primary factors limiting public interest and investment in Char Bakalia are related to access and environmental risk.

- **Inaccessibility:** The area remains profoundly inaccessible by formal transportation. It possesses no roadway or formal waterway connections. Access is strictly limited to hiring a boat and landing at an appropriate location, relying exclusively on informal boat services.
- **Environmental Risks:** Char Bakalia suffers from high flood and river erosion risks, which pose continuous threats to any permanent development.

3.3 ACCESSIBILITY AND CONNECTIVITY

The connectivity of the action area is defined by limited existing major road access in Bakalia and severe isolation of Char Bakalia, offset by promising future infrastructure projects.

3.3.1 EXISTING MAJOR ROAD ACCESS

The main existing major road access point into the Bakalia area is the entrance road from Bashir Circle (Shah Amanat Bridge Circle).

Other existing access options include the road along Rajakhali Khal and connections via the Kalpolok Residential area. However, the existing internal road network suffers from narrow access roads and contributes to severe traffic congestion within Bakalia.

3.3.2 FUTURE POTENTIAL: ONGOING EMBANKMENT ROAD CONSTRUCTION

A significant infrastructural opportunity for future connectivity and resilience is the ongoing construction of the embankment road. This project is anticipated to become the primary connecting road for the area.

The AAP identifies the construction of a 200-foot-wide embankment-cum-road along the Karnaphuli River as a key strategic intervention, serving the dual purpose of flood control and significant improvement of traffic flow.

3.3.3 CHAR BAKALIA ACCESS LIMITATIONS

Char Bakalia is currently isolated, lacking any roadway or formal waterway connections. Access is entirely reliant upon hiring a boat and landing at an appropriate location, utilizing informal boat services. Overcoming this physical isolation is a prerequisite for realizing the area's potential, with proposed solutions including a cable car system to connect Char Bakalia to Bakalia.

3.4 BROADER ENVIRONMENTAL CHALLENGES

The action area exists within a broader metropolitan context facing acute environmental degradation, particularly impacting the vital Karnaphuli River.

3.4.1 DEGRADATION OF THE KARNAPHULI RIVER (POLLUTION, ENCROACHMENTS)

The Karnaphuli River, which flows between Bakalia and Char Bakalia, is a critical natural and economic resource currently suffering from extensive environmental degradation.

Key threats to the river's health, ecological balance, and navigability include:

- **Pollution and Waste:** The river is harmed by unchecked pollution and the dumping of waste originating from industrial sectors and informal settlements.
- **Illegal Encroachments:** Illegal encroachments pose a major threat to the river's integrity.

The AAP recognizes the urgency of this issue, mandating the preservation of natural resources by protecting the Karnaphuli River and surrounding waterbodies through conservation efforts and eco-friendly practices.

3.4.2 ENVIRONMENTAL THREATS

The wider environment surrounding the action area faces several acute, city-level threats:

- **Industrial Pollution:** Significant environmental risks are posed by industrial pollution, particularly from brick kilns and unregulated small-scale industries.

- **Land Use Threats:** Threats include hill cutting.
- **Urban Deficiencies:** Chattogram city, generally, faces an acute shortage of public amenities, community facilities, and green open spaces, contributing to environmental strain and lowered quality of life.

3.5 CHAPTER SUMMARY AND IMPLICATIONS

The existing conditions analysis reveals a stark contrast between Bakalia and Char Bakalia, yet both zones require urgent intervention to achieve sustainable urban regeneration. Bakalia is characterized by high density, dominant low-rise structures undergoing chaotic vertical expansion, and critical infrastructural deficits leading to congestion, flooding, and safety issues (crime hotspot). The large amount of Vacant Land (95.01 acres), however, offers a substantial opportunity for planned redevelopment. Char Bakalia is a largely untouched natural asset, offering immense potential to become the “first natural park of Chittagong” and an eco-tourism hub, but this potential is wholly constrained by its inaccessibility and high environmental risks (flood/erosion). The degradation of the Karnaphuli River serves as a unifying environmental threat to the entire action area. The findings underscore the necessity of the AAP's integrated approach: focusing on slum upgrading and planned infrastructure (like the embankment-cum-road) in Bakalia, while prioritizing specialized access solutions (e.g., cable car) and environmental protection for Char Bakalia.

4. BAKALIA AND CHAR BAKALIA ACTION AREA PLAN: PROPOSED INTERVENTIONS

The Action Area Plan (AAP) for Bakalia and Char Bakalia forms a critical sub-component of the Chittagong Metropolitan Master Plan (CMMP), which envisions Chattogram's transformation into a modern, resilient, and sustainable metropolitan city. Situated on both banks of the Karnaphuli River, the two sites present contrasting realities: Bakalia, a dense urbanized settlement of approximately 327.5 acres, suffers from unplanned growth, inadequate services, and environmental risks, while Char Bakalia, a 406.6-acre landmass, remains largely vacant yet rich in ecological potential. Together, they represent nearly 715 acres of strategic urban land at the metropolitan edge of Chattogram, offering an unprecedented opportunity to harmonize urban regeneration with environmental conservation.

This chapter outlines the proposed interventions for both areas, integrating housing, commerce, infrastructure, environmental management, and eco-tourism. The interventions are designed to address current challenges—such as flooding, congestion, and informal settlement growth—while capitalizing on opportunities for sustainable economic development, improved quality of life, and enhanced environmental resilience. They are also consistent with the guiding principles of the CMMP, which emphasize balanced land use, inclusivity, ecological sustainability, and integration with regional infrastructure networks.

4.1 BAKALIA INTERVENTIONS AND ZONING

4.1.1 PROPOSED RESIDENTIAL ZONE DEVELOPMENT

Bakalia's current land use allocation indicates 80.82 acres of residential land, which represents approximately 24.6% of its developed area . However, the settlement is dominated by single-storey structures, with 1,882 one-storied buildings compared to only a handful of high-rise blocks. The AAP proposes to expand residential areas through nine designated residential blocks (B1–B9), covering 89.08 acres or 27.2% of the total land area .

Table 4-1: Proposed Residential Land Allocation in Bakalia

Residential Block	Area (sqm)	Area (acres)	% of Total
B1	41,915	10.36	–
B2	15,217	3.76	–
B3	39,283	9.71	–
B4	29,217	7.22	–
B5	52,646	13.01	–
B6	45,692	11.29	–
B7	15,147	3.74	–
B8	105,796	26.14	–
B9	15,562	3.85	–
Total	**360,475**	**89.08**	**27.2%**

The AAP anticipates 10,900 dwelling units in these residential blocks, supported by regulated height controls. Taller apartment buildings will be allowed along wide roads and lower-density family housing will be preserved near the riverfront. This ensures both population accommodation and spatial equity.

Residential development is at the heart of Bakalia's regeneration. The AAP proposes to reorganize and expand residential areas along the Karnaphuli riverbank, ensuring that housing growth is managed in a planned and sustainable manner. Existing residential clusters, which currently span about 80.82 acres,

will be supplemented by new housing blocks designed for different income groups. Large-scale mass housing projects are planned for low- and middle-income families, with emphasis on affordability, community services, and safe building design. Condominium-style developments will cater to upper-middle-class households, while riverside housing for single families will combine urban quality of life with scenic views of the river.

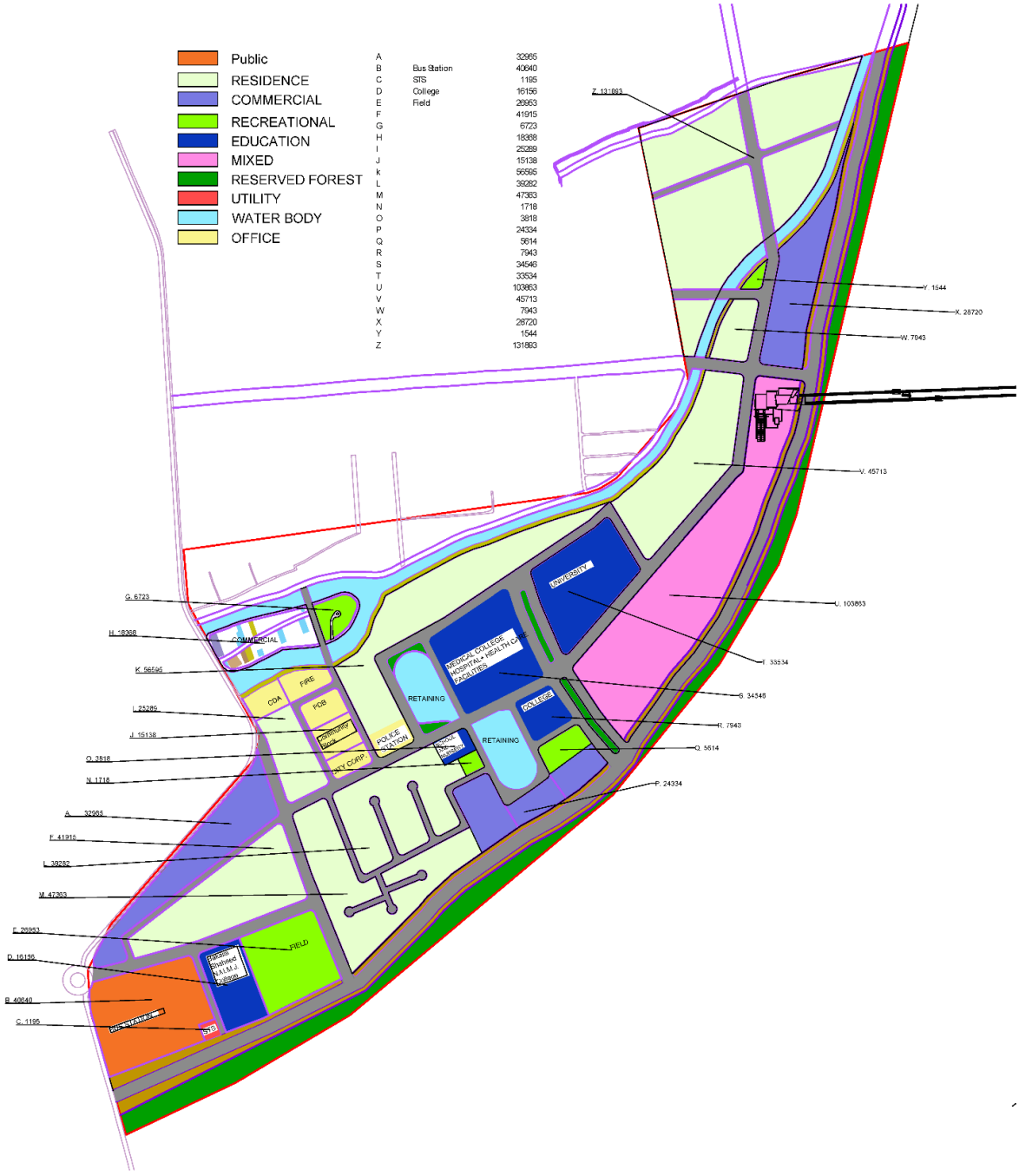

Figure 6: Proposed Action Area Plan for Bakalia

The plan also addresses the need to regulate vertical growth. Presently, Bakalia is dominated by single-storied dwellings (1,882 units), but the rise of high-rise structures—including thirteen thirteen-storied towers—indicates growing demand for vertical living. To prevent congestion, building height restrictions will be introduced in already dense areas, while taller buildings will be encouraged in less populated zones. This balanced approach to vertical expansion will optimize land use, accommodate a growing

population, and reduce urban sprawl. Each residential zone will be complemented by community facilities, playgrounds, and retaining ponds, ensuring both livability and resilience against seasonal flooding.

4.1.2 PROPOSED COMMERCIAL ZONE DEVELOPMENT (MODERN HUB INTEGRATION)

Commercial activity in Bakalia is presently fragmented, occupying 25.25 acres (7.7% of land area) across four designated zones (C1–C4). The AAP proposes to consolidate and modernize these areas into a riverfront commercial hub integrated with mixed-use buildings, studio apartments, and leisure spaces.

Table 4-2: Proposed Commercial Land Allocation in Bakalia

Commercial Zone	Area (sqm)	Area (acres)	% of Total
C1	24,334	6.01	–
C2	28,720	7.10	–
C3	16,195	4.00	–
C4	32,918	8.13	–
Total	**102,167**	**25.25**	**7.7%**

This commercial hub, inspired by global examples like Marina Bay Sands in Singapore, will feature high-rise towers, shopping complexes, business centers, and entertainment facilities. Its riverbank location will enhance urban branding while the proposed cable car connection to Char Bakalia will anchor it as a metropolitan gateway.

This commercial hub is proposed along the riverbank, designed to transform Bakalia into a new economic engine of Chattogram. The proposed commercial zone will integrate business, leisure, and residential activities in a dynamic mixed-use environment. Inspired by global models such as Marina Bay Sands in Singapore, the hub will feature commercial towers housing office spaces, retail outlets, and entertainment facilities.

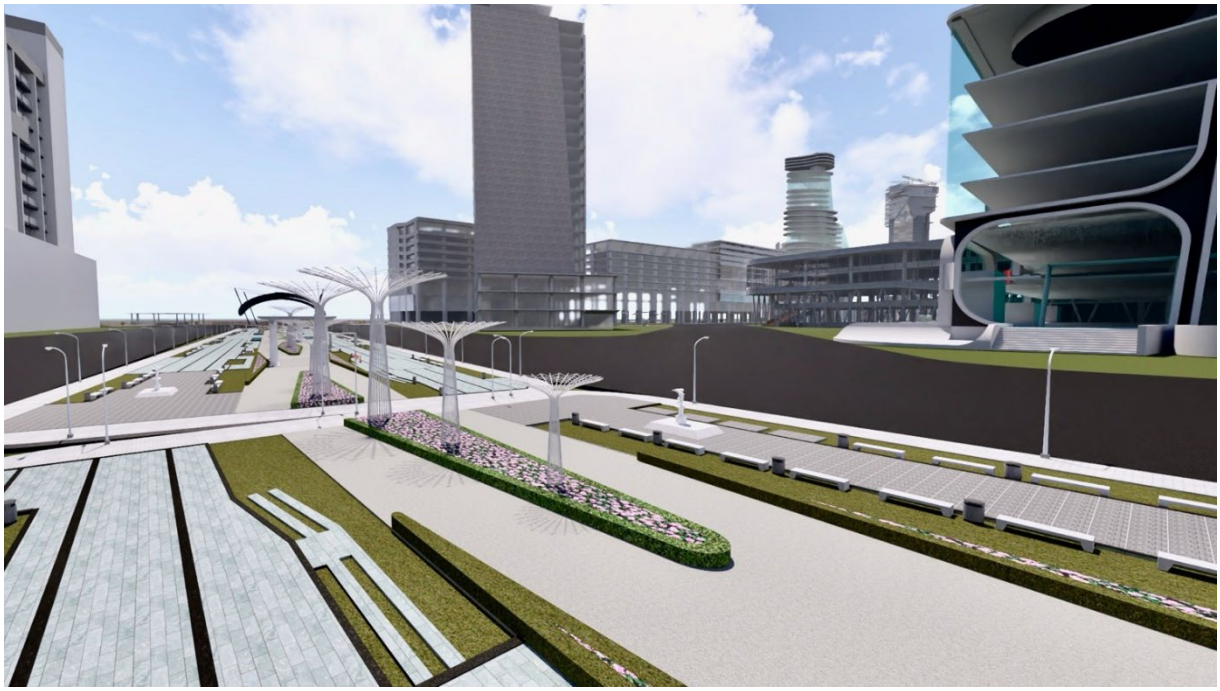

Figure 7: Commercial Developments along the Boulevard in Bakalia

Crucially, the hub will also include studio apartments designed for professionals, students, and young migrants who prefer compact and affordable living arrangements. In doing so, the commercial area will not only serve as a place of work and leisure but also become a residential destination, ensuring round-the-clock activity and economic vitality. Public plazas, playgrounds, and landscaped areas will be incorporated into the design to provide recreational relief within a bustling commercial landscape. In addition, the proposed cable car connection between Bakalia and Char Bakalia will originate from this hub, ensuring seamless connectivity with the eco-tourism destination across the river.

4.1.3 MIXED-USE DEVELOPMENTS AND STUDIO APARTMENTS

In addition to purely commercial blocks, the plan allocates 23.61 acres (7.2%) to mixed-use development. These areas will accommodate compact studio apartments integrated with retail and office spaces. The emphasis is on creating vibrant 24-hour neighborhoods that reduce commute times, promote walkability, and ensure more efficient land use.

The AAP places particular emphasis on mixed-use development, recognizing its potential to create walkable, vibrant neighborhoods. Mixed-use buildings will combine residential, commercial, and recreational functions within the same structures, promoting efficiency of land use while reducing dependence on long commutes. Studio apartments, a relatively new concept in Chattogram, will cater to smaller households and single professionals. This approach is expected to enhance housing diversity, attract private investment, and reduce pressure on informal settlements.

4.1.4 PROTECTION AND ENHANCEMENT OF OPEN SPACE AND RECREATION

Currently, Bakalia has only 5.32 acres of open space, far below PRLD (Planning and Research Limited) standards for a population of this density. The AAP increases open and recreational space to 10.17 acres (3.1% of total area), including a major new Bakalia Stadium (6.66 acres), community parks, and playgrounds .

The network of open spaces will be designed to serve multiple functions: recreation, flood management, and ecological balance. Green corridors along khals will double as drainage channels and pedestrian walkways, while retaining ponds will prevent waterlogging.

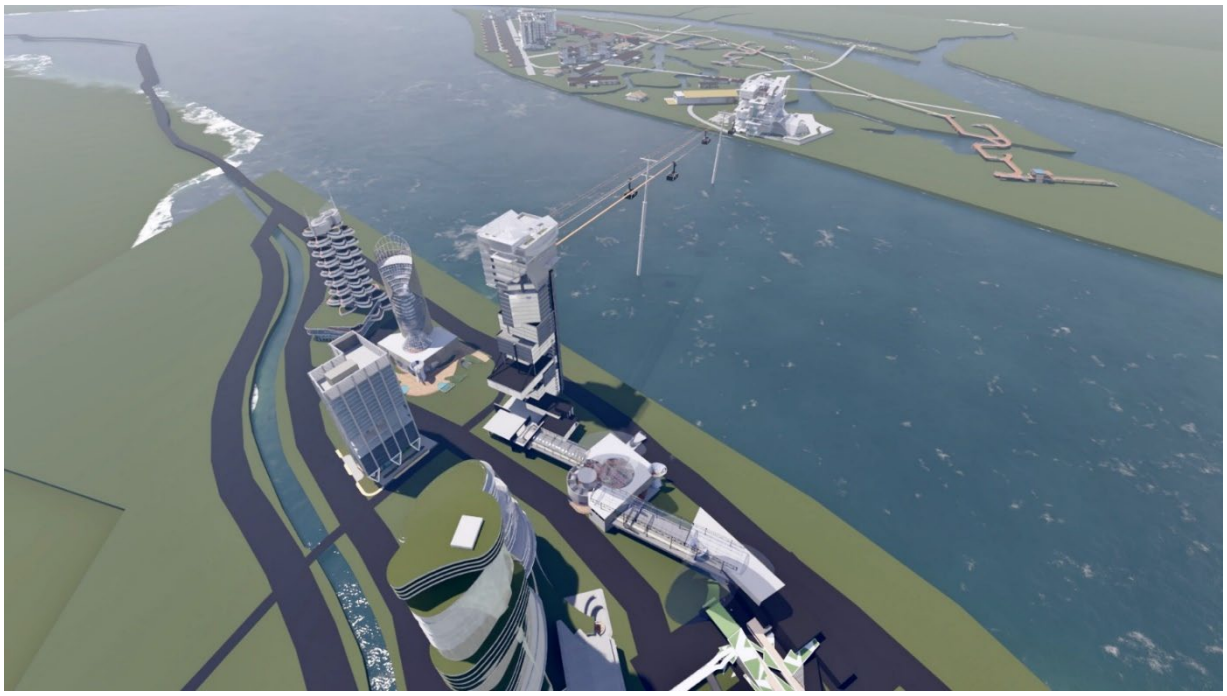

Figure 8: Cable Car Station at Bakalia Side

Open space preservation is central to the livability of Bakalia. The plan therefore proposes to significantly expand parks, playgrounds, and recreational areas to meet international and national planning standards. New parks will be created adjacent to both residential and commercial zones, while a major recreational facility, the proposed Bakalia Stadium, will serve as a landmark public venue for sports and cultural activities.

Green corridors will be established along khals and major roads, not only to enhance urban aesthetics but also to serve ecological and hydrological functions. These corridors will act as drainage channels during heavy rainfall while providing shaded pedestrian walkways. The integration of parks, retaining ponds, and open spaces will thus contribute simultaneously to flood management, biodiversity conservation, and community well-being.

4.1.5 AMENITIES

To ensure social infrastructure meets population demands, the AAP applies PRLD standards for community services per 1,000 population.

Table 4-3: PRLD Standards vs. Proposed Provisions in Bakalia

Facility	Standard (acre/1,000 pop.)	Required (acre)	Proposed (acre)
Primary School	0.038	1.74	3.99 (E2)
High School & College	0.04	1.83	10.22 (E3–E5)
Hospital	0.03	1.37	8.54 (E4)
Community Center	0.02	0.92	1.51
Playground	0.03	1.37	6.66+ (stadium)
Park/Lake	0.03	1.37	3.5+ (parks)

This shows that the AAP not only meets but significantly exceeds requirements for schools, colleges, and hospitals, ensuring that Bakalia evolves into a well-serviced urban neighborhood.

Community amenities form an essential layer of Bakalia's urban fabric. The plan incorporates neighborhood-level facilities such as playgrounds, parks, and retaining ponds within each residential cluster. These facilities will improve children's recreational opportunities, offer green breathing spaces for residents, and serve as reservoirs during flood events. Community centers, local bazaars, and religious facilities will also be introduced to ensure that daily life needs are met within walking distance. By embedding such amenities into residential design, the AAP ensures that urban growth translates into improved quality of life rather than uncontrolled congestion.

4.2 INFRASTRUCTURE, TRANSPORT, AND ENVIRONMENTAL STRATEGY

4.2.1 PROPOSED EMBANKMENT-CUM-ROAD CONSTRUCTION

A cornerstone of the AAP is the proposed construction of a 200-foot-wide embankment-cum-road along the Karnaphuli River. This ambitious project serves dual purposes. Firstly, it provides a robust flood defense mechanism, shielding Bakalia from the recurring seasonal inundations that currently disrupt livelihoods and damage property. Secondly, it functions as a major arterial road, improving connectivity between Shah Amanat Bridge and the wider metropolitan road network. The embankment road will not only relieve pressure on narrow internal roads but also create opportunities for riverfront development, including promenades, public spaces, and riverside housing projects.

4.2.2 INTERNAL TRANSPORTATION NETWORK UPGRADE

The plan dedicates 82.35 acres (25.1% of total area) to roads and transportation facilities. This includes:

- A grid-based network of internal roads.
- A new bus station covering 10.53 acres, with dedicated bus bays.
- A multi-modal transport hub integrating a ferry terminal with road-based transit.

At present, Bakalia's internal transport system is characterized by narrow roads, traffic congestion, and unsafe pedestrian conditions. To address this, the AAP proposes the development of a grid-based road network that redistributes traffic flows and creates more logical connections between neighborhoods. Dedicated bus bays and a new bus terminal are planned to improve public transport efficiency, while a multi-modal transport hub integrating ferry and bus services will connect Bakalia to other parts of Chattogram. Improved secondary connections, particularly to Bashir Circle and Kalpolok Residential, will enhance accessibility and reduce bottlenecks. These measures will not only reduce congestion but also strengthen economic linkages with the rest of the city.

Figure 9: Recreational Zone from Avenue side at Bakalia

By rationalizing the transport system, the plan seeks to alleviate chronic congestion while enhancing mobility for residents and businesses.

4.2.3 DRAINAGE AND WATER MANAGEMENT

Drainage and flood protection are addressed by expanding waterbodies to cover 20.34 acres (6.2%) of land, including retaining ponds (6.49 acres) and rehabilitated khals (13.84 acres). These measures are designed to store floodwaters during peak monsoon while ensuring year-round water quality.

Flooding remains one of Bakalia's most pressing challenges. The AAP proposes a comprehensive water management strategy centered on rehabilitation of major khals such as Chaktai, construction of new khals, and expansion of flood retention ponds. In total, over 20 acres of waterbodies are planned for conservation and retention, ensuring that stormwater flows are managed naturally. Green buffer zones along waterways will prevent illegal encroachments and allow for the restoration of aquatic ecosystems. Collectively, these measures will significantly reduce flood risks while improving environmental quality.

4.2.4 COMMERCIAL AND INDUSTRIAL REORGANIZATION

The existing 33.12 acres of industrial activity in Bakalia will be rationalized, with hazardous and polluting industries relocated to designated sites such as the Kalurghat Industrial Zone. Informal markets along the khals will be reorganized into formal commercial complexes, ensuring safety, hygiene, and efficiency.

Figure 10: Industrial and Recreational Developments in Bakalia

The plan recognizes that unregulated industrial activities and informal markets currently contribute to pollution, congestion, and safety hazards. To address this, industries will be relocated to planned industrial zones such as Kalurghat, where modernized infrastructure and pollution control measures can be enforced. Informal markets, particularly those along major khals, will be formalized into structured wholesale and retail centers. Warehousing and logistics facilities will be developed along rehabilitated canals to improve efficiency and reduce environmental hazards. By reorganizing commerce and industry, the AAP seeks to transform Bakalia into a safer, cleaner, and more economically productive urban area.

4.2.5 ENVIRONMENTAL PROTECTION MEASURES

The plan designates 19.56 acres for plantations and green belts, in addition to open parks. Along the Karnaphuli River, mangrove plantations will stabilize banks and mitigate climate change impacts. Strict controls are proposed for industrial waste discharge, while the Halda River will be safeguarded as a Special Ecological Zone. These measures embed environmental protection within the very fabric of urban growth.

Environmental protection is a cross-cutting objective of the AAP. Mangrove belts are proposed along the Karnaphuli River to stabilize riverbanks and create ecological buffers. Industrial waste treatment plants will be established to reduce river pollution, while strict controls will be enforced to prevent further encroachment. The Halda River, an ecologically significant breeding ground for indigenous fish, will be designated as a Special Ecological Zone with restrictions on destructive practices such as sand mining and brick kiln operations. In addition, urban green blocks and plantation areas are proposed to mitigate urban heat islands and enhance biodiversity. These measures collectively ensure that development is environmentally sustainable and resilient.

4.3 CHAR BAKALIA: THE ECO-TOURISM HUB

4.3.1 VISION: TRANSFORMATION INTO THE "FIRST NATURAL PARK OF CHITTAGONG"

Char Bakalia, surrounded by the Karnaphuli River, presents a unique opportunity to transform underutilized vacant land into Chattogram's first natural park. The AAP envisions Char Bakalia as an iconic eco-tourism hub that balances recreation, conservation, and cultural vibrancy. By preserving its 385 acres of vacant land and 21 acres of waterbodies, the plan aims to create a green oasis that enhances Chattogram's tourism appeal while promoting sustainable livelihoods.

Figure 11: Overview of Char Bakalia from Cable Car

4.3.2 ECO-TOURISM FOCUS AND PRESERVATION OF NATURAL RESOURCES

At the core of the Char Bakalia vision is eco-tourism, which prioritizes low-impact development while preserving natural resources. Proposed interventions include eco-lodges, nature trails, and boating activities that allow visitors to experience the natural landscape responsibly. Conservation of the Karnaphuli River and surrounding ecosystems is a priority, with initiatives for pollution control, riverbank stabilization, and biodiversity enhancement. By integrating tourism with conservation, Char Bakalia will serve both as a leisure destination and as an educational showcase of sustainable development.

The eco-tourism program of Char Bakalia includes:

- A recreational zone with sky dining, watch towers, and souvenir shops.
- A cable car system linking directly to Bakalia's commercial hub.
- A designed forest ecosystem curated by scientists to support safari experiences.
- A safari park and center, with museum, aquarium, and eco-science exhibits.
- An eco resort and spa, including river-facing cottages and wellness facilities.
- Water sports such as kayaking, boating, and cycling trails.
- A safari and camping ground for immersive day and night stays.

Figure 12: Action Area Plan for Char Bakalia

4.3.3 PROPOSED RECREATIONAL ZONE

The recreational zone in Char Bakalia is planned to be a premier destination for leisure, blending modern amenities with natural landscapes. Key attractions include a sky dining facility with panoramic views of the Karnaphuli, a watchtower for birdwatching and sightseeing, and souvenir shops that highlight local craftsmanship. A cable car system will connect this zone directly to Bakalia, offering visitors a scenic and eco-friendly mode of transport across the river.

4.3.4 CONNECTIVITY VIA CABLE CAR SYSTEM

Connectivity between Bakalia and Char Bakalia will be revolutionized by the introduction of a cable car system. This not only enhances accessibility but also symbolizes the integration of urban and eco-tourism zones. The cable car will reduce reliance on boats and road traffic, providing a safe, energy-efficient, and visually striking transport solution. It will also serve as a tourist attraction, offering unparalleled views of the Karnaphuli River and surrounding landscapes.

4.3.5 ENTERTAINMENT FACILITIES

Char Bakalia will include a range of entertainment facilities to diversify its tourism offerings. In addition to sky dining and souvenir shops, the area will host cultural events and exhibitions showcasing local heritage. These facilities will create employment opportunities for local residents, strengthen community identity, and make Char Bakalia a vibrant cultural hub alongside its ecological functions.

4.3.6 ECO-TOURISM ZONE AND DESIGNED FOREST ECOSYSTEM

One of the most innovative components of the plan is the creation of a designed forest ecosystem, curated by ecologists, botanists, and zoologists. This ecosystem will replicate natural habitats and provide the foundation for day and night safari experiences. A recreation center will offer rentals for kayaking, cycling, and other outdoor activities, encouraging active engagement with the environment. By combining ecological science with tourism infrastructure, the designed forest will enhance both conservation and visitor experiences.

4.3.7 SAFARI PARK AND SAFARI CENTER

The safari park will be a flagship attraction of Char Bakalia. Visitors will be able to experience wildlife in an immersive setting designed to highlight native species and biodiversity. The adjoining safari center will include a wildlife museum, an aquarium, and an eco-science center, promoting education and awareness of ecological issues. This blend of recreation and education will distinguish Char Bakalia from conventional tourist spots, positioning it as a knowledge-based eco-tourism hub.

4.3.8 ECO RESORT AND SPA

To attract longer-stay visitors, an eco-resort and spa will be established within Char Bakalia's forest ecosystem. Eco-cottages facing the river will provide serene and sustainable accommodations, while natural walkways will allow guests to explore the landscape. The spa will focus on wellness tourism, combining local traditions with global best practices in sustainable hospitality. This resort is envisioned as a high-value component of the eco-tourism strategy, appealing to both domestic and international tourists.

4.3.9 WATER SPORTS AND OUTDOOR ACTIVITIES

Char Bakalia's natural waterbodies make it ideal for water-based recreation. Kayaking, boating, and cycling will be central attractions, complemented by trekking trails and picnic spots. Such activities will promote healthy outdoor lifestyles while creating additional revenue streams for local communities. By carefully regulating these activities, the AAP ensures that environmental impacts remain minimal.

4.3.10 SAFARI AND CAMPING GROUND

A camping ground integrated with the safari park will provide visitors with immersive day and night experiences in nature. Designed and managed by ecological experts, the camping zone will maintain biodiversity while offering adventurous activities such as guided treks and night safaris. This component will position Char Bakalia as a unique eco-tourism destination in Bangladesh, combining adventure, education, and conservation.

4.4 SUMMARY AND RECOMMENDATIONS

The proposed interventions for Bakalia and Char Bakalia present a bold yet practical roadmap for sustainable urban and ecological transformation. Bakalia is envisioned as a planned residential-commercial hub, supported by modern infrastructure, open spaces, and environmental safeguards. Char Bakalia, in contrast, will evolve into an eco-tourism destination that showcases Chattogram's

natural assets while generating new livelihoods and branding the city as an innovative urban-ecological hub.

To ensure success, several recommendations are made. Firstly, phased implementation should be adopted, aligning interventions with available financial and institutional capacity. Secondly, strong stakeholder collaboration is essential, involving the Chattogram Development Authority (CDA), Chattogram City Corporation (CCC), National Housing Authority (NHA), NGOs, private investors, and local communities. Thirdly, strict enforcement of environmental safeguards must be prioritized to prevent degradation of the Karnaphuli and Halda rivers. Fourthly, inclusive housing strategies must be applied to integrate existing informal settlements into the formal city fabric. Lastly, Char Bakalia's eco-tourism development should be leveraged as a branding strategy for Chattogram, positioning the city as a leader in sustainable urban development in South Asia.

If effectively implemented, the Bakalia and Char Bakalia Action Area Plan will not only resolve long-standing challenges but also establish a replicable model for integrating urban regeneration with environmental sustainability, setting a precedent for other rapidly growing cities in Bangladesh.

5. IMPLEMENTATION FRAMEWORK

The successful realization of the Bakalia and Char Bakalia Action Area Plan (AAP) depends critically on establishing a robust, coordinated, and legally sound implementation framework. The AAP is intended to provide a management structure for urban transformation over the next ten years. This framework addresses institutional capacity, inter-agency coordination, phased delivery, financial mechanisms, and legal reforms necessary to transition from haphazard, uncontrollable growth to planned, resilient development.

5.1 INSTITUTIONAL ARRANGEMENTS & ROLES

Effective implementation requires clarity in mandates and the strengthening of key institutions involved in planning and service delivery.

5.1.1 CHATTOGRAM DEVELOPMENT AUTHORITY (CDA)

CDA is designated as the lead planning agency and holds primary responsibility for enforcing the Master Plan and regulating development within its jurisdiction under the Town Improvement Act of 1953. The CDA serves as the custodian of the DAP for the Chittagong Metropolitan Master Plan (CMMP) package. Its implementation roles include:

- Overseeing the execution of the Master Plan by coordinating zoning regulations and ensuring compliance with proposed Area Plans.
- Managing the process of change through a robust development control system.
- Mobilizing inter-agency collaboration and overseeing project monitoring.

To fulfill this mandate, CDA requires significant institutional reform and capacity enhancement. This includes appropriately staffing the planning department supported by technical personnel to handle urban planning, development control, and investment planning functions.

5.1.2 CHITTAGONG CITY CORPORATION (CCC)

CCC plays a critical supporting role in implementing the AAP, particularly concerning local infrastructure and service delivery. CCC is responsible for:

- Providing and maintaining municipal services such as solid waste management, drainage, street lighting, public sanitation, and local roads.
- Supporting local-level enforcement of zoning rules and building codes.
- Engaging in joint infrastructure planning and co-financing arrangements with CDA to avoid duplication of efforts.

5.1.3 LINE MINISTRIES AND UTILITY SERVICE PROVIDERS

Effective execution requires synchronized efforts from sectoral agencies:

- **Utility Providers (CWASA, KGDCL, PDB, BTCL):** These agencies must be consulted during detailed planning to ensure network capacity and investment synchronisation. CWASA is responsible for water supply and sanitation, including the proposed Sewerage Treatment Plant (STP).
- **Government Departments:** Ministries and agencies like the Public Works Department (PWD), Roads and Highways Department (RHD), and Bangladesh Water Development Board (BWDB) must align their sectoral projects with the AAP's infrastructure proposals.

5.2 COORDINATION & GOVERNANCE

Successful implementation hinges on structured mechanisms to overcome the traditional issues of institutional inertia, weak coordination, and fragmented planning.

5.2.1 MASTER PLAN IMPLEMENTATION UNIT (MPIU)

A dedicated Master Plan Implementation Unit (MPIU) should be established within CDA. The MPIU acts as the central coordinating body, responsible for:

- Managing implementation schedules and budgets.
- Maintaining a project tracking system integrated with GIS and MIS tools.
- Developing and maintaining a robust Monitoring & Evaluation (M&E) framework.

5.2.2 MULTI-SECTORAL INVESTMENT PROGRAMME (MSIP)

Coordinated public sector action is mandatory and is required as a part of a Multi-Sectoral Investment Programme (MSIP). The MSIP is intended to coordinate investments across all relevant organizations (public and large private).

- CDA must move the issue of MSIP and convince other ministries to undertake coordinated development projects and budget allocations.
- The MSIP should prioritize projects at the local level through a technical secretariat.

5.2.3 FORMAL COORDINATION MECHANISMS

To ensure integrated planning and conflict resolution, formal coordination platforms are necessary:

- **City-Level Coordination Committee (CLCC):** Proposed to resolve inter-agency conflicts, ensure alignment between the Master Plan and sectoral investments, and approve annual implementation priorities.
- **Urban Development Coordination Committee (UDCC):** Proposed to facilitate well-planned and equitable urban growth.
- **Zonal Implementation Offices (ZIOs):** Should be established in key growth areas, such as Bakalia, to facilitate micro-level enforcement, support permit processing, and coordinate with local elected bodies.

5.2.4 PRIVATE SECTOR AND NGO PARTNERSHIP

The plan must be executed through Public-Private Partnerships (PPP) to leverage private investment. PPPs may be utilized for infrastructure development, service provision (e.g., solid waste management), and housing projects (e.g., low-cost housing).

- Subsidiary Development Companies may be established, partly or wholly owned by CDA and the public, to undertake development projects.
- NGOs support community development, environmental conservation, and equitable housing.

5.3 PHASING & PRIORITIZATION

The implementation of the AAP proposals is structured into two revised phases, superseding the original CMMP timeline:

Table 5-1: AAP Implementation Phasing

AAP Implementation Phase	Period
Short Term	2026–2028
Medium Term	2028–2035

5.3.1 PHASING PRINCIPLES

Projects are prioritized based on:

- Urgency of problems (e.g., flood mitigation).
- Potentiality of urban development in the area concerned.
- Projects that serve both existing and new areas.

5.3.2 CRITICAL PRIORITY FOR BAKALIA

For the Bakalia area (DPZ-04), all recommended development works are subject to the construction of the new Road Cum Embankment along the Karnaphuli River. Before this key flood defense structure is built, massive development is prohibited along the eastern side of Bakalia. Therefore, the Embankment-cum-Road project is a non-negotiable prerequisite and must be given the highest short-term priority.

5.4 FINANCING & LAND MANAGEMENT TECHNIQUES

Financing must be secured through coordinated investment and creative land management strategies.

5.4.1 FINANCING MECHANISMS

- **Public Financing:** Investment must be coordinated through the MSIP to secure national-level budgetary commitments.
- **Climate Finance:** Opportunities should be explored to leverage international funds, such as the Green Climate Fund (GCF), Asian Development Bank (ADB), and Japan International Cooperation Agency (JICA), particularly for environmental and resilience projects (e.g., solid waste management, flood control, and drainage improvement).
- **Land Banking:** CDA, CCC, or NHA should engage in land banking (buying, holding, managing, trading, and selling land) in advance of development, especially to secure sites for low-cost housing and essential urban projects.

5.4.2 LAND MANAGEMENT TECHNIQUES

Innovative land management is required to guide haphazard growth into planned communities, particularly for upgrading unplanned residential areas:

- **Land Readjustment (LR):** This technique should be applied widely, making it mandatory in certain areas (e.g., mixed-use zones, unplanned neighborhoods like Borua Para) to restructure plots, generate revenue for infrastructure, and ensure reservations for open spaces and urban amenities.
- **Site and Services Schemes:** Recommended for the redevelopment of unplanned residential areas to create healthy neighborhood environments.
- **Compulsory Acquisition:** Used sparingly, only where absolutely necessary for major public infrastructure like roads and flood defenses.

5.5 LEGAL AND REGULATORY FRAMEWORK

The existing legal framework needs specific updates and stricter enforcement to control growth and protect the planned environment.

5.5.1 DEVELOPMENT CONTROL AND LEGISLATIVE REFORM

- **Separate Control Mechanism:** A distinct planning or development control mechanism, separate from the existing building construction control, must be established. Any action on land, including subdivision, must be defined as 'development' subject to this control.
- **CDA Ordinance:** Changes to the CDA Ordinance are needed to empower the Authority to undertake both land and building control functions.

5.5.2 BUILDING RULES AND STANDARDS

- The current Building Rules must be updated to incorporate mandatory requirements for Floor Area Ratio (FAR), specific setbacks, and the provision of adequate open space.
- In the high liquefaction zone of eastern Bakalia, the plan requires that construction of buildings over two stories must adhere to proper structural and architectural design to ensure safety.

5.5.3 COORDINATION ON LAND LEASE

A major legal and governance challenge is the uncoordinated leasing of government Khas land by the District Commissioner's Office, often in contravention of the Master Plan (e.g., hill land or sites for brickfields).

- **Mandatory Consultation:** Coordination with the planning authority (CDA) must be mandatory prior to the lease of land for any use to ensure compatibility and prevent environmental abuse.

5.5.4 CULTURAL AND ENVIRONMENTAL PROTECTION

- **Heritage Conservation:** Statutory provision for conserving cultural and heritage buildings and sites must be made. An interim Heritage Committee should be formed to guide the preservation of sites.
- **Environmental Zoning:** Strict rules must govern the Special Ecological Zone (100m wide belt), including the removal of harmful activities like brickfields and sand mining.

5.6 MONITORING & EVALUATION

A system of continuous assessment is required to ensure accountability and adaptive management.

5.6.1 M&E STRUCTURE AND TOOLS

- The MPIU will house a dedicated Monitoring & Evaluation (M&E) cell responsible for performance assessment and preparing periodic implementation reports.
- All project progress must be tracked using a central GIS-based data bank and Management Information System (MIS) to ensure data-driven review and decision-making.

5.6.2 KEY PERFORMANCE INDICATORS (KPIS) AND COMPLIANCE

- **KPIs:** Progress must be tracked using specific Key Performance Indicators (KPIs) related to infrastructure delivery, environmental quality, social equity, and economic vitality.
- **Compliance Control:** The Planning Commission must ensure that no project contrary to the provisions of the approved DAP is approved or funded without prior clearance from CDA. This strict control is vital for mitigating ad hoc development.

5.7 CHAPTER SUMMARY AND IMPLICATIONS

The Implementation Framework for the Bakalia and Char Bakalia AAP requires a fundamental shift towards integrated governance and rigorous enforcement, moving past the historical failures of CMMP implementation that stemmed from weak institutional support and resource scarcity. The dual urgency of flood mitigation (necessitating the Embankment-cum-Road construction as the top priority) and the need to regulate haphazard growth requires the swift establishment of the MPIU within CDA. Success hinges on securing national government commitment to the Multi-Sectoral Investment Programme (MSIP) to coordinate funding, leveraging PPP models for urban renewal, and successfully applying mandatory Land Readjustment (LR) techniques to deliver equitable housing (50% LI commitment) and public amenities. Critically, legal reforms concerning land leasing and development control must empower CDA to prevent the encroachment and pollution that continue to degrade strategic resources like the Karnaphuli and Halda Rivers. The M&E framework, underpinned by transparent GIS data,

ensures that the ambitious transformation of Bakalia remains accountable and aligned with the vision of creating a dynamic, resilient, and socially inclusive metropolitan hub.