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Directorate of Urban, Regional Policy & Strategic Planning,
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"PREPARATION OF DEVELOPMENT MASTER PLANS OF MAJOR SECONDARY CITIES OF SINDH"

(PACKAGE # 3 - KOTRI, HALA, TANDO ADAM & MORO)

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STRATEGIC DEVELOPMENT PLAN REPORT

Moro City

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PREPARATION OF DEVELOPMENT MASTER PLANS OF MAJOR SECONDARY CITIES OF SINDH

(PACKAGE # III – KOTRI, HALA, TANDO ADAM AND **MORO**)

STRATEGIC DEVELOPMENT PLAN REPORT – MORO

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ADP	Annual Development Plan
AGR	Annual Growth Rate
BC	Brick Construction
BHU	Basic Health Unit
BOD	Biological Oxygen Demand
CBD	Central Business District
CC	Climate Change
DBM	Digital Base Map
DCs	Deputy Commissioners
DHQ(s)	District Headquarters
DMP	Disaster Management Plan
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DSPC	Development Strategies & Prevalent Condition
ECP	Emergency Contingency Plan
EDP	Economic Development Plan
EMC	Environmental Management Consultants
EPA	Environmental Protection Act
FWO	Frontier Works Organization
GBHS	Government Boys High School
GBHSS	Government Boys High Secondary School
GBLSS	Government Boys Lower Secondary School
GBPS	Government Boys Primary School
GER	Gross Enrolment Ratio
GGHS	Government Girls High School
GGHSS	Government Girls Secondary School
GGLSS	Government Girls Lower Secondary School
GGPS	Government Girls Primary School
GIS	Geographic Information System
GOP	Government of Pakistan
GOS	Government of Sindh
GPS	Global Positioning System
HESCO	Hyderabad Electricity Supply Corporation
HH	Household
HQ	Head Quarters
KA(s)	Katchi Abadis
KV	Kilo Volt
LPG	Liquid Petroleum Gas
LULC	Land Use/Land Cover
MC	Municipal Committee
MISC	Multiple Indicator Cluster Survey
MW	Mega Watt
NER	Net Enrolment Ratio
NGO	Non-Governmental Organization

NPDMP	National & Provisional Disaster Management Policy
NRM	National Reference Manual
O&M	Operation & Maintenance
OH	Over Head
P&D	Planning & Development Department
PCU(s)	Passenger Car Units
PDAO	Planning & Development Act Ordinance
PDMA	Provincial Disaster Management Authority
PGS	Population Growth Scenarios
PH	Peak Hour
PHED	Public Health Engineering Department
PMTs	Pole Mounted Transformers
PR	Public Representative
PTCL	Pakistan Telecommunication Limited
RAP	Resilience & Adaptability Plan
RCC	Reinforced Cement Concrete
SAR	Situation Analysis Report
SB&TPR	Sindh Building & Town Planning Regulation
SBI	Sindh Board of Investment
SDI	Spatial Data Information
SECP	Securities & Exchange Connection of Pakistan
SED	Socio Economic Data
SES	Socio Economic Survey
SEPA	Sindh Environmental Protection Agency
SME(s)	Small Medium Enterprises
SOP	Standard Operation Procedures
SPPRA	Sindh Public Procurement Regulatory Authority
SS	Sample Survey
SSGC	Sui Southern Gas Company
STP	Sewerage Treatment Plant
SWM	Solid Waste Management
SWOT	Strength Weaknesses Opportunities Threat
TOR	Terms Of References
TSS	Total Suspended Solids
TVC	Traffic Volume Count
TW	Tube Well
UC	Union Council
UG	Under Ground
UG/l	Concentration of Arsenic (10 micro-gm/litre)
W&SD	Work & Services Department
WAPDA	Water and Power Development Authority
WATSAN	Water & Sanitation
WASH	Water, Sanitation & Hygiene
WB	World Bank
WHO	World Health Organization

EXECUTIVE SUMMARY

I. Introduction

Sindh is the most urbanized province of Pakistan, with 53.7% of its population residing in urban areas as per the 2023 Census. Despite this, secondary and district headquarter (DHQ) cities have historically received limited attention in structured planning and coordinated public investment. This has led to fragmented infrastructure, unmanaged growth, and inadequate service delivery limiting their ability to function as engines of economic growth and reinforcing poverty in surrounding hinterlands.

This Strategic Development Plan (SDP) for Moro City has been prepared under Package 3 (Kotri, Hala, Tando Adam, Moro), awarded to EA Consulting Pvt. Ltd. The plan provides a 20-year roadmap (up to 2045) for sustainable urban growth, economic regeneration, and resilient service delivery.

The SDP framework covers:

- Sectoral assessments and SWOT analysis.
- Long-term and short-term development scenarios.
- Immediate Action Plan (IAP) for the core urban area.
- Economic Development, Climate Resilience, and Disaster Management Plans.
- Integration of Sustainable Development Goals (SDGs).
- A clear Implementation Strategy for phased execution.

This report therefore serves as both a technical blueprint and a policy guide for transforming Moro into a sustainable, resilient, and economically vibrant urban center by 2045.

II. District and City Overview

District Naushahro Feroze covered an area of 2,946[1] Sq.km and hosting population of 17.7 million (2023 Census), with 71% rural and urban 29%. The district is suitable for the production of crops. Mainly during Rabi are wheat, oil seeds, berseem fodder, mutter and gram and in Kharif cotton, jowar, bajra and sugarcane. While also supporting livestock-based livelihoods. Geographically, the district is in, what is termed vaguely, Vicholo or middle Sindh. Naushahro Feroze city is indeed almost the exact center of the province of Sindh. The climate of the district is extreme, both in winters and summers, receiving less than 50 mm annual rainfall.

Moro is the largest city of District Naushahro Feroze, greater than even with the District Headquarter Town. With a population of 142,685 (2023 Census), projected to grow to 625,000 by 2045, it is fastest growing urban center of the district. The city is strategically located on the N-5, with natural water resources from Daulatpur Distributary and Dad branch.
The city's expansion is occurring around almost in all the four directions, which seems more prominent with the existence of National Highway N-5.

[1] sindh_district_wise.pdf (pbs.gov.pk)

Spatial analysis highlights that residential use dominates (42%), followed by agriculture (38.5%), transportation (7%), commercial activity (5.7%), and industry (0.6%). Recreational areas cover less than 0.5%, underscoring deficits in livability.

III. Vision for the Strategic Development Plan

The Strategic Development Plan (SDP) for Moro has been formulated through a participatory and evidence-based process, combining technical assessments with citizen input gathered during the consultative workshop held on **24 July 2024**. The vision builds upon identified challenges in infrastructure, services, and economic opportunities, while reflecting community aspirations for a livable, inclusive, and economically vibrant city.

Vision Statement

The city full filling all the basic needs, such as housing, water supply, sanitation and metalled roads with transportation facilities, in clean and sustainable pollution free green environment, with education and health for all, along with growth in local and regional economy with increase in employment, incomes and related skills development to emerge as well-planned modern city with peace, security and prosperity like some of the best most livable cities in the world.

IV. Proposed Master Plan of Moro City

The Proposed Development Master Plan for Moro City presents a comprehensive framework to guide its transformation into a sustainable, compact, and resilient urban center by 2045. Building on the city's strategic location within Naushahro Feroze District and its established role as a hub for trade, agriculture, and industry, the plan integrates strategic spatial growth with robust infrastructure development and environmental stewardship.

The plan is the result of extensive analysis and stakeholder consultation, which evaluated three alternative growth scenarios: **Agricultural Preservation, Agro based Cottage Industries, and Mixed Development.**

Stakeholders unanimously endorsed the **Mixed Development** scenario as the preferred strategy.

This chosen path ensures a foundation for orderly growth, improved service delivery, and an enhanced quality of life for residents, solidifying Moro's role as a key regional center in Sindh.

V. Housing

Housing in Moro City faces significant challenges, despite relatively high ownership (≈79%) and a predominance of pacca structures. The 2023 Census recorded 24,702 units with an average household size of 5.7, yet informal growth, katchi abadis, and inadequate basic services remain widespread. By 2045, demand will rise to 108,000 units, requiring structured interventions to avoid further informal expansion and to improve conditions in the core urban areas where sanitation, drainage, and housing quality are poor.

The Strategic Development Plan proposes a dual approach: planned expansion with affordable housing schemes, and upgrading of existing informal settlements. Key strategies include land banking and pooling, microfinance for incremental housing, public–private partnerships for low-income projects, and regularization/upgradation of katchi abadis. Immediate priorities focus on low-income housing schemes (≈400 units in Phase 1) and rehabilitation of the core urban area through façade improvements, street and pavement upgrades, and solar street lighting. These interventions aim to expand housing supply, improve livability, and ensure that growth is both affordable and sustainable.

VI. Education

The education sector in Moro City is marked by overcrowding, inadequate infrastructure, and limited access to quality facilities. Despite strong demand, public schools and colleges face a classroom shortage of nearly 1,719 rooms (2025 baseline), with many institutions requiring urgent repairs, furniture upgrades, and provision of essential services such as toilets, water, and electricity. Higher education options remain limited, with only one social university's campus, while technical training is severely underdeveloped. Barriers of affordability, poor infrastructure, and insufficient teachers reinforce inequalities, leading to low enrolment, high dropout rates in some schools, and weak skill development for youth.

The Strategic Development Plan aims to strengthen existing schools' system, classroom establishment of technical and vocational training facilities. Short term measures focus on upgrading/rehabilitation of schools in core urban area, while long-term strategies include adding more than 6,590 classrooms by 2045, establishing new education zones, and integrating digital learning. Priority projects include the extension and rehabilitation of schools with ~272 new classrooms (PKR 1,800 million) and constructing new public library (PKR 300 million) to support students, researchers and the wider community. These interventions, aligned with SDG 4 (Quality Education), aim to raise literacy, improve equality in access, and prepare Moro's youth for emerging economic opportunities.

VII. Health

The health sector in Moro City faces critical shortages in both infrastructure and human resources. The Taluka Headquarters (THQ) Hospital, with only 42 beds and significant vacancies among medical staff, is overstretched, serving nearly 900 outpatients daily. Current ratios fall far below national and WHO standards, with only one bed for every 3,330 residents (against a target of 2 per 1,000) and just 24 doctors for a population of 142,000 (against a need for 68). Basic facilities, including diagnostic equipment, laboratories, and emergency services, are outdated or insufficient, while the 2022 floods further exposed the fragility of the healthcare system. Private facilities and Roshan Medical College add capacity, but affordability and accessibility remain major barriers for low-income communities.

The Strategic Development Plan prioritizes rehabilitation of existing facilities, expansion of bed capacity, improved diagnostic and emergency services, and workforce development. Short-term actions include upgrading THQ Hospital and dispensaries, expanding mobile health units, and introducing digital health systems, while long-term strategies focus on sustainable workforce development, and climate-resilient infrastructure. Priority projects (estimated at PKR 1,000 million) include THQ extension, provision of mobile units, diagnostic upgrades, and training programs. Immediate interventions for the core urban area (PKR 500 million) will rehabilitate THQ Hospital to ensure safer, more accessible, and responsive healthcare. These investments, aligned with SDG 3 (Good Health and Well-Being), aim to build a resilient health system capable of meeting the needs of Moro's growing population.

VIII. Recreation, Culture & Tourism

Moro City has only two recreational places, one is stadium and the other is Shaheed Benazir Bhutto Park. Although, for the stadium only a site was allocated and might be developed in past but at present the situation is different, it is without the boundary wall and in very poor condition. There is need for construction of new parks and stadiums for the residents of Moro. The absence of green belts, well-

maintained open spaces, and organized cultural events has restricted opportunities for leisure, youth engagement, and tourism-led economic growth.

The Strategic Development Plan emphasizes creating new community parks, rehabilitating existing recreational places, and integrating eco-friendly features such as solar lighting, drought-resistant landscaping, and stormwater management systems. Long-term strategies include creating new recreational places to fill the need of population by 2045. Priority projects (PKR 950 million), including amusement parks, Sports complex, and large parks for Moro city. These initiatives, aligned with SDG 11 (Sustainable Cities and Communities), aim to enhance livability, preserve heritage, and stimulate local economic activity through recreation and tourism.

IX. Water Supply

Currently, Moro has no water supply network and majority of the people use groundwater to meet their demand of water for drinking and domestic purposes. The surface water is available in the form of Daulatpur Distributary which is passing in the South-East of the city perpendicular to Moro-Bandhi Road, which needs supply and distribution network. To consider the need of water for existing population and demand for population in the year 2045 the 30 gallons per capita per day (gpcd) was used as given in NRM under domestic water demand. The given standard in NRM is 25-30 gpcd for house connection with partial plumbing (with pour flush toilet). the need and demand of water for existing population of 2025 is 4.90 MGD and for the projected population in the year 2045, after twenty years of time it will increase about four times the existing demand of water supply i.e. 18.77 MGD.

The Strategic Development Plan builds on the Sindh Drinking Water Policy 2017 and sets clear priorities. These include developing criteria for installation of new drinking water supply schemes and ensure that all new schemes are safely managed, rationalized and constructed through need-based criteria so that all area and communities are served. Priority projects amounting approximately (PKR 1,600 million) include feasibility study and construction of water supply system and installation of water filtration plant which amounting approximately PKR 700 million aiming to provide safe, reliable, and equitable access to clean drinking water supply in line with Sustainable Development Goal 6.

X. Sewerage and Drainage

At present Moro City is provided underground and open drainage system, 25% area of city is provided with sewerage system laid out on one side of the road whereas, 75% of the city is provided with open drainage system lying in the median of the road, and it serves for both storm water or surface water, and it also gets domestic sewage of the households residing in the city. Currently, Moro City has to confront numerous issues such as dilapidated drainage infrastructure, inadequate operation and maintenance, inadequate sewerage facilities, lack of facility information, inefficient record keeping, and absence of operation and maintenance standard operating procedures. There exists no sewerage treatment plan in the city however, two oxidation ponds are located in the south-east of Moro aside from railway line near the junction of Daulatpur Road and Irrigation Road. In 2025, with a population of 163,207, the city's water demand is estimated at 4.90 MGD (Million Gallons per Day), leading to an expected sewerage flow of approximately 3.92 MGD, assuming 80% of the water supply converts to wastewater. As the population

grows to 625,686 by 2045, the water demand is anticipated to rise 18.77 MGD, resulting in an estimated sewerage flow of 15.02 MGD.

The Strategic Development Plan prioritizes rehabilitation of deteriorated drains, development of a separate stormwater drainage system, establishment of modern wastewater treatment plants, and integration of climate-resilient solutions such as retention basins and recharge wells. Immediate action is required in the core urban areas, where overflows and blockages are most acute, with a PKR 2,300 million rehabilitation program proposed to safeguard public health, improve sanitation, and build resilience against monsoon flooding.

XI. Solid Waste Management

Solid waste collection in Moro City is carried out through a door-to-door mechanism and manual street sweeping. The roads & streets cleaning or sweeping occurs daily in two shifts during designated hours by 153 sanitation staff, with a shortage of 105 sanitation staff, and the collected waste is then transported to the nearest secondary collection points. All biomedical waste is mixed with domestic municipal waste, which is not suitable for the health of the people residing in the area. It is necessary that hazardous waste must be separately collected and disposed, rather incinerated. The absence of a sanitary landfill, proper segregation, and hazardous waste handling has resulted in serious public health and environmental concerns. In 2025 Moro City, with an estimated population of 163,207 persons, is expected to generate an estimated (64.12 metric tons) of solid waste and by the year 2045 it will be 248.13 metric tons will be generated by the projected population 625,685 persons requiring significant upgrades in infrastructure, staffing and systems.

The Strategic Development Plan proposes the feasibility study for solid waste management mechanism in Moro. Immediate actions (PKR 200 million) in the core urban area focus on deploying community bins, expanding municipal fleet capacity, public awareness campaigns, and user-free based service models. Together, these measures will align Moro with Sindh Solid Waste Management Policy, improve urban cleanliness, and enhance public health resilience.

XII. Firefighting

Moro's firefighting capacity is severely under-equipped, with no functional fire engine and 27 sanctioned staff to serve a population of over 163,000. According to national standards, the city requires at least three vehicles to provide adequate coverage. The absence of sufficient resources exposes residents, property, and commercial assets to heightened risks during emergencies.

The Strategic Development Plan proposes expanding firefighting infrastructure through the establishment of additional fire stations and sub-stations, recruitment and training of staff, and ensuring readiness of vehicles with adequate POL and spare parts. Measures such as integrating sprinklers in multi-story buildings, early warning systems, and community-level training in evacuation, first aid, and fire response will strengthen preparedness. Together, these interventions will enhance the city's resilience, reduce fire-related losses, and align emergency services with the growing needs of Moro's population.

XIII. Transportation

Moro is situated on the National Highway (N5), which is a major artery of communication in Pakistan. This highway provides Moro with direct road links to many of the country's major cities. Road conditions vary sharply: several primary corridors are serviceable, yet many secondary and tertiary streets suffer from pavement failure, poor drainage, encroachments, and unmanaged rickshaw and Qingqi staging. The main Railway line between Lahore and Karachi passes through some towns of Naushahro Feroze District such as Padidan, Bhirya Road and Mehrabpur, the railway line passing through Moro is abundant. The Bus Terminal located near the Junction of Dadu – Moro Road and National Highway N5 in the south-east of Dadu – Moro Road. This Bus Stop/Bus Terminal, which is not properly planned and constructed, is however serving the taxis and wagons to move people from one area to another. The closest airport to Moro City lies in Sukkur, approximately 100 kilometers away, while Moro does not have its own airport. A traffic study conducted in Moro City highlights the dominance of motorcycles and rickshaws in the overall traffic composition, reflecting the city's reliance on low-cost and flexible modes of transport. The analysis of travel time distribution indicates a relatively even pattern across the city, with only a small proportion of users experiencing significantly longer travel times than the average, suggesting localized congestion rather than citywide delays.

The plan prioritizes a practical blend of network rehabilitation and system management. Short term actions focus on repairing priority corridors, installing solar street lighting, organizing paratransit stands, restoring drainage along roads, marking crossings, and enforcing parking and encroachment rules in the core. Long term actions develop a modern bus terminal with universal access, add formal truck facilities, and introduce smart traffic control, cycling lanes, and pedestrian upgrades that meet accessibility standards. Three priority projects anchor delivery: rehabilitation of secondary and tertiary roads with integrated side drains, citywide street lighting, and a new bus terminal on the outskirts supported by a feasibility study and land procurement. An immediate action package for the core commercial spine realigns curb space, improves surfaces and markings, and adds green medians and signals to cut delays and improve safety.

XIV. Energy

Moro City's electricity supply is predominantly reliant on SESCO (Sukkur Electric Supply Company), which provides power through urban feeders connected to one main grid station. The city benefits from relatively robust infrastructure, survey results ensuring that 83% of residents have access to electricity, indicating a widespread distribution network and substantial number of residents have adopted alternate power solutions, particularly solar energy. Approximately 49% of households report using alternative power sources, with solar energy emerging as the most popular, with 88% respondents relying on it to meet their energy needs.

The Strategic Development Plan envisions strengthening conventional infrastructure while diversifying into cleaner, more sustainable energy. Short term actions include upgrading the existing grid station, adding substations to ease transformer loads, and promoting household energy-efficient devices. Long term strategies focus on mainstreaming solar and wind through feasibility studies and pilot projects, encouraging energy-efficient building design, and supporting women-led awareness programs on fuel-use

practices. Together, these measures aim to provide Moro with a stable, efficient, and future-ready energy system aligned with sustainable urban growth.

XV. Gas Supply

As reported by the Sui Southern Gas Company, 100% Moro City along with 79 surrounding villages are served with natural gas. However, due to the shortfall at the country level, the city faces the challenge of gas load shedding, with residents experiencing approximately 8 hours of interruptions in gas supply per day. According to surveyed household reported insufficient gas pressure, forcing many residents to rely on coal (76.7%), wood, or cylinders as alternate fuels. These practices raise environmental concerns and health risks while highlighting inequities in service provision.

The Strategic Development Plan calls for improving gas distribution networks to underserved neighborhoods, addressing pressure management, and exploring alternative clean energy options such as biogas, LPG expansion, and solar for cooking and heating. Policy directions include demand-side efficiency, rationalized pricing of energy resources, and measures to mitigate the impact of load-shedding. Together, these interventions aim to ensure equitable, affordable, and sustainable energy access for Moro's growing population.

XVI. Communication

Moro City is served by PTCL (Pakistan Telecommunication Company Ltd) but a significant portion of the population does not rely on landline services, with approximately 80% of residents reporting the absence of PTCL or landline telephone connections. Instead, the overwhelming majority rely on cellular or mobile phones as their primary mode of communication.

The Strategic Development Plan proposes short-term improvements through upgrading mobile towers for 4G/5G readiness, expanding PTCL and mobile internet services, and running awareness campaigns. Long-term priorities include extending fiber-optic networks, establishing a digital innovation hub, and introducing smart city initiatives to strengthen connectivity and support inclusive growth.

XVII. Economic Development

The economy of Moro is the primary driver of its growth and sustainability. Traditionally, the city has functioned as an agro-based hub, with cotton, wheat, sugarcane, and vegetables forming the backbone of its agricultural economy. Despite its economic potential, Moro faces several challenges. These include high youth unemployment, limited industrial diversification, weak infrastructure and logistics, low women's participation in the workforce, and climate-related risks that threaten agricultural productivity. Development Plan focuses on modernizing agriculture and allied industries, expanding trade and ICT enterprises, promoting industrial estates and small business clusters, building skills and entrepreneurship, and improving enabling infrastructure and market linkages under a transparent, investment friendly framework aligned with SDGs.

a. Agricultural

Naushahro Feroze contributes significantly in agriculture sector of Sindh because its climate is suitable for production of various food items including the Kharif crops of maize, rice, sugarcane, cotton and the Rabi

crop of wheat. In addition to these, fruit orchards are abundant in this district. District Naushahro Feroze is irrigated by Sukkur Barrage and its canals, including the Rohri Canal, Nara Canal and Dadu Canal. Tube wells are also used to extract ground water for irrigation purposes and rain water is collected and stored in ponds, tanks and other structures for irrigation.
The strategy prioritizes higher productivity through modern technologies and quality inputs, climate resilient farming, better data and extension, post-harvest storage, and farm to market access. Immediate economic measures include expanded credit for small and medium farmers, improved canal management and drainage, deployment of solar and efficient tube wells, and construction and maintenance of rural roads to cut losses and raise farm incomes.

b. Livestock

District Naushahro Feroze is richly populated area having animal's population 2,701,415 of large and small animals including fish. The comparison of livestock quantity of Sindh Province with the district Naushahro Feroze indicate that highest share of Buffalos is 7.2%, then 6.5% Goats and then 6.1% is of Mules. The 2022 floods highlighted the sector's vulnerability, causing the death of nearly 436,435 animals and destroying grazing pastures, leading to severe feed scarcity and economic losses.

Key challenges include landlessness, fragmented holdings, reduced natural grazing areas, lack of veterinary extension services, and climate-induced risks. While Nasuhahro Feroze has two veterinary hospitals and 53 centers, Moro lacks a dedicated facility, underscoring service gaps. The Strategic Development Plan prioritizes model farms, cooperative dairy initiatives, improved veterinary coverage, and productivity gains through deworming, vaccination, feed supplementation, and value addition. With its labor force and pasture potential, livestock products can be scaled into industry-linked value chains, enhancing food security, livelihoods, and rural incomes.

c. Fisheries

According to Sindh Statistics 2024, fish production in District Naushahro Feroze is extremely limited compared to the provincial level. Total fish production in Sindh stands at 56,503 metric tons, while Naushahro Feroze contributes only 57 metric tons, accounting for a negligible 0.1% share of provincial production. The number of fishermen in the district is 160, representing 0.9% of Sindh's total fishermen. Among them, 120 are full-time fishermen and 40 are part-time, indicating a relatively higher proportion of full-time engagement compared to part-time involvement.

The district has a total of 46 boats, which is 0.56% of the total boats in Sindh. Of these, 34 are sailing boats (about 1.0% of Sindh's sailing boats), while 12 are row boats, accounting for 0.25% of the provincial total. Overall, the data reflects that fisheries play a very minor role in the local economy of Naushahro Feroze, with limited production capacity and infrastructure when compared to Sindh as a whole.

The Strategic Development Plan emphasizes the need for a dedicated district-level fisheries policy, private sector participation, aquaculture promotion, and capacity building through training and extension services. Priority measures include fish seed stock replenishment, sustainable fishing practices, value addition (processing, packaging, and cold storage), and improved market linkages. Establishing fish farms in suitable areas, supported by government and private investment, will modernize the sector, enhance

resilience, and expand employment opportunities, aligning fisheries with the broader vision of inclusive economic growth for Moro and Naushahro Feroze District.

d. Industries

Industries in Naushahro Feroze are mainly associated with agriculture. The famous among these are the sugar mills since sugarcane is cultivated on large scale in this district. District Naushahro Feroze has agriculture related industries ranging from sugar mill, cotton-ginning factories. These are the source of employments for residents of district Naushahro Feroze. However, challenges persist, including limited diversification, weak infrastructure, absence of an industrial estate policy, and vulnerability to economic and environmental shocks.

The Strategic Development Plan emphasizes revitalizing the Small Industrial Estate, expanding agro-based and cottage industries, promoting value addition in local products, and strengthening workforce skills through vocational training. Public–private partnerships, investment incentives, and improved market and supply chain linkages are proposed to attract investment and generate employment. Which will also modernize facilities, create jobs, and enhance industrial competitiveness while integrating green buffers to mitigate environmental impacts.

e. Trade & Commerce

Moro boasts a robust local retail market, primarily embodied by Shahi Bazaar along both sides of Old National Highway and Dadu Moro Road. The entire commercial areas in the city including malls, shops, hotels, restaurants, workshops etc. are providing a wide variety of goods and services which are located the city in particular on Old National Highway in the starting of road coming from Hyderabad and up to end of highway leading to Sukkur. However, unplanned business activities, the decline of traditional agricultural markets, weak PPP performance, and inadequate infrastructure undermine trade efficiency and growth.

The Strategic Development Plan proposes modernizing bazaars, developing a wholesale market with cold storage and logistics, and promoting artisan-based industries through organized trade clusters and digital platforms. The Immediate Action Plan focuses on the core commercial zones (Shahi Bazar and old National Highway) by upgrading infrastructure, improving pedestrian access, relocating hawkers to organized vending zones, and introducing smart technologies. Priority shifting/establishment of Moro fruit and vegetable market (PKR 600 million) aim to reduce congestion, strengthen market accessibility, and enhance the shopping environment, thereby improving business activity and aligning with SDGs 2, 8, and 11.

XVIII. Environment

The environment of Moro and District Naushahro Feroze is shaped by its alluvial plains, Indus River flood zones, and a canal-irrigated agrarian landscape, interspersed with patches of saline and waterlogged soils. While the area benefits from fertile land and a well-developed irrigation system, challenges such as soil degradation, salinity, and waterlogging persist—largely due to poor drainage and over-irrigation. The district lies in Seismic Zone 2A, indicating moderate earthquake risk, which has implications for infrastructure resilience. Biodiversity has suffered due to habitat loss and forest degradation, though

riverine forests along the Indus still support avian populations and limited wildlife. Ambient air quality remains generally within safe limits; however, carbon monoxide levels at key urban sites in Moro exceed regulatory thresholds, pointing to traffic-related emissions. Noise pollution remains within acceptable levels but is anticipated to rise with urban expansion. Environmental vulnerabilities are compounded by climatic extremes, overexploitation of groundwater, and forest pressure, requiring integrated, climate-resilient planning to sustain both ecosystems and livelihoods.

The strategic plan calls for sustainable land and water management, biodiversity conservation, pollution control, and climate adaptation. Long-term measures emphasize rehabilitating drainage systems, promoting salt-tolerant crops, wetland and forest management, industrial effluent control, and climate risk mapping. Short-term priorities include emergency drainage, wetland monitoring, reed-based livelihood support, stricter pollution bylaws, urban flood preparedness, and community training. Together, these interventions aim to balance ecological conservation with urban growth, strengthening resilience to climate change while safeguarding natural resources for future generations.

XIX. Disaster Risk Management

Moro and Naushahro Feroze District face recurring climate and disaster-related threats that critically endanger lives, livelihoods, and public systems. Devastating floods in 2010, 2011, 2012–13, and 2022 submerged farmland, destroyed homes, and disrupted healthcare and basic infrastructure, with central and western Moro particularly prone due to large catchment areas and inadequate drainage. Alongside flood risks, the region grapples with recurring droughts, groundwater scarcity, and rising heat extremes, placing further strain on food security and forcing rural displacement. Without coordinated planning and urgent infrastructure investments, Moro remains highly exposed to compounding environmental and urban stresses.

Disaster risk management in Moro is guided by the Sindh DRM Policy and coordinated through the Provincial and District Disaster Management Authorities, supported by municipal committees, taluka administrations, and community organizations. However, weak infrastructure, insufficient municipal capacity, and poor enforcement of building and environmental standards undermine preparedness and response. The Strategic Development Plan sets out short-term measures such as flood forecasting, drainage clearance, medical readiness, and public safety systems while laying the groundwork for long-term resilience through climate-resilient infrastructure, integration of risk mapping into land-use planning, and community-based disaster preparedness. A flagship priority is the establishment of a dedicated Emergency Shelter and Disaster Resilience Hub, designed to provide safe, well-equipped refuge for over 2,000 people in times of crisis. Together, these initiatives aim to safeguard lives, strengthen institutions, and build a more resilient urban future for Moro.

XX. Climate Change Emergency Contingency Plan

Moro and Naushahro Feroze face escalating climate risks: hotter summers, intensified monsoon rainfall, and prolonged dry seasons. Historical trends (2010–2022) show extreme summer temperatures reaching up to 47°C, with mild winters, and rainfall that is both highly variable and increasingly extreme. The 2022 monsoon exemplified this volatility—delivering over 237 mm of rain in just three months, leading to one of the worst flood disasters in recent memory. Flat topography, weak drainage infrastructure, and

widespread waterlogging and salinity heighten exposure. Drainage overloads and lack of elevation-based urban planning leave vulnerable communities at risk during heavy rains. The 2022 floods caused devastation surpassing that of 2010: Naushahro Feroze ranked among Sindh's three worst-hit districts, with 234,168 people affected, 221,001 displaced, 105,110 houses destroyed, and over 250,000 acres of crops damaged. Livestock losses topped 36,000, and connectivity to Punjab was severely disrupted. Annual seasonal epidemics (dengue, diarrhea, malaria) and recurring heatwaves further compound vulnerability.

The plan aligns local action with national and Sindh frameworks (MoCC/NCCP, SEPA/DoCC, Sindh Climate Policy 2022) and integrates with key resilience initiatives (RRU, SFERP, SPHF). It prioritizes immediate preparedness—climate-informed land use, elevation-based infrastructure siting, monsoon forecasting and early warning, drainage maintenance, and emergency health and evacuation capacity. Long-term adaptation focuses on climate-smart agriculture and livestock systems; solarized public services and resilient infrastructure; safe and equitable water supply networks (treatment, rainwater harvesting, quality monitoring); and flood-resilient roads, bridges, and urban utilities. Structural interventions include canal system rehabilitation, construction of retention ponds and pump stations, enforcement of resilient building codes, and green corridors to mitigate heat risk. Cross-cutting actions target institutional strengthening, finance mobilization (including PPPs and climate funds), and inclusive community engagement, DDMA, municipal bodies, and union councils to embed climate resilience in all development decisions.

XXI. Sustainable Development Goals for Moro

In Moro, socioeconomic surveys reveal pressing challenges across food security, healthcare, education, water and sanitation, energy, livelihoods, and urban growth. To address these, seven SDGs have been selected for integration into the Strategic Development Plan: Zero Hunger, Good Health and Well-Being, Quality Education, Clean Water and Sanitation, Affordable and Clean Energy, Decent Work and Economic Growth, and Sustainable Cities and Communities. Each is mapped to relevant sectors such as agriculture, health, WASH, education, energy, industry, and land use planning. Sector strategies specify outputs, indicators, and timelines that feed into the city's SDG monitoring system and connect to provincial reporting.

The Strategic Development Plan provides the overarching framework for aligning local development with the 2030 Agenda. A separate SDG Implementation Plan complements this framework with detailed baseline analysis, target-to-indicator mapping, and implementation matrices. Together, they ensure that urban growth in Moro is directed toward sustainability, inclusivity, and resilience while contributing to national and global SDG commitments.

XXII. Urban Land Management

Urban land management in Moro reflects broader challenges faced across Sindh, where the supply of serviced and affordable land has not kept pace with rapid population growth. The absence of a provincial policy framework, weak enforcement of zoning, and limited financial capacity of municipal bodies have led to unplanned expansion, conversion of fertile agricultural land, and rising informal settlements. Issues

such as outdated land use plans, corruption in land governance, and infrastructure stress from poorly regulated housing and commercial schemes further aggravate the situation.

The Strategic Development Plan emphasizes introducing modern land management tools such as Land Pooling and Reconstitution (LPR), Guided Urban Development (GUD), and Transferable Development Rights (TDRs) to ensure a steady supply of serviced land while safeguarding agricultural zones. Immediate priorities include cadastral surveys, digitized land records, and pilot LPR projects in peri-urban areas, along with enforcement of zoning bylaws to curb haphazard development. In the long term, strategies focus on establishing land banks, PPP-based industrial and commercial zones, peri-urban agriculture protection, and redevelopment of katchi abadis through inclusive models. These measures, aligned with existing legal frameworks, provide a pathway for sustainable, equitable, and resilient urban expansion in Moro.

XXIII. Implementation Strategy

The successful execution of the Strategic Development Plan hinges on a clear institutional framework, phased implementation, and diversified funding. The Moro Urban Development Authority (M-UDA) will be established as the central coordinating body, operating initially within the Municipal Committee before evolving into an autonomous entity. Implementation will be phased: short-term (1-3 years) focuses on establishing the M-UDA, digitizing land records, and launching pilot projects; medium-term (4-10 years) scales up land pooling and priority infrastructure; and long-term (10-20 years) advances regional integration and climate-resilient development.

Funding will be mobilized through provincial development programs (ADP/PSDP), municipal budgets, donor partnerships, and private sector investment via PPP models. Oversight will be provided by a District Coordination Committee chaired by the Deputy Commissioner, ensuring alignment with provincial goals and active stakeholder engagement. This structured approach ensures the plan's transition from vision to actionable, accountable outcomes.

STRATEGIC DEVELOPMENT PLAN FOR MORO CITY

1. THE PROJECT OVERVIEW

Sindh is the most urbanized province of Pakistan, with 53.7% of its population residing in urban areas as per the 2023 Census. Despite this high rate of urbanization, the province's secondary and district headquarter (DHQ) cities have historically received inadequate attention in terms of structured planning and coordinated public investment. Infrastructure development has often been fragmented and ad hoc, resulting in inefficient service delivery, unmanaged growth, and limited opportunities for balanced regional development.

As a consequence, many secondary cities have not been able to function as true "engines of economic growth." Their inability to attract investment and provide adequate infrastructure and social facilities has reinforced rural poverty in surrounding hinterlands, where the poverty headcount ratio remains nearly double that of declared urban areas.

Recognizing these challenges, the Government of Sindh established the Directorate of Urban, Regional Policy & Strategic Planning (DURP&SP) under the Planning & Development Department. The Directorate provides technical support in policy formulation, master planning, and project implementation aimed at revitalizing Sindh's urban sector and enhancing the role of secondary cities in regional development.

1.1 Objective and mandate of DURP&SP

The core objective of the Directorate is to provide technical support to the Planning & Development Department, Government of Sindh on urban policies, plans, programs, and schemes related to sustainable urban development. The Directorate's focus spans a wide range of urban sectors, including:[2]

- Strategic and Spatial Urban Planning
- Development Regulation and Control
- Economic Regeneration and Investment
- Data and Information Management
- Urban Transport and Mass Transit
- Water Supply and Sanitation
- Municipal Finance and Urban Governance
- Housing and Katchi Abadis
-

The mandate and scope of the Directorate are twofold:

1. Establishing a province-wide urban development planning process through the preparation of policies, plans, and studies across short-, medium-, and long-term horizons.

[2] Urban Policy & Planning – urbandirectorate.gos.pk

2. Supporting the implementation of development projects in line with approved policies and plans, addressing the needs of the urban population, managing migration pressures, and decentralizing economic activities to reduce the burden on already congested metropolitan areas.

Specific functions of the Directorate include:

- Providing guidance and technical support on urban policy and planning.
- Facilitating economic regeneration, investment planning, and municipal governance reforms.
- Establishing urban information systems (GIS, cadastral surveys, and databases).
- Compiling and managing urban data to support evidence-based policymaking.
- Preparing development/master plans, surveys, and sectoral studies.
- Coordinating with provincial departments, local administrations, and development partners on planning issues.
- Developing and updating the policy framework targeting sustainable urban growth in Sindh.

To date, the Directorate has completed 17 Development Master Plans for DHQ cities, including Sukkur, Larkana, Sanghar, Mirpurkhas, Umerkot, Thatta, Badin, Dadu, Jamshoro, and others.

1.2 Goals and Objectives of the Development Master Plan Project

Building on this institutional foundation, the Government of Sindh initiated the preparation of Development Master Plans for 12 additional secondary cities. These have been grouped into three geographic packages to facilitate integrated regional planning:

- **Package 1:** Khairpur, Ghotki, Mirpur Mathelo, Rohri
- **Package 2:** Shikarpur, Kandkot, Jacobabad, Kambar
- **Package 3:** Kotri, Hala, Tando Adam, Moro

Package 3 has been awarded to EA Consulting Pvt. Ltd. The primary goal is to create comprehensive, 20-year master plans that will transform these cities into sustainable and economically vibrant urban centers.

The proposed Development Master Plans of selected major secondary cities of Sindh would focus on the following activities:

- Review of Past Trends, Development Strategies and Prevalent Conditions
- Preparation of Digital Base Maps
- SWOT Analysis
- Carving out a Vision for Future
- Preparation of the Development Plan focusing on:
    - Long Term Development Plan
    - Growth Scenarios

- Short Term Action Plan for Priority Infrastructure Development
- Development of an Immediate Action Plan for the Core Urban Area
- Economic Development Plan
- Climate Change, Resilience & Adaptability Plans
- Disaster Management Plan
- Sustainable Development Goals SDGs Implementation Plan
- Implementation Strategy
- Dissemination – Development Master Plan

This report presents the Strategic Development Plan for Moro City, outlining sector-wise assessments, growth strategies, and implementation mechanisms designed to guide the city's transformation into a sustainable and resilient urban center by 2045.

2. AN OVERVIEW OF NAUSHAHRO FEROZE AND ITS ENVIRONMENT

2.1 District Naushahro Feroze at a Glance

Naushahro Feroze is a district in the province of Sindh, Pakistan. Its capital is Naushahro Feroze city. Administratively subdivided into five (5) talukas and 51 union councils. According to announcement of results of the 7th Population and Housing Census 2023[3] it had a population of 1,777,082 persons with an annual growth rate of 1.64 %, which in year 2017[4] was 1,612,373 souls and the growth rate was 2.09 % indicating a decreasing trend of average annual growth rate of 0.45 %.

The Naushahro Feroze was given the status of District on 15 November 1989 and. Before, it was Taluka of Nawabshah District (Now Shaheed Benazir Abad). On given status as district, Naushahro Feroze was placed under administrative control of Sukkur Division however, it has been placed under Shaheed Benazir Abad Division during 2011. Naushahro Feroze has had the status of a district since 1989.

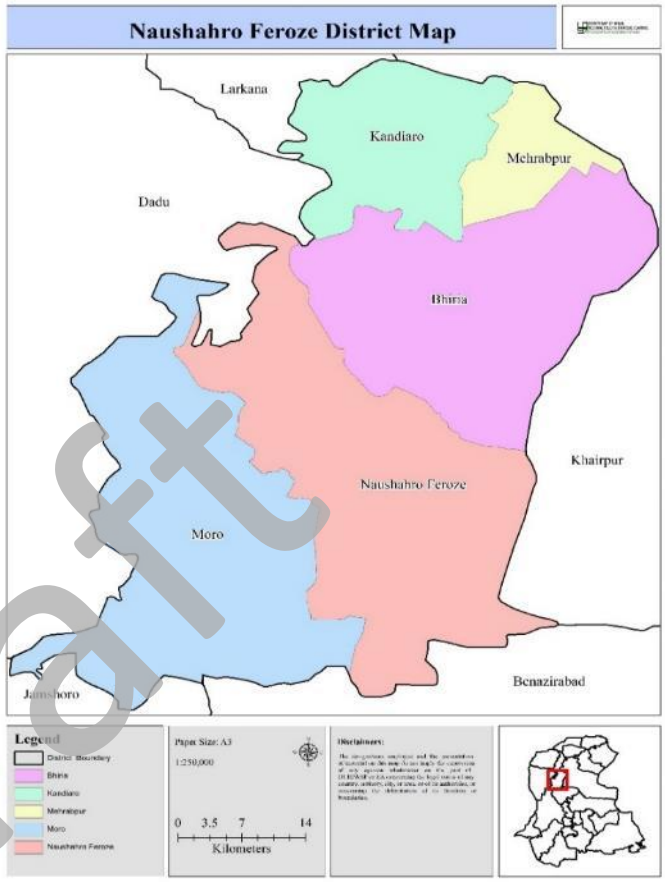


Figure 2-1: District Map of Naushahro Feroze

District Naushahro Feroze covered an area of 2,946[5] Sq.km with an average household size of 5.55 persons per household, which in 2017 was 5.79 persons per household. This district is bounded by five districts i.e. Khairpur is in the east, district Larkana in the north, district Dadu in the west, and district Jamshoro and Shaheed Benazir Abad are located in south of Naushahro Feroze district.

2.1.1 Geographical Location and Area

District Naushahro Feroze lies in 67° 48” 2’ to 68° 26” 51’ east longitudes and 26° 32” 45’ to 27° 13” 36’ north latitudes[6]. This district is bounded by district Khairpur on the east, district Larkana on the north, district Dadu on the west, and district Jamshoro and Shaheed Benazir Abad on the south. Indus Rivers flows alongside the western boundary of the district. Indus Rivers flows alongside the western boundary

[3] https://www.pbs.gov.pk/sites/default/files/population/2023/Sindh.pdf
[4] Final Results (Census-2017) | Pakistan Bureau of Statistics (pbs.gov.pk)
[5] sindh_district_wise.pdf (pbs.gov.pk)
[6] Naushahro Feroze - Wikipedia

of the district. Naushahro Feroze district is located in the middle part of Sindh on the National Highway about 120 km from its Divisional Headquarter Sukkur and is connected with Sukkur and Karachi by the main National Highway (Motor way) N-5.

2.1.2 Topography, Geology and Soils

The soil of Naushahro Feroze is fertile and sandy with hard clay loams with negligible exception where the soil is Kalarish. Naushahro Feroze district is the part of the Indus Valley which has benefited more than any other part of Sindh from the development of irrigation under Rohri canal. The average elevation of the area is about 50 meters above sea level. Geographically, the district is in, what is termed vaguely, Vicholo or middle Sindh. Naushahro Feroze town is indeed almost the exact centre of the province of Sindh.

Indus is the only river of the district, which passes through Kandiaro, Naushahro Feroze and Moro talukas covering about 50 kilometers and having three flood protection bunds namely S.M. Bund, Munjuth Loop Bund and Bakhri Loop Bund On an average, the temperature of water is 10°C lower than that of the air.

2.1.3 Climate

The climate of Naushahro Feroze district is that which prevails through-out the upper Sindh. The climate of the district is extreme, both in winters and summers. During summers, the mean maximum temperature is 44^0C and minimum temperature is 25^0C and during winters, the mean maximum temperature is 24^0C and minimum is 5^0C. Average precipitation is maximum in the months of July and August, reaching at 42 mm[7].

As it is clear from the data in Figure 2-4 it is clear that during the year the month of July to September Naushahro Feroze gets 41.7 mm rain in the month of July then 30.7 mm in August and during the month of September the District gets 11.8 mm of rain. The figure also depicts that throughout the year district Naushahro Feroze may have rainfall starting from 1.2 mm in January to 3.3 mm in the month of December.

2.1.4 Ethnicity, Culture and Politics

Naushahro Feroze has a rich traditional Sindhi culture. Women usually wear Shalwar Qameez but quite often dress in the traditional attire, Ghaghra or Parro as well. Traditionally, women wear bangles. Men commonly wear a Shalwar Qameez distinguished by broader bottoms, and a traditional Sindhi style cap.

People of this district are pre-dominantly Sindhi speaking but a significant Urdu speaking population is also residing in this district and still others speak Seraiki, Punjabi and Balochi. Islam is the religion of majority in this district[8] as 98.3% of the population is Muslim followed by 1.6% Hindu community and 0.1% persons belong to communities of other religions.

[8] https://www.pbs.gov.pk/sites/default/files/population/2017/results/10209.pdf

2.1.5 Historical/ Famous Places

Naushahro Feroze is the headquarter town of the district. The name Naushahro Feroze has been derived from the Feroze Khan, one of the state officials in the days of Mian Var Mohammad Kalhora, who founded it. During the Talpur rule, it was one of the principal depots for the artillery of the Mirs.

- Here are few important and famous places in Naushahro Feroze.
- Mosque of Government Madarssah High School, Naushahro Feroze
- Madarssah High School, Naushahro Feroze
- Mazar of Hazrat Nango Shah
- Tomb of Hazrat Sheikh Allahyar, Kotri Kabir, Naushahro Feroze
- Mazar of Makhdoom Shaikh Muhammad Kabir
- Dargah Hazrat Sayed Ismail Shah Jelani

Naushahro Feroze Bypass

Dargah Hazrat Sayad Ismail Shah Jelani

2.1.6 Administrative Set-up

District Naushahro Feroze has its district headquarters in Naushahro Feroze city. This district has five talukas, named: Naushahro Feroze, Bhiria, Moro, Kandiaro and Mehrabpur. It has 51 union councils and 233 mouzas (revenue village). Out of the total mouzas, 194 are rural mouzas, 2 are urban, 15 are partly urban, 7 are forests and 3 are un-populated mouzas.

Table 2-1: Administrative Division of District Naushahro Feroze

Naushahro Feroze	Krungo Circles / Supervisory Tapas	Patwar Circles / Tapas	Number of Mouzas					
			Total	Rural	Urban	Partly Urban	Forest	Un-Populated
Naushahro Feroze District	14	97	233	194	2	27	7	3
Naushahro Feroze	3	21	60	51	1	7	-	1
Bhiria Taluka	2	17	33	21	1	10	-	1
Moro Taluka	4	26	53	47	-	2	3	1
Kandiaro Taluka	3	17	53	46	-	3	4	-
Mehrabpur Taluka	2	16	34	29	-	5	-	-

Source: Mouza Statistics of Sindh 2008, Agriculture Census Organization.

2.1.7 Major Linkages

The main means of transport and communications in Naushahro Feroze district are roads and railways. The National Highway connecting Karachi and Peshawar passes through this district. The main Pakistan Railway line from Karachi to Lahore also runs through the district touching Padidan, Bhirya Road and Mehrabpur talukas. All talukas are connected with the district headquarters either by road or by railway. Naushahro Feroze is also equipped with telecommunication system beside postage and telegraph.

Road network is considered as a vehicle for economic development and social change. Efficient road network not only develops a quick and efficient transportation system but also opens up new area hitherto remained closed. It brings about social integration among rural and urban sectors and greatly assist in accessibility to basic needs i.e. education, health facilities, etc. it brings rural areas in constant touch with urban segment of a society and creates better understanding necessary for social change and political awareness.

Naushahro Feroze district covers an area of 2,945 square kilometers yet it has only 427 kilometers of good quality roads, which are grossly inadequate for the area and population. A National Highway (N-5) connects Naushahro Feroze with Hyderabad and onwards to Karachi (capital of Sindh province).

2.1.8 Demography

In Pakistan, male population is more than the female population and is among those four countries where life expectancy for female, at birth, is less than that of males[9]. Sex ratio in district Naushahro Feroze is 103 males per 100 females, which is less than in Sindh. The sex ratio in Sindh was 108.76 males for 100 females as per 2023 census. District Naushahro Feroze, like majority of the other districts in Sindh, is rural by its characteristics. 71.46 % of the population resides in rural areas as compared to the 28.54 % population resides in the urban areas. The consultants have estimated current population and housing units on the basis of data obtained from the latest Census 2023.

Table 2-2 : Demographic Statistics: District Naushahro Feroze

Area	Census 2023				Current Year -2025	
	Population	Average Growth Rate	Average HH Size	Households	Population Projection	Housing Units
Naushahro Feroze	**1,777,082**	**1.64%**	**5.5**	**319,938**	**1,835,848**	**333,791**
Source: Census 2023						

[9] A profile for District Badin: 2009, South-Asia Partnership Pakistan http://www.sappk.org/district-profiles with focus- on-livelihood-related-issues-0

2.2 Moro City

Moro is a city in the Naushahro Feroze District, the city is administratively subdivided into 12 Union councils and is located on National highway (N-5) in the center of Sindh at an altitude of 28 m (95 ft.) and is 12 km of the Indus River. It is the largest city in Naushahro Feroze District with taluka population of 408,148 and Moro MC Population of 142,685 as per 2023 Census of Pakistan.

2.2.1 History

Moro was founded in the early 13th century by the Kalhoro dynasty, a ruling family of Sindh. The city grew in importance during the British colonial period, importance as it became an important railway junction connecting Sindh to the rest of the country. In 1947, Pakistan gained independence from British rule, and Moro became a part of the newly formed country.

2.2.2 Geography

Moro, is the largest city of District Naushahro Feroze, greater than even with the District Headquarter Town, which lies in 26.6623°N latitude and 68.001° E longitude. It is the headquarter town located in Moro Taluka, Taluka Moro is bounded by district Dadu from north to west, from east it is surrounded by taluka Naushahro Feroze, and from south it shares boundaries with district Jamshoro and Shaheed Benazir Abad. Dadu city is almost 24 k.ms away from Moro via Dadu-Moro Road and main Naushahro Feroze city is approx. 25.7 k.ms away the main City Moro and linked via National Highway – N-5.

2.2.3 Demography

Demography is a fundamental aspect for understanding the population dynamics of Moro and its neighboring areas. This section offers an overview of past growth trends, as well as population projections for the current year, 2025, and a future outlook for 2045.

As per Census of 2023, the total population of Moro MC was 142,685 with average household size of 5.7. Population of MC has an estimated growth rate of 7% per annum with 16,862 housing units. Moro MC Population comprises of 51.7% male and 48.3% of female.

The Current (2025) population of Moro MC estimated is 163,207 persons, Moro Taluka is 415,168 and the District Naushahro Feroze population estimated is 1,835,848 people. The analysis of previous growth trends plays an important role in understanding the existing and historical population dynamics of the region. According to the 2023 Census, in the year 2023 the population of Moro Municipal Committee (MC) was 142,685 persons, indicating a net increase of 47,237 persons during the six years if compared with Census of 2017, this increase of population was at an average growth rate of 7% per year. The comparison of the average growth rates in the last three Censuses indicates a fluctuating trend, it was 4.19% in 1998, it went down to 2.38% in 2017 and in the year 2023 it significantly goes up to 7%.

Whereas the Moro Taluka, inclusive of the city, had a population of 408,148 persons with an average growth rate of 1.72%, which is substantially low as compare to the city's average growth rate of 7% per

annum. As far as the population, of district is concerned in the year 2023 it was 1,777,082 persons with a significantly lower annual growth rate of 1.64% per year.

Table 2-3: Current and Previous Population Starting from Moro City to Naushahro Feroze District

Population Growth		Naushahro Feroze District	Moro Taluka	Moro MC
Census 1998	Pop.	1,087,571	265,251	61,033
	AGR	1.61%	0.21%	4.19%
	HH Size	5.8	5.4	6.7
	House Holds	187,988	49,548	9,120
Census 2017	Pop.	1,612,047	368,579	95,448
	AGR	2.09%	1.74%	2.38%
	HH Size	5.79	5.49	5.6
	House Holds	275,693	66,644	17,044
Census 2023	Population	1,777,082	408,148	142,685
	AGR	1.64%	1.72%	7%
	HH Size	5.5	5.3	5.78
	House Holds	319,938	75,868	245,702
Population Projection in 2025 (Current year)	Population Projection	1,835,848	422,309	163,207
	House Units Projection	333,791	79,681	28,237

b) Projected Population:

To prepare Development Master Plan of Moro MC for the year 2045, a long term twenty years plan, the statistics of population and housing units is prerequisite. Therefore, keeping the same annual average growth rate reported in 2023 Census, population projection at district level, taluka level and city level is considered to find out population staring in the year 2030 to the year 2045.

It is conceived that by the targeted planned year 2045 there will be a number of 625,685 persons residing in Moro MC. The comparison of both the statistics indicate that the future population will almost be four (3.87) times than the existing population of 163,207 persons housed today in the city. The population projected for future of taluka and district level at five-year intervals i.e. population 2025, 2030, 2035, 2040 and 2045 below table:

The projected future population of 625,685 persons by the year 2045 of Moro MC need shelter to live and protect themselves from rough weather. To accommodate a number of 625,685 persons total housing required is also projected and it is found that a total of 108,250 dwelling units will be required by the year 2045. The analysis of existing housing stock and the total housing units required it is found that a substantial number of 83,548 additional housing units will be required. Simultaneously, the total housing units required to house the projected future population 2,541,733 persons and 767,101 persons of Naushahro Feroze District and Moro Taluka are 462,133 and 144,736 houses respectively.

Table 2-4: Existing and Projected Previous Population Starting from Moro City to Naushahro Feroze District

Area	Census 2023				2025 (Current year)		2030		2035		2040		2045	
	Population	Aver. Growth Rate	Aver. HH Size	Housing Units	EST: Pop.	HUs:	Est: Pop.	HUs EST:	Est: Pop.	HUs EST	Est: Pop.	HUs EST:	Est: Pop.	HUs EST
NAUSHAHRO FEROZE DISTRICT	1,777,082	1.64%	5.5	319,938	1,835,848	333,791	1,991,407	362,074	2,160,147	392,754	2,343,185	426,034	2,541,733	462,133
MORO TALUKA	408,148	1.72%	5.3	75,868	422,309	79,681	459,899	86,773	500,834	94,497	545,413	102,908	767,101	144,736
MORO MC	142,685	6.95%	5.78	24,702	163,207	28,237	228,373	39,511	319,557	55,287	447,148	77,361	625,685	108,250

2.3 Urban Morphology

Moro's urban morphology defies a singular, uniform pattern, and instead reflects a dynamic and multifaceted development. The N-5 in Moro starts in South-West from Irrigation Road and then it connects Dadu-Moro Road in North-West of city forming a loop and finally it connects Old National Highway after connecting Moro New Jatoi Road.

North-West Expansion: At present the city is growing in North-West direction, primarily along Dadu-Moro Road encircling with National Highway N5, which is indicative sign that the city's outreach towards accessible transportation routes.

North and North-West Expansion: One prominent direction of growth is in the North and North-West, similarly as around other areas of the city along the Dars Roads and Moro New Jatoi Road. This expansion is indicative of the city's outreach towards accessible transportation routes and commercial establishments.

South-East Sprawl: The city is also developing notably along Gachero Road and National Highway N-5 along Old National Highway. This extension signifies the city's capacity for expanding infrastructure and services to meet the needs in particular the health facilities of its residents.

South-West Development: Expansion in the South-West direction, along Moro Bandhi Road perpendicular Daulatpur water distributary. This growth signifies the city's capacity for expanding infrastructure and services to meet the needs in particular the education facilities of its residents.
An interesting aspect of Moro's urban evolution is the emergence of numerous new housing schemes. These developments signify the city's growing urbanization and the surging demand for both residential and commercial properties. As the housing landscape diversifies, the need for meticulous urban planning becomes evident. Strategic and sustainable urban management is essential to ensure organized and well-coordinated growth.

The ongoing development in multiple directions underscores Moro's potential for continued expansion, urban renewal, and enhanced infrastructure. It also emphasizes the importance of adopting a forward-looking and adaptive approach to urban management, addressing challenges while capitalizing on opportunities for the city's prosperous future.

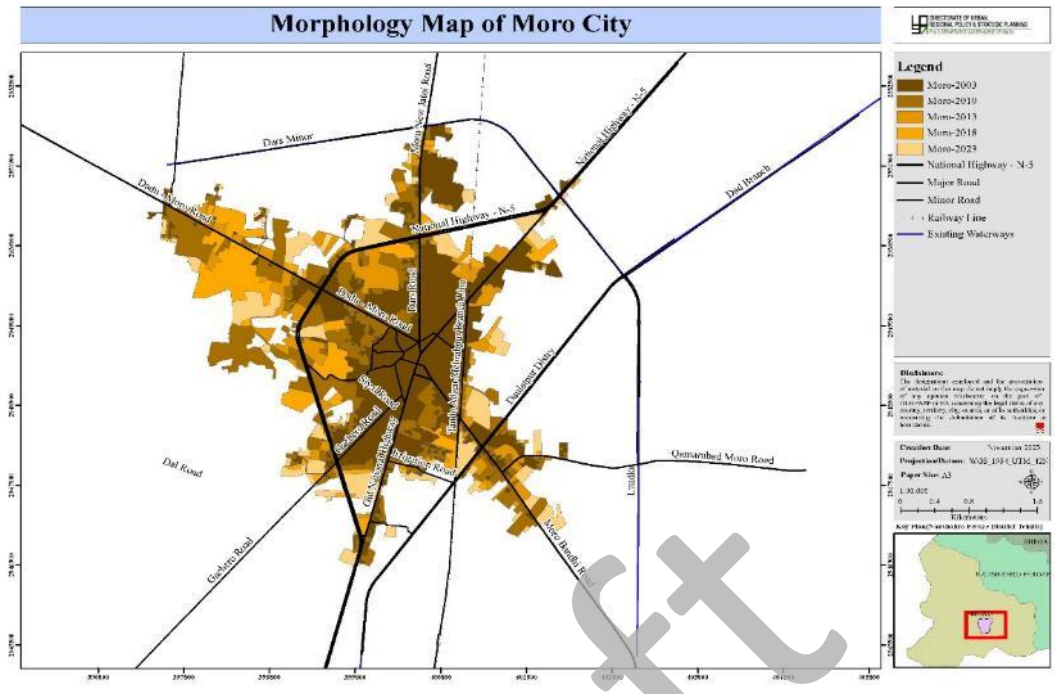


Figure 2-2 : Morphology Map of Moro City

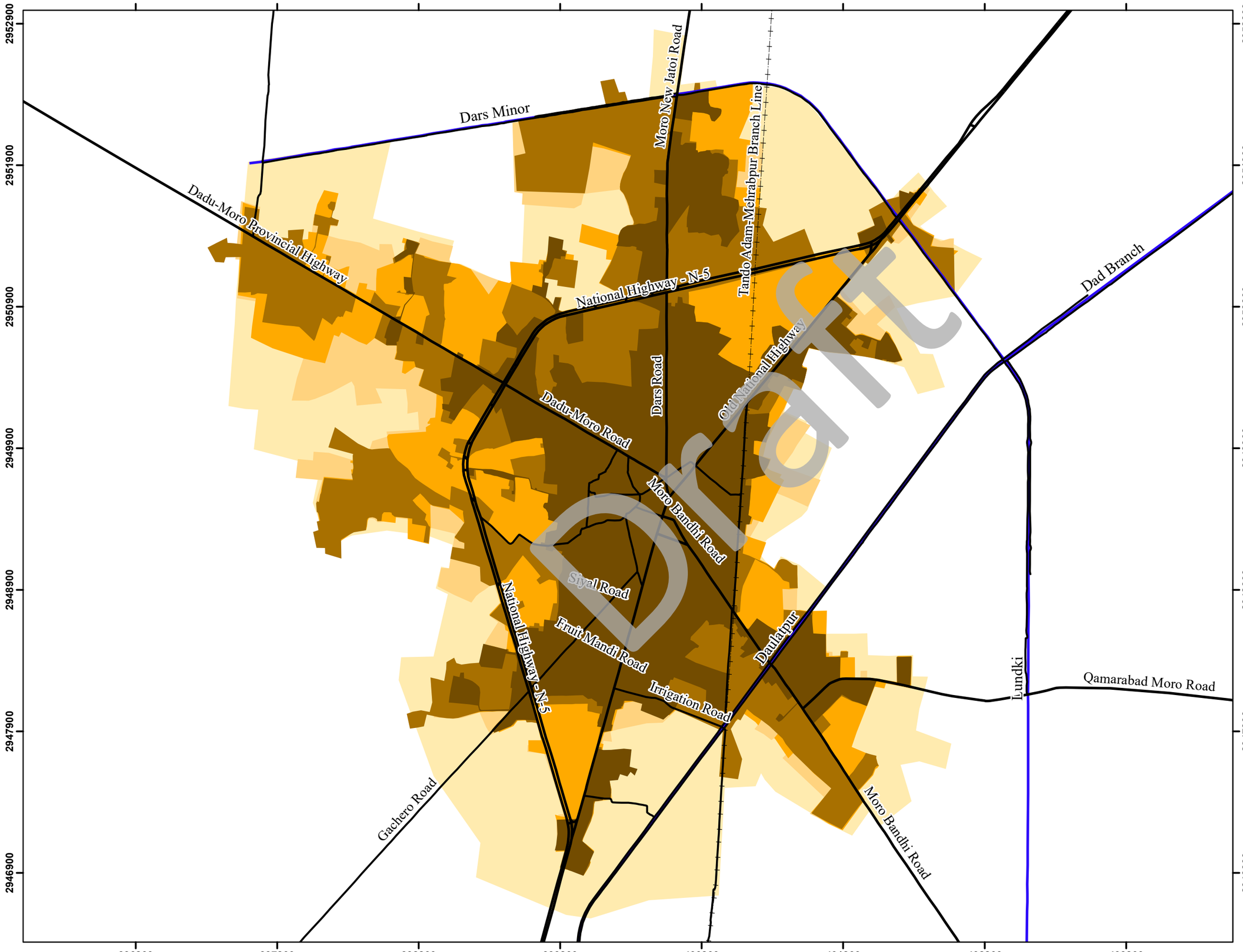
The expansion and evolution of Moro in different time starting from 2003 to 2024 i.e. is depicted in below table, which is self-explanatory. As it is clear from the figures that in the year 2003 Moro City was spread over 1,323 acres of land and the present area is 4,737 acres of land, which is 3.6 times of land if, compared with area twenty years back in 2003.

Table 2-5. Previous Urban Growth Trends - Moro

Sr. No.	Year	Area (Sq. Km.)	Area (Acres)
1.	2003	5.35	1,323
2.	2010	9.45	2,335
3.	2013	11.53	2,849
4.	2018	12.52	3,094
5.	2024	19.17	4,737

Morphology Map of Moro City

DIRECTORATE OF URBAN, REGIONAL POLICY & STRATEGIC PLANNING
P & D DEPARTMENT GOVERNMENT OF SINDH



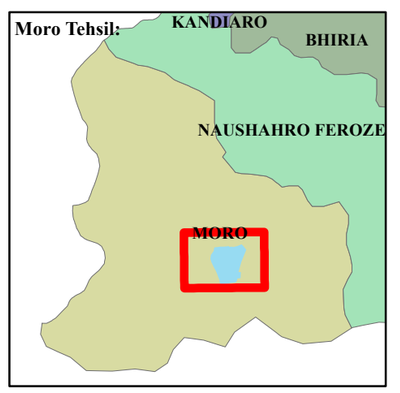
Legend

- Moro 2003 Year
- Moro 2010 Year
- Moro 2013 Year
- Moro 2018 Year
- Moro 2023 Year
- Major Road
- Minor Road
- Railway Line
- Existing Waterways

Paper Size: A3
1:25,500

N W E S

0 0.35 0.7 1.4
Kilometers



2.4 Land Use and Spatial Extension

Before starting this section a question arises, why it is necessary to prepare a land use map and the analysis of various land uses while preparing a development plan of an area? Generally, two terms **land cover** and **land use** are often used interchangeably, but each term has its specific meaning. Land cover refers to the surface cover on the ground like vegetation, urban infrastructure, water, bare soil etc. Identification of land cover establishes the baseline information for activities like thematic mapping and change detection analysis.

Land use refers to the purpose of the land serves, for example, residential, commercial, industrial, transportation, amenities, agriculture, water bodies etc. Land use information that reflects socio-economic functions and human activities is critically essential for urban planning, landscape design, environmental management, health promotion, and biodiversity conservation. Land-use maps outline the distribution, pattern, and composition of urban land use categories facilitate the Urban Planners to choose the best option.

In preparation of city development plan, land use maps also help the decision makers to decide the most appropriate and sustainable ways to manage the proper utilization of the resources – related to space in a given area. Land use analysis further helps decision makers to understand the factors affecting resources utilization and ensure the resources are used wisely to create a conducive living environment for the people of that area.

The base map creation involved collaboration with government department, and other line departments and data was collected during a consultant's physical survey. Open-source satellite imagery in ARCGIS was employed for firsthand information, complemented by ground-verification through physical survey proforma.

To delineate the Municipal Committee (MC) boundary, Election Commission maps, though unscaled and lacking geo-coordinates, were utilized. The district map aided in delineating the MC limits. While MC officials provided specific points, highlighting their non-connectivity, a tentative boundary was outlined of Moro City. However, verification of the existing MC boundaries from District Administration is in the pipeline and Deputy Commissioner of Naushahro Feroze is requested to provide the map showing MC limits of Moro City.

The land use calculations provide an overview of land distribution in MC Moro city, encompassing 09-major categories within the total MC boundary area of 3,103.36 acres. Residential land use dominates, occupying 42.16% of the total area, indicating a primarily residential cityscape. Further classification includes medium density residential (22.18%), high density (4.84%) and low density residential is 1.78%, land reserved for future residential use is 7.04%, whereas for area for existing housing schemes is 6.31%) and mix development (0.02%). Notably, medium and low-density residential areas suggest a moderate population density and limited demand for high-rise structures.

Commercial activities cover 5.76%, further divided into low density commercial (5.56%) and medium density commercial (0.20%). Limited commercial development indicates a weaker secondary or tertiary sector.

The total area under amenities is 4.83%, out of which institutional (2.66%), utilities and municipal service facilities (0.51%) religious is 1.66%. Total amenity area of 4.83% is indicating limited amenities and demonstrating a weaker public or social sector.

Industrial land use encompasses 0.61%, subdivided into small-scale manufacturing/light industry (0.29%), warehouse (0.22%) and under trade & commerce the area is 0.29%. This suggests a minimal industrial presence, particularly in the small-scale and informal sectors. Of these industrial establishments and warehouses two warehouses are located on Dadu-Moro Road in North-West of the city, Ice factory in West and Mohsin Oil Mill is located on National Highway N5 in South-West of Moro, other units including Dahri Rice Mill are at Moro Bandhi Road in South-Eastern part of the city.

Transportation claims 7.19% of the total area, showing a well-developed transportation network. Subcategories include roads (7.1%), bus stop/adda (0.07%), and taxi stand (0.01%). At present railway service is not available in the city however in previous time railway was in operation as railway is existing in the city, it starts from south of city (Nawabshah) going towards in north of city (Naushahro Feroze). Heavy reliance on roads suggests flexibility but may lead to issues like traffic congestion and environmental pollution.

Agriculture covers 38.59% of the total area, highlighting Moro's dual identity as an agricultural hub. The lack of subcategories implies a homogeneous agricultural production system, indicating a strong reliance on the primary sector for a large population.

Water bodies occupy 0.16%, emphasizing natural or artificial features like lakes, and ponds, contributing to a scenic and potentially resourceful landscape.

Recreational areas, not further classified, are scarce at 0.16%, possibly impacting recreational demand and satisfaction, including parks and playgrounds.

Special use, representing unique areas like vacant land, covers 0.53%, suggesting minimal distinct zones or potential for unique development.

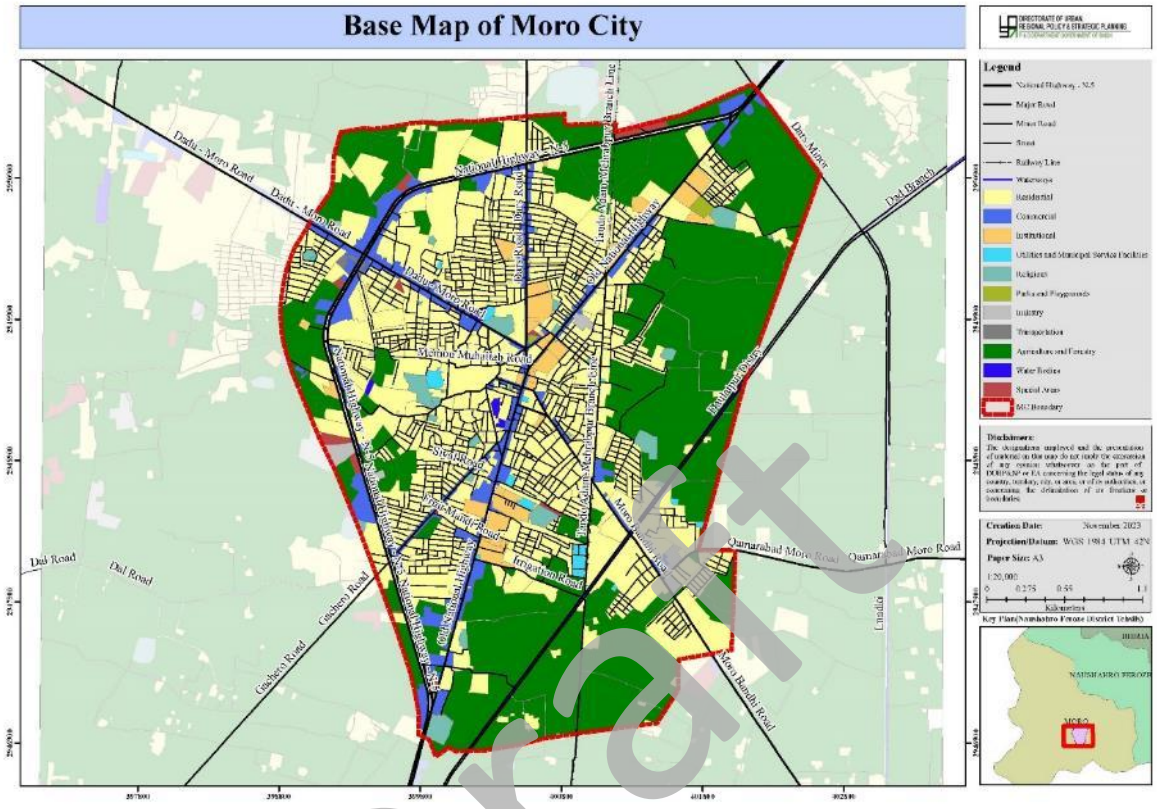
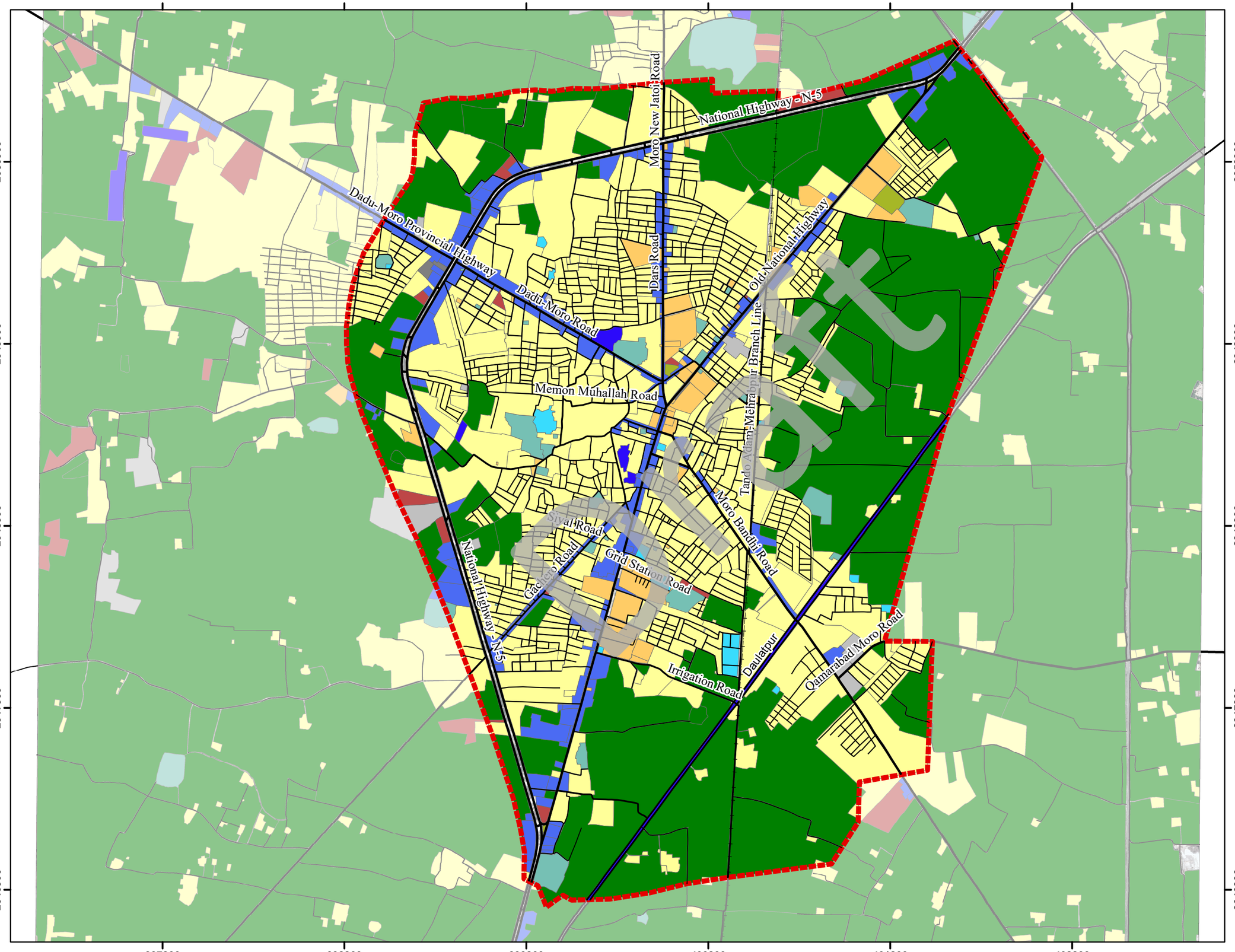


Figure 2-3 Base Map of Moro City

Base Map of Moro City

DIRECTORATE OF URBAN, REGIONAL POLICY & STRATEGIC PLANNING
P & D DEPARTMENT GOVERNMENT OF SINDH



Legend

- Major Road
- Minor Road
- Street
- Track
- Railway Line
- Residential
- Commercial
- Institutional
- Utilities and Municipal Service Facilities
- Religious
- Parks and Playgrounds
- Industry
- Transportation
- Agriculture and Forestry
- Water Bodies
- Special Areas
- Moro MC Boundary

Paper Size: A3
1:20,000

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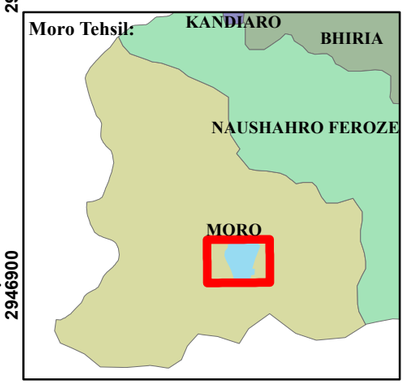


Table 2-6: Land use Classification and Percentages

Landuse Classification and Percentages					
Moro (MC)					
S No	**Landuse Classification**			**Area (Acres)**	**%**
1	Residential	Residential	Low Density Residential	55.10	1.78
			Medium Density Residential	688.34	22.18
			High Density Residential	150.12	4.84
			Reserved for Residential Purpose	218.50	7.04
			Mix Development	0.53	0.02
			Existing Housing Schemes	195.90	6.31
		Sub Total		**1308.49**	**42.16**
2	Commercial	Commercial	Low Density Commercial	172.61	5.56
			Medium Density Commercial	6.25	0.20
		Sub Total		**178.86**	**5.76**
3	Amenities	Institutional	Government/Public Administration	42.21	1.36
			Health And Welfare	9.35	0.30
			Education	30.71	0.99
			Private Office/Institution	0.24	0.01
		Sub Total - A		**82.51**	**2.66**
		Utilities And Municipal Service Facilities	Sewerage	12.25	0.39
			Solid Wasate Disposal	1.53	0.05
			Electricity	1.75	0.06
			Communication	0.41	0.01
		Sub Total -B		**15.94**	**0.51**
		Religious	Mosque	11.21	0.36
			Imam Bargah	0.97	0.03
			Temple/Mandir	0.04	0.00
			Burial Ground	39.17	1.26
		Sub Total - C		**51.39**	**1.66**
		Total of A+B+C		**149.84**	**4.83**
4	Recreational	Parks and Playground	Parks and Playgrounds	**4.90**	**0.16**
5	Industrial	Industry	Small-Scale Manufacturing/ Light Industry	9.12	0.29
			Warehouse	0.73	0.02
			Trade and Commerce	9.03	0.29
		Sub Total		**18.88**	**0.61**
6	Transportatio	Transportation	Bus Stop/Adda	2.32	0.07
			Taxi Stand	0.30	0.01
			Roads	220.42	7.10
		Sub Total		**223.04**	**7.19**
7	Agriculture	Agriculture And Fores	Agricultural	1193.57	38.46
			Livestock	4.06	0.13
		Sub Total		**1197.64**	**38.59**
8	Water Bodie	Water Bodies	Pond	**5.12**	**0.16**
9	Special Use	Special Areas	Vacant Land	**16.59**	**0.53**
10	**Total Area of MC Boundary**			**3103.36**	**100.00**

Source: Spatial Analysis done by consultants

Graveyard

NADRA Office

Masjid

Judicial Lockup

Social Center

Bahria Foundation College

Fruit Mandy

Commercial Area

Main Disposal

Figure 2-4: Pictures of Various Types of Land Uses in Moro

2.5 Town Scape

The meaning of Townscape in English is "a view or the appearance of a town or city", under this section of Strategic Development Plan Report Townscape of Moro City is to be discussed i.e. how the city looks in a picture? Which land use activity is prominent? Commercial, industrial, educational, health, water body, industrial, recreational, religious, etc., the attached Townscape map will serve the purpose of getting a clear picture to understand the existing situation of Moro MC. For the purpose city is divided into eight distinctive areas, therefore each area conspicuous delineated keeping in view the prevailing layout of the city. It is important to keep in mind that these unique areas are not representing the administrative boundaries but will serve the reader to understand the existing cityscape.

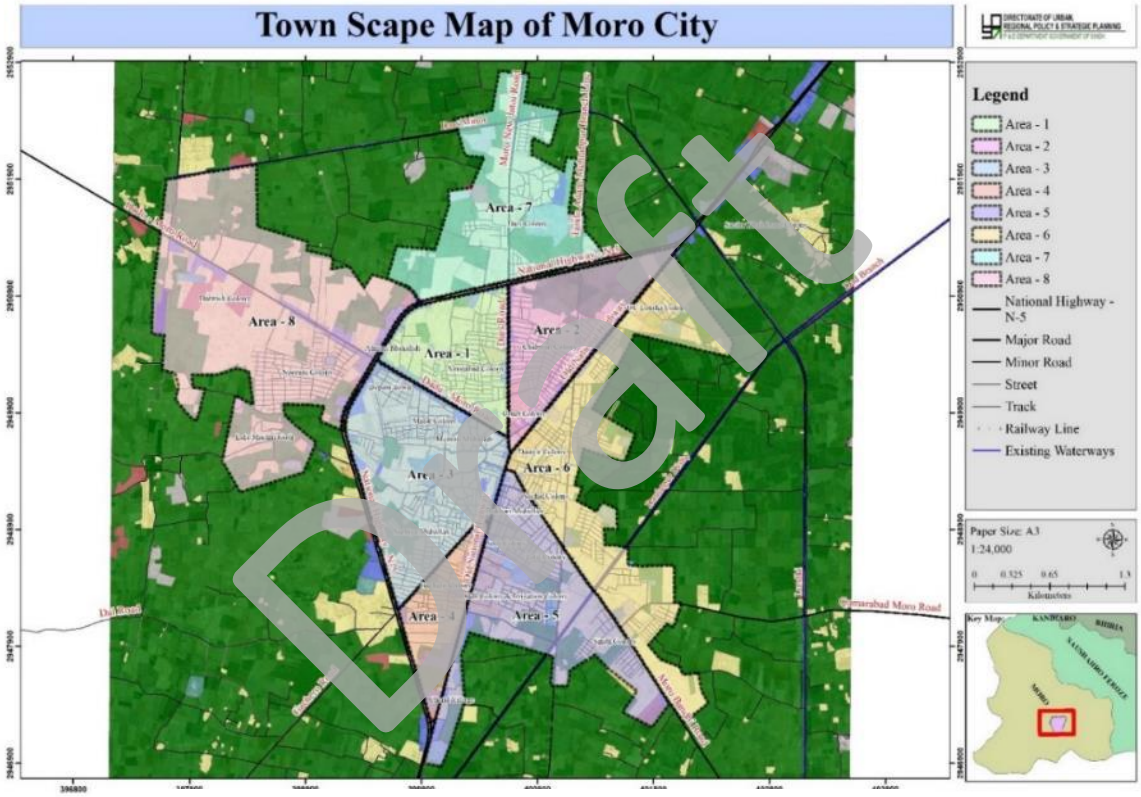


Figure 2-5 : Townscape of Moro

Area-1:

Area-1 encircled by National Highway N5, Dars Road and Dadu-Moro Road. Dadu Moro Road starts from Dars Road, opposite of Qalandria Medicos, and merge with National Highway N5 in north-West of the city. Dars Road, perpendicular to Dadu-Moro Road, starts and all the way long N5 after crossing SYMB Shoaib Yar Motor Cycle Auto parts shop at Bismillah Estate merge at N5. The piece of National Highway N5, which connects Dadu-Moro Road and Dars Road, finally ends the polygon of Area-1.

This Area-1 serves the people of Moro by the subsequent land use activities:

- Residential - Aminabad, Almani Muhallah, ITD Sehar Muhallah, Sehar House and Kalhora House;
- Commercial – Super Salateen Restaurant, Lahoti Hotel, fast foods (Al Jaddah Fast Food), NF Pizza, Tobu Burger, Petrol filling station, Moro CNG station, car repair workshops, other Commercial establishments in particular along both sides of Dadu-Moro and Dadras Roads;
- Educational - Government Elementary College, Habibia School of Hope and Alamin School;
- Health - AD Medical Centre and Moro Lab Diagnostic Centre, Amna Child Care Clinic and Khan Muhammad Medical Centre;
- Religious – Masjids, and two graveyards of these two ones is Khalifa Qabrustan;
- Warehouses – Fatimah and Fauji Fertilizer ware houses;
- Utilities – Sehar Disposal Station

Area-2:

Area-2 is a triangular area formed by two highways, one is New National Highway N5 and the other is Old National Highway, and the third is Dars Road, which is a primary road. It starts from Old SSGC Office on Dars Road, this primary road after crossing MC Office, protrude in North of Moro City and merge at N5. From the same place Old National Highway runs towards North-East of Moro City and merge at National Highway N5. The inclusion of these two roads, one is Dars Road and the other is Old National Highway, with N5 completes the polygon in the shape of a triangle.

- Residential – Chahwan Colony and Court Colony;
- Commercial – On road sides of Dars Road and Old National Highway;
- Education – Government Boys High School, Government Mehran Degree College, Government Girls Elementary School and Degree College, Gulshan-E- Mukhtiyar Primary School, Bahria Foundation College, Paras Public School, Government Boys Lower Secondary School, Roshan Tara Primary KG Primary and Middle School;
- Health – Civil Hospital, Taluka Hospital and Khan Muhammad Medical Centre;
- Religious – Masjids and graveyard;
- Recreation – Benazir Children Park;
- Agriculture – All vacant area in this zone

Area-3:

Area-3 consists of Dadu Moro Road starting from Deparja Bus Stop located in the center of city, which leads towards North-West of city and merge at National Highway N5, near Daewoo Express Restaurant. From the Deparja Bus Stop Gachero Road merges with National Highway N5 in south western part of City and then along N5, which is then connected to Daewoo Express Restaurant and the loop of Area 3 is completed.

Area-3 is providing is used by following land uses:

- Residential – Siyal Muhallah, Surhiya Muhallah, Memon Muhallah, Malik Colony, Gachero Colony and Bypass Town;
- Commercial areas –Along National Highway;
- Light industrial - Ice Factory;
- Agriculture area – In the form some pockets for crops and cattle farm;
- Religious use - Masjids, Imam Bargah Grave yard, Eid Gah, Temple;
- Utilities use – Proposed disposal by PHED;
- Transportation use- Taxi stand and Bus stand at the junction Dars Road and Dadu Moro Road;
- Educational use- Education facilities of various levels i.e. primary to secondary etc.

Area-4:

The triangular area coming between Gachero Road, Old National Highway and National Highway N5 starting from Watto Hotel located in the center near administrative Zone or Area-6.

This area is serving the people of Moro by the subsequent activities:

- Residential- Gachero Colony;
- Commercial – Animal Mandi, Hotel, Marriage Hall, petrol filling stations, medical stores and others shops etc.;
- Government Offices- Civil Court Moro;
- Health – Animal Hospital, Mehran Tibiya College;
- Religious use – Masjids;
- Parks & play ground;

Area-5:

Area-5 starts from Mukhtiayrkar Office, Pakistan Postal Office, SSGC Old Office and Moro Police Jail beneath these offices with the union of two roads, one is Moro Bandhi and the other is Old National Highway. Of these two, one road Moro Bandhi is running down in South-East of city up to Kloi Homes (Condominium Complex) and the Old National Highway is leading down in South-West of city and these roads meet each other, forming a V, after running aside covering entire built-up area and crossing the Daulatpur Distributary also (See Town Scape Map).

Area-5 consists of the following land use activities:

- Residential- Latif Colony, Odhh Colony and Irrigation Colony and Bukhari Muhallah, Jatoi Colony
- Education- Various education facilities including schools, High Schools, Girls Degree College, Education and Rehabilitation Centre;
- Government Offices- AC Office, WAPDA Revenue Office, Grid Station and Irrigation Department;
- Health- Al Murad Consultants Clinics and Laboratory;
- Religious use – Masjids and Grave yard;
- Rural Area- Chand Village

Area-6:

Around Moro Bandhi Road and Old National Highway, starting at Old National Highway from Bahria Foundation College Moro Campus passing along the all-built-up area around Faizaan-E-Madinah covering Dastagir Colony near administrative zone, Qamarabad Moro Road and, Sindh Colony and completing a polygon is Area-6 of Moro City.

Area-6 consists of the following land use activities:

- Residential- Dastagir Colony, Sachal Colony
- Utilities – Existing sewerage & proposed disposal
- Trade & Commerce- Wheat warehouse
- Transportation- Deparja Bus Stop and Taxi Stand
- Religious – Masjids and graveyards
- Light Industries – Dahri Rice Mill
- Education - Primary school, Madrasa Darul Salam and Madinah Markaz Faizan

Area-7:

Starts around both side of Moro New Jatoi Road and Dars Colony starting from National Highway-NH5 near Tando Adam Mehrabpur Branch Line and leading towards north of city beyond MC boundary, encircling Allama Iqbal Open University GN Morai (Moro Campus) and after crossing Dars Minor it meets Moro New Jatoi Road and finally it completes the polygon by protruding back at National Highway N5 near Al Amin Restaurants and Guess House.

Area-7 consists of the following land use activities:

- Residential- Dars Colony, Manghi Housing Complex and new housing schemes
- Education - Allama Iqbal Open University GN Morai (Moro Campus)
- Commercial- Petrol Filling Station

Area-8:

Both sides of Dadu Moro Road and up to Blue Water Park area 8 starts from National Highway (N-5) near Al Amin Restaurants & Guest House and it protrude in north-west direction up to Dars Minor. From Dars Minor the area is spread in southern direction and after encircling Lalu Machhi Goath the polygon is completed by merging back to National Highway N5.

Area-8 consists of the following land use activities:

- Residential- Dalwish Colony, Noorani Colony and Lalu Machhi Goat
- Education - Sojahro Model School and Government Primary School & Habibia School of Hope
- Trade & Commerce- Suzuki Motors (Dealer), Shopping Mall and Restaurant
- Transportation- Daewoo Express and Kainat Bus Terminal
- Light Industries – Floor Mill & Oil Mill
- Utilities – Oxidation Pond
- Religious – Masjids

3. VISION FORMULATION WORKSHOP

The vision formulation exercise aimed to adopt a pluralistic, stakeholder-led approach to define a shared long-term vision for Moro City, clarify its intended regional role within Sindh, and identify priority development directions for socio-economic uplift and improved livability.

A consultative vision formulation workshop was held in Moro on 24 July 2024 to capture stakehokder priorities and translate them into measurable stategic directions for the SDP.

Stakeholder Consultation

3.1 Summation of Vision Formulation

The vision formulation exercise consolidated stakeholder perspectives on Moro's future development, service delivery priorities, economic positioning, and environmental sustainability. At the concluding session, feedback forms were administered using a close-ended questionnaire to quantify perceptions of current services and validate priority interventions.

Key findings are summarized below (to directly inform SDP strategies and project prioritization):

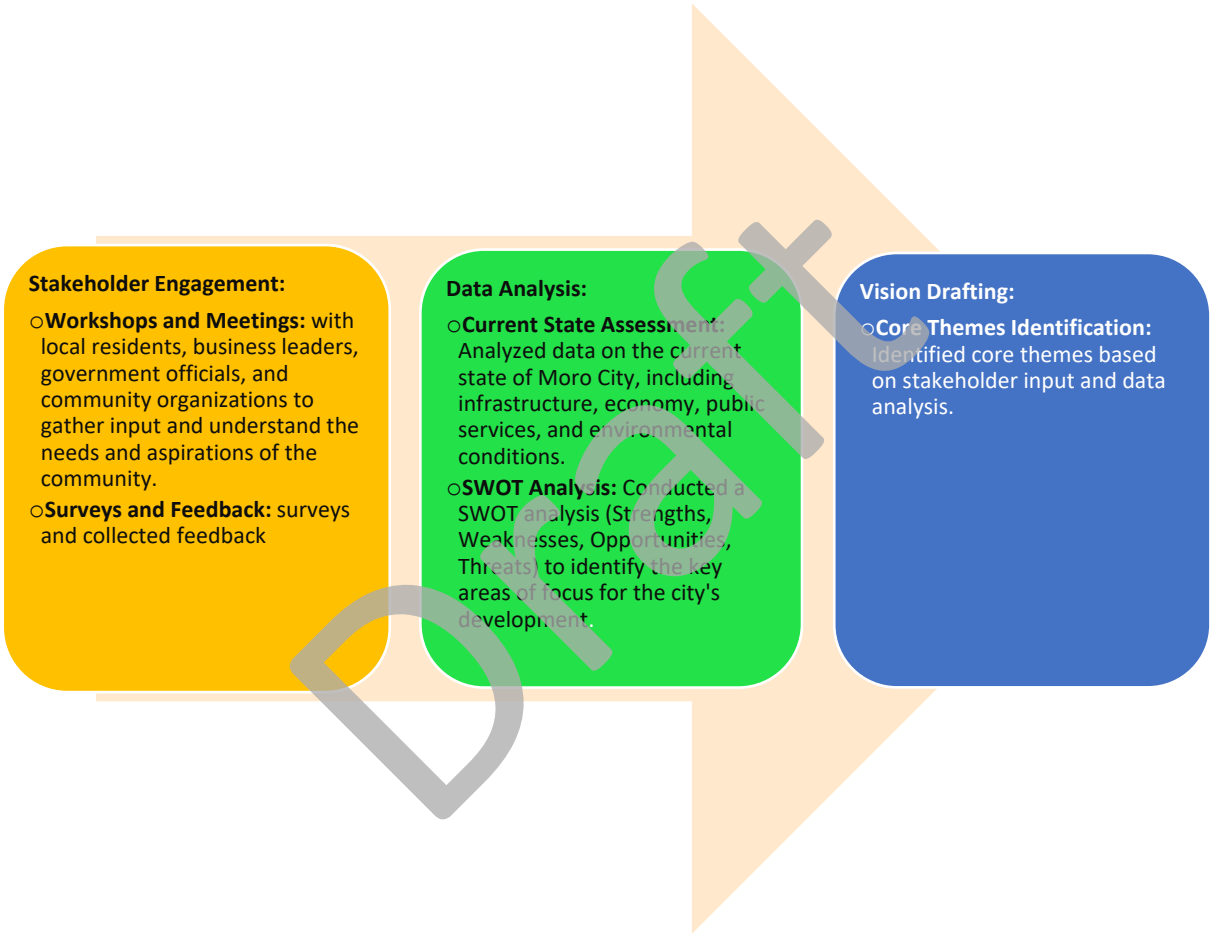
1) Although the participants generally understood that vision should reflect citizens and stakeholders' aspirations as to where they want to see their city in twenty years from now. However, their focus has been remained on the resolution of immediate problems namely; supply of clean drinking water, sewerage and drainage, solid waste disposal, traffic congestion and parking, better health and educational facilities, cleanliness, parks and play areas. It is clear that far-flung high-sounding vision statements, are meaning less for them if the immediate problems are not urgently solved.
2) The participants showed concern regarding urbanization and uncontrolled land use conversion is eating away lots of urban agricultural land and breaking social fabric of residential communities. Need for proper land management system was stressed.
3) The socio- economic uplift of the population was mentioned by almost all the participants, which include provision of basic needs of housing facilities with sustainable utility services including water supply & sanitation, health, education, parks and playgrounds, employment and income generation.

Peace, safety, security and proper governance are envisioned by the participants as the ultimate goal for the twenty-year **Moro Strategic Development Plan**. Whereas the Vision will remain static, the path to reach the vision may be subject to adjustments to account for ground realities.

3.2 Moro City Vision Statement

The vision statement is derived from stakeholder inputs and is translated into strategic themes and measurable targets to guide sector strategies, project prioritization, and implementation sequencing under the SDP.

Process of Developing the Vision Statement:



MORO CITY VISION 2045

"The city full filling all the basic needs, such as housing, water supply, sanitation and metalled roads with transportation facilities, in clean and sustainable pollution free green environment, with education and health for all, along with growth in local and regional economy with increase in employment, incomes and related skills development to emerge as well-planned modern city with peace, security and prosperity like some of the best most livable cities in the world."

PROPOSED MASTER PLAN FOR

MORO CITY

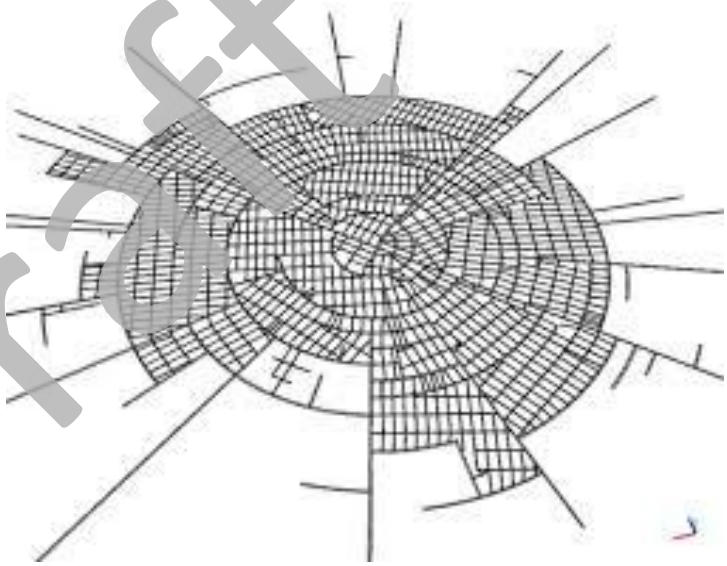
4. PROPOSED MASTER PLAN OF MORO CITY

4.1 Spatial Pattern

Moro is a city in Naushahro Feroze District, the city is administratively subdivided into 12 Union Councils and is located on National highway (N-5) in the center of Sindh at an altitude of 28 m (95 ft.) and is 12 km of the Indus River. It is the largest city in Naushahro Feroze District with taluka population of 408,148 and Moro MC Population of 142,685 as per 2023 Census of Pakistan.

The main Railway line between Lahore and Karachi passes through some towns of District Naushahro Feroze such as Padidan, Bhirya Road and Mehrab-Pur. All the taluka headquarters are also connected by loop lines such as Mehrab pur via Tharu Shah to Moro, Padidan via Tharo Shah to Moro and Nawabshah via Sakrand to Moro. But the system of this railway lines is out of use now and the nearest railway station to Moro is Bandhi, which is about 40 kilometers away from Moro.

To prepare a strategic Development Plan of Moro City first of all it is necessary that existing land use spatial pattern and basic urban forms of Moro to study and following the same spatial pattern and basic urban forms the proposed future plan for year 2045 to be proposed. The existing spatial pattern and basic urban forms are discussed as under:

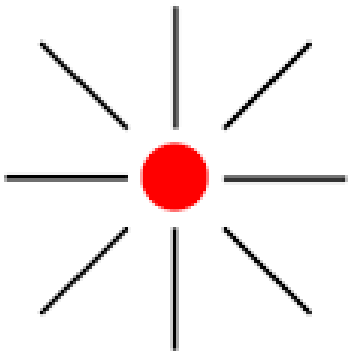


The spatial growth of Moro City follows a pattern reminiscent of concentric circles, radiating outwards from the city center, as depicted in the radial growth map. The city's expansion has occurred around almost in all the four directions, which seems more prominent with the existence of National Highway N-5. The N-5 in Moro starts in South-West from Irrigation Road and then it connects Dadu-Moro Road in North-West of city forming a loop and finally it connects Old National Highway after connecting Moro New Jatoi Road.

In last decade, the city extended mainly in north-western and south-east direction constantly along Dadu-Moro Road, National Highway N-5 and Moro Bandhi Road. The administrative zone and offices i.e. AC Office are situated near the CBD along all the four major roads i.e. Dadu-Moro, Dars Road, Old National Highway and Moro Bandhi Road. At present the pressure of new development is on Dadu-Moro Road after crossing the Bypass (i.e. N-5) on north-west direction of the city. Therefore, as result the city attained an irregular shape and non-linear pattern.

4.2 Basic Urban Form

The existing urban form of Moro City is characterized by a mix of residential, commercial, agricultural and industrial areas that serve the needs of the local population and surrounding rural communities. The city's core remains the focal point for commercial and social activities, with development radiating outward in a concentric pattern.



The existing city is a small lively and thriving urban center that fulfils the socio-economic and financial needs of its population and that of surrounding towns and villages. Especially those are not along major national road network are benefited with N-5; like Jatoi Naushahro Feroze, Nasrulla Raho, Hazoor Bux Khoso and Raj Muhammad Dahri.

It is no surprise then that the population demands the uniqueness and prominence of the existing city to be maintained or enhanced in the future plan. During the stakeholder's meeting, the city elders insisted that any future urban development detached from the existing town making the existing city a redundant, will not be acceptable to them.

The existing city core would naturally be the physical nucleus of future city, and the future development will radiate from it in all directions in form of different sectors. At present four major roads and N-5 connects Moro with the other cities, all converging on the city center - Shahi Bazar. Interconnection of these radiating roads with the proposed Ring Road around the existing city, will keeps the development compact. Since the existing population of Moro is over 152,673 persons and the future projected population is about four times the existing population the city, thus the future growth strategy of compact development is followed by providing a new bypass formed a Ring Road all around the city.

SWOT Analysis and Development Framework

The development of the proposed land use plan for Moro City was guided by a detailed SWOT analysis, which identified the strengths, weaknesses, opportunities, and threats impacting the city's growth. This analysis provided a strategic foundation to ensure that the proposed master plan addresses key challenges while leveraging existing opportunities to create a sustainable and resilient urban environment.

- **Strengths:** In Moro, the dominant employer sector[10] is agriculture sector, good breed of buffalos and cows are found in the district and favorable environment is available for livestock growth (Pasture), poultry farming and fish farms in outskirts of Moro City. It is easily accessible and

[10] Development Statistics Sindh 2022

navigable by road, rail and air and National Highway (N5) is a major strength which provide a vital link for transportation of goods & services within Sindh and throughout Pakistan.

- **Weaknesses**: The city is facing challenges related to social services and inadequate infrastructure. The absence of taped water supply, separate sewerage and drainage system creates un-healthy living environment. Besides this, inappropriate planning, design, unplanned expansion, less job opportunities in industrial sector and poor governance further aggravated the urban management.

- **Opportunities**: There are significant opportunities to enhance agro-based industrial development, the roads are wide enough to accommodate the development for mass transit system and to facilitate multiple transport activities by implementing road space design standards invest in regional connectivity, and implement infrastructure improvements. Development of transit-oriented areas and cluster housing also provides potential for planned growth.

- **Threats**: Threats include the risk of losing agricultural land to urban sprawl, environmental degradation, social inequalities, and economic instability. The outmigration of educated people, skilled professionals and vulnerability to natural disasters pose additional risks to sustainable development.

4.3 Proposed Master Plan

The Proposed Master Plan for Moro has been prepared with the consideration of three phases as follows:

i. Immediate Phase - Immediate Action Plan
ii. Short Term Phase - Priority Projects
iii. Long Term Phase – Strategic Development Plan

The total extent of the area included in the overall proposed Moro Master Plan is 13,700 acres approx. for a population of 625,685 by 2045. In this way, Moro City in next twenty years is expected to have population density of 22 persons per acre and overall, six housing units per acre with an average household size of 5.78.

The hallmark of the plan is that it is **compact without being congested**. Although future expansion of the Moro Town is expected to grow at an average speed, however considering the present up hazard pattern of development in mono direction, the Proposed Moro Master Plan is catering for all the needs of a full-fledged city of the future. Thus, the plan will afford balanced development containing all required land uses and will not burden one sector of the town.

The overall structure of the plan is in radial form that the existing major roads, serving as radial roads and proposed ring road is making circle all around. Further the intersection of radial roads and ring road creates main junctions and forming different sectors.

Despite taking different aspects in to consideration, the Consultant suggest that the Master Planning should be reviewed every five years to estimate the land use and area requirement according to the growth rate and economic investment.

The Development Master Plan is based on the following components:

a) Determination of Growth Scenarios: The potential growth scenarios for the city and district have been identified based on population growth projections, economic development potential, and recommendations for the most viable spatial growth option for the city. These scenarios consider land requirements for spatial growth, environmental concerns, and economic opportunities. This forms the basis for delimiting development zones for the city and its hinterland, ensuring that the delineated area meets the anticipated spatial needs for the coming 20 years.

b) Long Term Plan: The Long-Term Framework focuses on the development of the city and the larger region over the next 20 years on an ecologically sustainable basis. It addresses urban planning and development, including programs and strategies across infrastructure, economic, and social sectors such as housing, land supply and management, education, health, recreation, water supply, sewerage, storm water drainage, solid waste management, transportation networks, electric power supply, gas supply, firefighting systems, environmental and ecological concerns, and economic development. Specific projects identified in the long-term plan are intended for implementation in the short term.

c) Short Term Action Plan for Priority Infrastructure Investment: Based on the long-term physical and economic development plans, a Short-Term Action Plan has been prepared to identify priority projects in each sector. These include rehabilitation, improvement, and extension of water supply, sewerage, storm water drainage, solid waste management, road infrastructure, housing (including Katchi abadies and slums), education, health, recreation, the central business district, and firefighting systems. The priority projects are aligned with the Sustainable Development Goals (SDGs 2, 3, 4, 6, 7, 8, and 11). Scope, size, and preliminary cost estimates for public sector projects have been worked out for Annual Development Program (ADP) allocations.

d) Preparation of an Immediate Action Plan for the Core Urban Area: An Immediate Action Plan (IAP) has been developed for the core urban area, including detailed design proposals for development and revitalization of key elements such as housing, footpaths, street lighting, street furniture, water supply, wastewater networks, essential garbage collection, horticulture, plantation, and the creation of urban open spaces. Scope, size, and preliminary cost estimates for public sector projects have been drafted for ADP allocations, and sector-wise PC-Is have been prepared.

e) Economic Development Plan: Within the Long-Term Development Plan framework, both long- and short-term economic development plans have been formulated. The focus is on strategies, interventions, and projects that will lead to the economic revitalization of Moro City and the district. The plan emphasizes identifying new avenues for job creation, revenue generation, and the development of Small and Medium Enterprises (SMEs), Special Economic Zones (SEZs), agro-based industries, tourism, recreational activities, and the services sector. Investment plans have been proposed to attract investors, with an emphasis on syncing with the core competencies of the city and district.

The Economic Development Plan also considers ongoing and proposed projects and the potential for industrial, agricultural, livestock, tourism, and other developments. A detailed framework for the development of primary, secondary, and tertiary industries is included, with strategic actions aimed at boosting the economy and creating employment opportunities.

f) Disaster Management Plan**:** A Comprehensive Disaster Management Plan has been developed based on a detailed study of the environmental setting and natural disaster risks for Moro City and the larger region. This plan includes threat perception, emergency preparedness, coordination between various government agencies, and emergency response, relief, and rehabilitation strategies.

g) Climate Change, Resilience & Adaptability Plan: A Climate Change Resilience and Emergency Contingency Plan has been formulated based on secondary data and consultations with relevant institutions. The plan includes recommendations for the conservation and enhancement of local agriculture, flora, and fauna, focusing on climate change adaptation and resilience.

h) Sustainable Development Goals (SDGs) Implementation Plan**:** SDGs Implementation Plan is prepared to achieve national commitments to the SDGs. The plan analyzes the existing situation of Moro City concerning SDGs such as Zero Hunger (Goal 2), Good Health and Well-Being (Goal 3), Quality Education (Goal 4), Clean Water and Sanitation (Goal 6), Affordable and Clean Energy (Goal 7), Decent Work and Economic Growth (Goal 8), and Sustainable Cities and Communities (Goal 11).

Alternative Land Use Planning Options in Master Plan Design

To apply the three alternative land use planning options for Moro City, the following steps have been taken to effectively integrate each scenario into the master plan:

a) Integration of Key Objectives into Zoning Plans

I. Agricultural Land Preservation Focus:

- A minimum 24% of land as standard of Moro land is reserved for agriculture, specific zones have been allocated for agricultural purposes to preserve this critical aspect of the

city's economy and livelihood. "Agricultural Conservation Zones" have been created to protect farming activities, restricting urban expansion into these areas.

- Green buffer zones have been defined to separate agricultural areas from urban areas, maintaining ecological balance and ensuring a controlled transition between urban and rural land uses.

II. Mix Development Focus:

- A mixed-use zoning has been used, integrating the existing *residential (42.16%)*, commercial (5.76%), industrial (0.61%), institutional (2.66%), transportation (7.19%), communications, utilities and municipal services (0.51%) areas to create Mix growth across different sectors.
- Urban green spaces, parks, and buffer areas have been incorporated throughout the city to address the limited recreational areas (0.16%), enhance urban environment and quality of life.
- Zones that support transit-oriented development (TOD) have been established, linking residential areas to employment hubs, thereby utilizing the existing transportation infrastructure, which currently covers 7.19% of the total land.
- Existing area of land 38.59% under agriculture is reduced to 15% at minimum standard of land is reserved for agriculture purposes, which encompasses crop and livestock production, aquaculture, and forestry for food and non-food products.

III. Agro based Cottage Industries Focus:

- "Zone for Cottage Industries" is created for agro-based industries, recognizing the city's agricultural base and the presence of medium and small-scale industries, such as oil mills, rice mill, ice factory and warehouses.
- Specific zone for industrial activities has been identified and currently allocated for industrial use, with emphasis on areas close to transport networks to facilitate logistics. The industrial zones have been expanded near the N-5 highway to leverage connectivity for economic development.
- Infrastructure provision (utilities, roads) has been ensured in these zones to support further industrial growth and employment generation.

b) Mapping the Proposed Land Use Plan Alternatives in GIS

- GIS-based digital maps have been developed to represent the three land use planning alternatives, marking different areas according to the objectives of each plan.
- For each scenario:

- Scenario 1: Areas designated as preserved agricultural land have been shown, highlighting the boundary limits of urban expansion, and green belt zones have been marked to separate urban areas from rural uses.
- Scenario 2: A mixed-use map has been created that includes residential, commercial, social infrastructure, and green spaces for a Mix Urban Development environment, incorporating existing and proposed expansions.
- Scenario 3: Areas planned for agro based industrial use has been highlighted including transportation links and logistics corridors to enhance agro based cottage industrial efficiency.

c) Infrastructure and Utilities Planning

- **Agricultural Land Preservation**:
  - New infrastructure in agricultural zones has been minimized, focusing mainly on rural access roads to aid local farmers and prevent unnecessary urban sprawl into agricultural areas, at present which is 38.59% of the city's land and it is proposed at the maximum standard of 24% agricultural land (standard NRM).
- **Mix Development:**
  - Multiple centers of commerce and other activities such as commercial, schools, healthcare, and community centers have been identified and mapped to ensure comprehensive infrastructure coverage across the entire city, especially in residential areas that make up 42.16% of the land.
  - TOD nodes have been integrated to improve access to public transit, enhancing mobility between residential, commercial, and industrial zones.
- **Agro based Cottage Industries**:
  - Infrastructure improvements in industrial zones have been planned, including upgrades to water supply, power, roads, and communication systems. This supports the growth of industries that currently occupy 0.61% of the city's land.
  - Utility corridors have been included in the master plan to connect industrial zones to other parts of the city, enhancing connectivity and efficiency.

d) Development of Growth Scenarios

- Detailed growth scenarios for each option have been prepared, outlining the expected expansion in residential, commercial, and industrial areas.

- **Agricultural Focus**:
    - Growth projections focusing on enhancing agricultural productivity and limiting urban sprawl have been outlined, considering that agricultural land occupies a significant portion of the city and provides livelihoods for many residents.
- **Mix Development Focus:**
    - Residential, economic, and recreational growth projections have been integrated, creating a scenario that balances population density, economic activity, and quality of life improvements, addressing current shortages in amenities and recreational spaces.
- **Agro based Cottage Industries**:
    - Agro based industrial growth scenarios is developed, including economic projections tied to increased industrial output, leveraging the existing industries and planning for expansion.

e) Selection of the Optimal Scenario and Refinement

A stakeholder consultation workshop was held on 04 August 2025 at Al Amin Restaurant in Moro, chaired by the Assistant Commissioner and Chairman Municipal Committee, with participation from DURP and SP officials, line departments, EA Consulting, and community representatives. The land use Master Plan was presented and feedback was received and recorded. After incorporating the suggestions, the final Master Plan was prepared, with the mixed development path adopted as the preferred scenario because it provides an appropriate balance between economic development, livability, and the preservation of productive agricultural land.

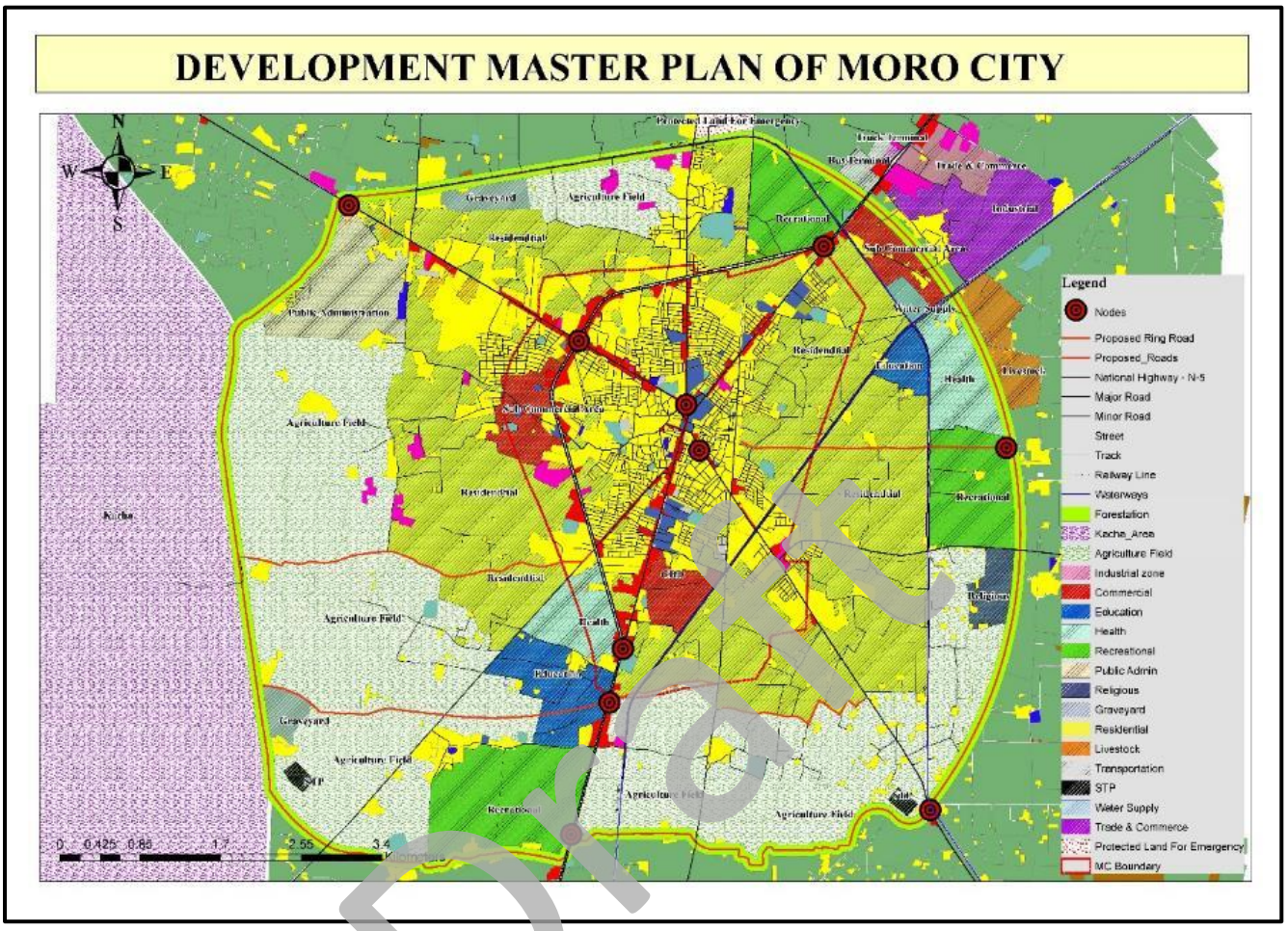
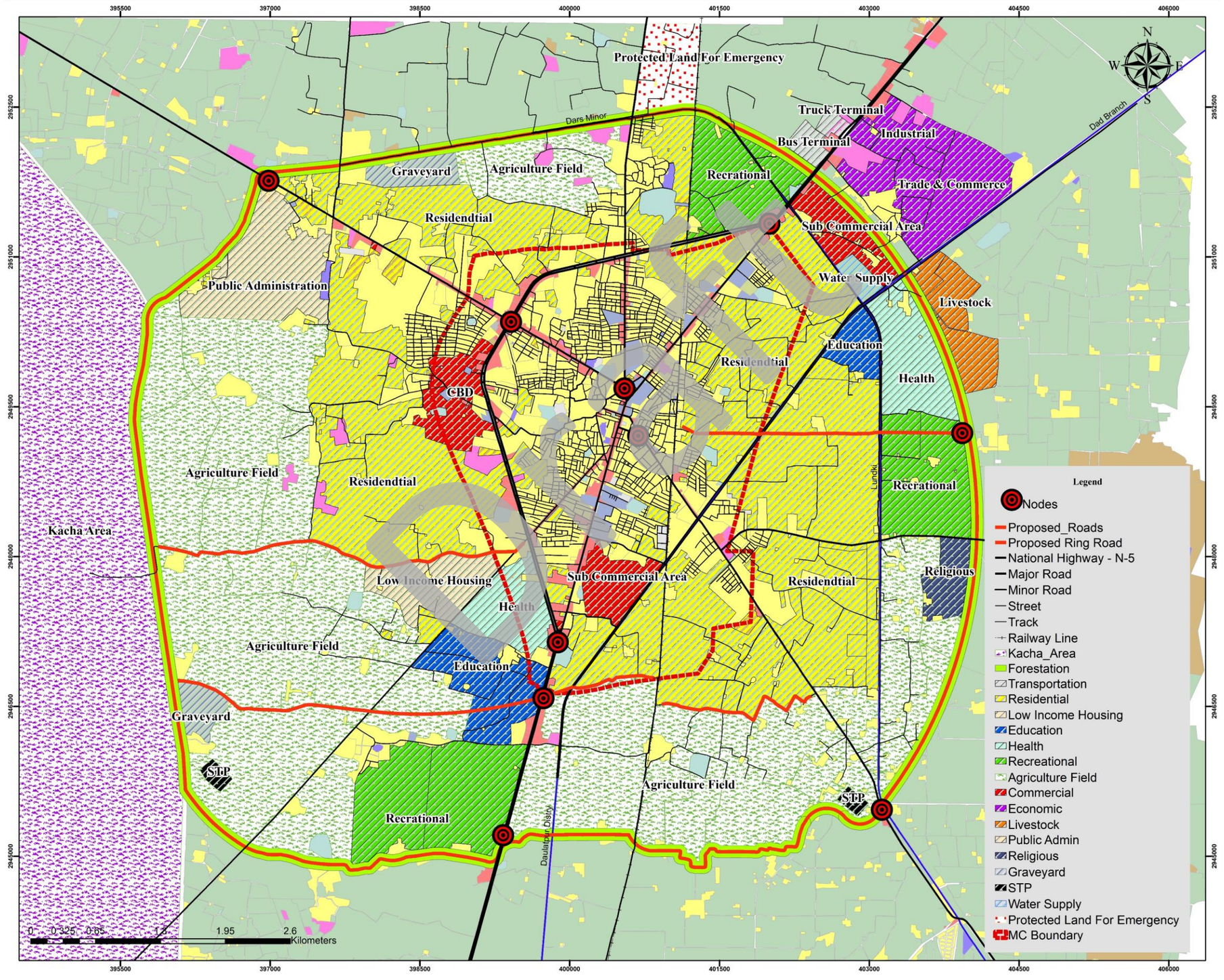


Figure 4-1: Development Master Plan of Moro City

DEVELOPMENT MASTER PLAN OF MORO CITY



4.3.1 Salient Features of Planning

- As the city span is not much bigger, so the extension is made near existing commercial hub, to formally call it a New CBD (Central Business District). It is located at Main Road or Old National Highway, which is almost center of attraction from all sides.
- Since not enough piece of land is available for central commercial activities, secondly to distribute the burden of commercial activities, two sub commercial centers also proposed. Their placements are chosen on the basis of accessibility from major roads and to serve the population without entering the town center.
- All economic activities are placed along the existing National Highway towards the north with respect to existing industrial activities. These activities include industrial estates, trade and commerce, and warehouses.
- Both the public transport terminal (Bus terminal) and truck terminal are proposed along the National Highway N-5, on the northern side of the city. The two terminals are located side by side, with the bus terminal designed to serve public transport needs, and the truck terminal dedicated to accommodating freight vehicles such as trucks and containers, particularly in connection with nearby industrial activities.
- There are two graveyards, one on the northern side, which is proposed to be further extended. And another site for a graveyard is proposed on the western side of the town near the Katcha area.
- The cattle area is proposed on the eastern side, accessible from Dulatpur Distributary Road, outside the proposed ring road to limit the town development further, and it will also benefit the population of nearby villages and other settlements.
- The public administration area is proposed along Dadu-Moro Road.
- Both new educational and health areas are recommended along National Highway N-5. In addition, the extension of THQ Hospital at the proposed ring road and a new education zone at Dualatpur Distributary Road are proposed.
- In addition, three major recreational areas are designated at the north end of National Highway N-5 and the south ends of the town along N-5, and the third one is on the eastern side along the new proposed ring road in order to balance distribution.
- The areas reserved for agriculture beyond the ring road will be helpful in restricting housing development and preserving the agricultural farms from the onslaught of housing projects by the private sector.

4.3.2 **Ring Road**

The proposed ring road is designed to function as an outer bypass, facilitating traffic movement around the city rather than through its congested center. While it does not form a perfect circle, it connects key points on the western and eastern sides to create a continuous loop. On the western side, the bypass extends up to the start of the Katcha area, while on the eastern side it crosses the Dars Minor, curving around to complete the route. The N-5 highway runs through the city, effectively splitting it into two halves. By using this ring road, vehicles traveling from one side of the city to the other can avoid passing through the urban core, reducing congestion and improving connectivity. The recommendations are to increase the right-of-way, i.e., 200 feet, with urban forestation of 200 feet wide on both sides of the ring road with the same cross section and standards. As the areas on both sides of the Ring Road will attract many developers. The land two hundred feet on both sides of the ring road should be notified for development control, where only planting of local trees should be allowed.

4.3.3 **Radial Roads – Regional Connectivity**

All proposed radial roads are existing major roads, providing transport connectivity with other urban and rural regional areas. Most of these roads are converging to core urban area, or in other words these roads are originating from the existing town. In this way, the existing town will remain focal point of all development along the roads. However, these roads are also serving as vital radial regional connections. As a result, there are four proposed radial roads with increased ROW, which will serve as future regional connections. However, it is very important to control upfront development along the Major Roads. Likewise, ring road on both sides of major roads as well as planting of local trees is also recommended.

4.4 Proposed Land Use Zoning

Deviation from NRM percentages reflect Moro's compact medium-density trend, the need for stronger green buffers and institutional clustering, and the requirement to protect agricultural land from speculative conversion. The NRM has not been revised since decades, thus the Consultant have added new land uses in the prescribed categories, as primary zoning i.e. Level-1. Further, as per the contextual requirement of the local environment of Moro City, secondary zoning i.e. Level-2, is also categorized accordingly, again in consideration to the NRM Standards[11]. The proposed land use zoning is shown in the table:

Table 4-1: Proposed Land Use Zoning

NRM STANDARDS			Proposed Land Use Classification		
S.No	Land Use Zoning	Land Uses (%)	Level - 1 Functional Zoning	Areas (acres approx.)	Land Uses (%)
1	Residential	40-45%	Residential	5,635	41
2	Commercial	2-3%	Commercial	509	4
3	Industrial	2-10%	Economic	508	4
			Livestock		
			Industrial		
4	Institutional	3-5%	Health and Welfare	1,029	7
			Educational		
			Religious		
			Public Administration		
5	Community Open Spaces	4-6%	Recreational	863	6
			Urban Forestation	2,003	14
6	Graveyards	2-3%	Graveyards	207	2
7	Arterial Circulation & Terminals	15-20%	Transportation	944	7
			Utilities and Services		
8	Protected Reserved	15-25%	Agriculture	2,004	15
			Water Bodies		
			Vacant / Reserved		
	Total Area of Proposed Master Plan			13,702	100

[11] Standard Land Use Classification for Urban Jurisdictions in Pakistan, Appendix 10.1, page no. 398, National Reference Manual on Planning and Infrastructure Standards

The total area requirement for full fledge city will be around 13,702 acres. As shown in the table of proposed land use classification, the percentage of residential is low and institutional is high, in comparison to the NRM standards. Subsequently, the institutional area will also contain residences for health, educational, religious and public administration employees / staff. In this way, institutional area is sharing the residential load as well.

Table 4-2: Land Use Classification Level-2 Functional Zoning

NRM STANDARDS		PROPOSED LAND USE CLASSIFICATION FOR MORO CITY								
S. N	Land Use Zoning	Land Uses (%)	S.N	Level - 1 Functional Zoning	Level - 2 Functional Zoning	Areas (acres approx.)		Land Uses (%)	Areas (acres approx.)	Land Uses (%)
1	Residential	40-45%	1	Residential	Existing Residential	2231	5,635	16.28	5,635	41
					Proposed Residential	3404		24.84		
2	Commercial	2-3%	2	Commercial	Existing Commercial	211	509	1.54	509	4
					New CBD	116		0.85		
					Sub-Commercial near Water Supply	89		0.65		
					Sub-Commercial at old National Highway	92		0.67		
3	Industrial	2-10%	3	Economic	Trade and Commerce	217	251	1.58	508	4
					Warehouses	35		0.25		
			4	Livestock	Cattle Farms	135	135	0.98		
			5	Industrial	Existing Industries	61	122	0.44		
					New Industrial Area	61		0.45		
4	Institutional	3-5%	6	Health and Welfare	Existing Health and Welfare	11	324	0.08	1,029	7
					Proposed Health Zone Near N-5	140		1.02		
					Proposed Health Zone near Dad Branch	172		1.26		
			7	Educational	Existing Educational	35	293	0.26		
					Proposed Education Zone near Daulatpur Distributary and Lundki	60		0.44		
					Proposed Education Zone Near Gachero Road	198		1.44		
			8	Religious	Existing Religious	15	85	0.11		
					Proposed Religious	70		0.51		
			9	Public Administration	Existing Public Administration	42	327	0.31		
					Public Administration	285		2.08		
5		4-6%	10	Recreational	Existing Parks and Playground	5	863	0.04	2866	20

NRM STANDARDS		PROPOSED LAND USE CLASSIFICATION FOR MORO CITY								
S. N	**Land Use Zoning**	**Land Uses (%)**	**S.N**	**Level - 1 Functional Zoning**	**Level - 2 Functional Zoning**	**Areas (acres approx.)**		**Land Uses (%)**	**Areas (acres approx.)**	**Land Uses (%)**
	Community Open Spaces				Proposed Sports and Cultura Complex	397		2.90		
					Amusement Park	207		1.51		
					Large Public Park and Festival Grounds	252		1.84		
			11	Urban Forestation	Urban Forestation	2,003	2,003	14.62		
6	Graveyards	2-3%	12	Graveyards	Existing Graveyards	100	207	0.73	207	2
					Graveyard	107		0.78		
7	Arterial Circulation & Terminals	15-20%	13	Transportation	Existing Transportation	3	873	0.02	944	7
					Proposed Bus Terminal at N-5	28		0.20		
					Proposed Truck Terminal at N-5	15		0.11		
					Road Network	827		6.04		
			14	Utilities and Services	Existing Utilities and Services	20	71	0.14		
					Proposed Water Supply	27		0.20		
					Sewerage	25		0.18		
8	Protected Reserved	15-25%	15	Agriculture	Agricultural Reserved	1,872	1,872	13.66	2,004	15
			16	Water Bodies	Canals and Ponds	18	18	0.13		
			17	Vacant	Vacant Area	114	114	0.83		
Total Area for Future Development of Moro						**13,702**		**100**	**13,702**	**100**

4.4.1 Residential Zone

The important features of the proposed master plan is accommodation of all income groups with diverse options for housing. Therefore, in total 5,635 acres of residential land use is proposed, which will create 19 housing units per acre on average. Thus, in overall town more than 108,000 housing units are expected to be in city by 2045.

The 143-acre public supported scheme along Gachero Road shall be planned at medium to high residential yields with an emphasis on affordability. The scheme shall include serviced plots of smaller sizes, a share of walk-up apartment blocks suitable for rental and ownership, and the full complement of public facilities including primary and secondary schools, basic health units, parks, playgrounds and community facilities. Plot and unit allocations shall be designed to ensure that at least a fixed share of the total stock is reserved for lower income households, with tenure and pricing mechanisms defined in the implementation plan.

The following land use division is for New Residential Schemes according to Sindh Building & Town Planning Regulations of Sindh Building Control Authority:

Table 4-3 : New Residential Scheme [12]

S. No.	Land Use	SBCA Standards
1	Residential	55% max
2	Commercial	5% max
3	Parks	4% min
4	Playgrounds	4% min
5	Public Uses	4% min
6	Educational	3% min
7	Roads	25% min

The Level II secondary zoning of residential land use will be as follow:

- **Houses**
  Taking the existing trend of housing, it is recommended to concentrate more towards houses, as the cultural context favor low to medium density housing development. However, it is preferred to follow the standards and give ample spaces to neighborhood facilities as well.

The following guidelines are for houses zone development:

Permitted Uses	Allied Permissible Uses	Prohibited Uses
- Houses - Neighborhood level facilities like small commercial, parks, playgrounds, schools, religious, parking	- Utilities and services - Road accessibility - Pedestrian friendly streetscape - Mixed-used structures	- Apartments - Large health and educational institution - Large commercial activities

[12] Land Allocation for New Residential Schemes as per Sindh Building & Town Planning Regulations, Chapter 20.4.1, page no 124.

Table 4-4: Houses - Applicable SBCA Bylaws[13]					
Types	**Densities per acre**	**Plot Sizes sq.yds**	**Foot Print FP %**	**Floor Area Ratio - FAR**	**No. of Floors**
Low Density Houses	50 – 100	1,000 or above	40% - 45%	1:1	G+2 (max)
Medium Density Houses	100 - 200	400 to 999	50% - 55%	1:1 - 1:1.5	G+2 (max)
High Density Houses	200 - 300	120 to 399	65% - 75%	1:1.8 - 1:2	G+2 (max)

- **Apartments**

  Since new migrants are expected from other urban areas as well, thus there is a need to fulfill the modern residential need like apartments. On the other hand, apartments are more effective in accommodating large number of households in less acres of land due to increased density in comparison to houses.

  Here it is not necessary to build a concrete jungle, however with better design and new ideas different type of walkable as well as high rise could be made. The main focus should be to provide open and green areas as breathing spaces in between apartment building as per the standards.

  The following guidelines are for apartment zone development:

Permitted Uses	Allied Permissible Uses	Prohibited Uses
- Apartments - Designated parking areas - Small commercial - Parks and playgrounds - Prayer areas	- Utilities and services - Road accessibility - Pedestrian friendly streetscape - Mixed-used structures	- Large health and educational institution - Large commercial activities

[13] Houses/Bungalows, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.2, page no 141.

Table 4-5 : Apartments - Applicable SBCA Bylaws[14]					
Types	**Densities[15] per acre**	**Apartment Sizes sq.ft**	**Foot Print FP %**	**Floor Area Ratio - FAR**	**No. of Floors**
Low Density Apartments	325	2,500 – 4,000	40%	1:2.75	G+6 (max)
Medium Density Apartments	500	1,500 – 2,500	40%	1:2.75	G+6 (max)
High Density Apartments	650	1,000 - 1,500	40%	1:2.75	G+6 (max)

All residential sectors shall be planned as walkable neighborhoods with block structures compatible with the proposed ring and radial street hierarchy. Local streets shall be designed with continuous footpaths, safe crossings and street lighting. Water, sewerage and drainage services shall be provided as separated systems and shall follow the sector structure so that maintenance responsibilities are clear. Solid waste management shall include primary collection, neighborhood collection points and transfer to the city system. Shade trees shall be planted along all residential streets and local parks shall be distributed so that every household is within walking distance of a recreational space.

4.4.2 Commercial Zone

The commercial zone is conceived as a mixed-use environment with contemporary buildings and high-quality public realm. Development will favor medium to high intensity with compact building footprints so that land is used efficiently while still providing generous open and green spaces, continuous pedestrian routes, and convenient access to public transport.

The Level II secondary zoning of commercial land use will be as follow:

- **New CBD (Commercial Business District)**
  The New CBD has been located before an intersection of Dadu-Moro Road at N-5. The main land uses of the CBD will be regional corporate headquarters, financial centers, media houses, IT/software, specialized production service and retail shopping outlets with dedicated parking and large open spaces. This will integrate a great deal of financial, business, culture, service institutions and lots of supporting facilities; such as business office buildings, large shopping malls, hotels and apartments, etc. These will be developed with perfect and convenient traffic, communications and other infrastructures, favorable economic development, environment friendly places; which are convenient for commercial activities.

[14] Flat Sites Category, Zoning Regulations /Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.4, page no 144.
[15] Residential Density Standards, as per Sindh Building & Town Planning Regulations, Chapter 20.3, page no 123.

Considering the potential of tourism and to meet the demand of facilities related to tourism; the New CBD could also accommodate the convention center, expo center, hotels, shopping malls, etc.

- **Sub Commercial**

  In addition, two sub commercial centers are also proposed at North-east on N-5 and old National Highway intersection, And the other is given in southern intersection of N-5 and Old National Highway Further small commercial in the residential areas are also located for retail commercial activities of everyday goods required to fulfill the daily need of the residents.

  Small-scale shops will be permitted within residential zones to cater to the daily needs of residents.

The following guidelines are for commercial zone development:

Permitted Uses	Allied Permissible Uses
- Corporate head office buildings, towers - Huge markets, malls, outlets - Large public squares and parks - Dedicated parking lots / spaces	- Pedestrian friendly streetscape - Mixed-used buildings - Medium to High Rise Apartments - Fueling stations
Applicable SBCA Bylaws[16][17]	**Prohibited Uses**
- Plot Sizes: 1,000 sq.yds. (min) - FP: 40% - 65% - FAR: 1:2.75 – 1:5.5 - Floors: G+6 & G+8 (max)	- Residential housing schemes - Large health and educational institution

4.4.3 Economic Zone

The Economic Zone extends beyond conventional industry and is anchored in Moro's local strengths. The total allocation is 508 acres, which is about four percent of the Master Plan area. It is placed on the north-eastern side along National Highway N-5, contiguous with the proposed industrial estate and near the consolidated truck and bus terminals, so heavy vehicles remain on the highway–ring system and out of housing areas.

The Level II secondary zoning of economic land use will be as follow:

- **Trade and Commerce**

  In northeast of the city at along N-5, trade and commerce area is positioned next to industrial zone. This will provide in and out trading activities of the region especially to other areas of the city. It will include grains, fruit and vegetable markets, wholesale markets, slaughter house, storage areas etc. For all of these trading activities large to small scale warehouses will be required, comprises of

[16] Commercial, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.3, page no 143.

[17] Flat Sites Category, Zoning Regulations /Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.4, page no 144.

general, bulk, liquid, dry and cold storage as well. These should be well equipped with all the required technology of good storage and management like CCTV surveillance, in and out data entry.

- **Technical Services**
  Technical services area is also marked next to trade and commerce area, to cater present trend of technical services in the city. These technical services will include mechanical workshops and spare parts (auto mobile repairing), building construction materials, home depots, furniture market, housewares, food and beverages, computer hardware etc. However, with the passage of time, technological advancement and changing needs; new requirement will come up to cater to the job market through new economic opportunities and activities.

The following guidelines are for economic zone development:

Permitted Uses	Allied Permissible Uses
- Warehouses and Workshops - Godowns and Cold Storage - Trade and Commerce Areas - Showrooms or Display Centers	- Mixed-used buildings - Residences for workers - Fueling stations
Applicable SBCA Bylaws[18]	**Prohibited Uses**
- Plot Sizes: o Small size: upto 0.5 acres o Medium size: 0.5 to 5 acres o Large size: 5 acres or above - FP: 60% - 70% - FAR: 1:2.5 - 1:1.5 - Floors: G+1 & G+2 (max)	- Private Residential housing schemes - Large health and educational institution

4.4.4 Livestock Zone

The livestock zone serves Moro's mixed farming economy by concentrating animal husbandry and allied services in a planned estate. It is located on the eastern side outside the ring road along the Daulatpur Distributary (Dad Branch) Road, contiguous to agricultural belts and with controlled access to the ring and N-5. The land budget is one hundred and thirty-five acres, matching the Level-2 allocation for Livestock.

The Level II secondary zoning of livestock land use will be as follow:

- **Veterinary Hospital and College**
  A full-fledged veterinary hospital and college is proposed to cater to livestock health requirements and to produce more vet doctors.

[18] Industrial Areas, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.6, page no 145.

- **Dairy Production**[19]
  Dairy area will be facilitated with mandi / cattle market, artificial insemination center, slaughter house, milk collection unit, chiller storage unit, fodder storage and purchase, bio gas plant etc.

- **Cattle Farms with Pasture and Grazing Lands**
  Cattle area will contain mainly cattle farms that could accommodate cattle, poultry, ostrich, camel etc. with pasture and grazing lands around the farms.

  The following guidelines are for livestock zone development:

Permitted Uses	Allied Permissible Uses	Prohibited Uses
- Cattle Farms - Poultry Farms - Pasture and grazing lands - Slaughter Houses - Dairy production - Veterinary services - Veterinary education and training	- Low rise ancillary structures - Residences of caretakers - Related commercial activities - Fueling stations - Godowns and cold storage - Cattle market	- Other than permitted and permissible

4.4.5 Industrial Zone

The Industrial Zone in the Master Plan expands employment and value addition while remaining separate from residential areas. The total industrial area is one hundred and twenty-two (122) acres within the Economic Zone, consisting of sixty-one (61) acres of existing clusters and a sixty-one (61) acre New Industrial Estate. The estate is located outside the ring road on the left side of National Highway N-5, contiguous with the trade and commerce precinct and close to the consolidated truck terminal, so freight remains on the highway–ring system and out of neighborhood streets.

Table 4-6 : New Industrial Estate [20]

S. No.	Land Use	SBCA Standards
1	Industrial	70% max
2	Commercial	1% max
3	Parks / Playground	3% min
4	Public Uses	6% min
5	Roads	20% min
6	Residential	8% min
No roads shall be less than 40 feet in small industries. No roads shall be less than 50 feet in medium and large industries. Industrial plot of 5 acres or more, residential area for labour and staff is allowed at rear.		

[19] Dairy Plots, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.8, page no 149.
[20] Land Allocation for New Industrial Estate as per Sindh Building & Town Planning Regulations, Chapter 20.4.2, page no 124.

The following land use division is for New Industrial Estate according to Sindh Building & Town Planning Regulations of Sindh Building Control Authority:

The Level II secondary zoning of economic land use will be as follow:

- **New Industrial Area**
  The estate is on the left side of National Highway N-5 and outside the ring road, to be developed for small and medium industries. Development should proceed in phases, beginning from the road-accessible frontage, with deeper land reserved for future phases once the initial area is utilized.

  Small industries include ice factories, packaging of fruits and vegetables, feeder crops processing, and cottage industries such as handicrafts and souvenirs. Medium-scale industries include flour mills, cotton ginning factories, and rice husking mills. Given large-scale cultivation of wheat, cotton, rice and sugarcane in the district, emphasis is placed on processing of these product

  The following guidelines are for industrial zone development:

Permitted Uses	Allied Permissible Uses
- Small, and Medium Industries - Processing Units - Manufacturing Activities - Warehouses or Godowns - Workshops	- Showrooms - Mixed-used buildings - Residences for workers - Fueling stations
Applicable SBCA Bylaws[21]	**Prohibited Uses**

- Plot Sizes:
  ○ Small size: upto 0.5 acres
  ○ Medium size: 0.5 to 5 acres
  ○ Large size: 5 acres or above
- FP: 60% - 70%
- FAR: 1:2.5 - 1:1.5
- Floors: G+1 & G+2 (max)
	- Private Residential housing schemes
	- Large health and educational institution

4.4.6 Health and Welfare Zone

This zone is reserved for large scale health and welfare activities. It will provide advanced medical facilities, social welfare and supporting services with upgraded infrastructure, serving Moro and surrounding urban and rural areas.

[21] Industrial Areas, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.6, page no 145.

The Level II secondary zoning of health and welfare land use will be as follow:

- **Extension of THQ Hospital**
  The THQ Hospital is located on Dars Road. Its extension is proposed on the south side of the city near the intersection of the Old Highway and National Highway N-5. The extension will accommodate medical and nursing colleges, staff residences, hostels, community and allied facilities, rehabilitation centers, facilities for special children, and Edhi Homes (orphanage, old age, women). As a tertiary-level center, it will serve beyond the city.

- **New Health and Welfare Area**
  A new area is identified on Dad Branch Road on the inner side of the ring road to ensure regional accessibility and to attract private investment. Over the long term it will host specialized hospitals, research and welfare centers, and units such as oncology, urology, infertility, organ transplantation, specialized treatment, and research and development.

The following guidelines are for health and welfare zone development:

Permitted Uses	Allied Permissible Uses
- Large Hospitals - Specialized treatment centers - Medical College - Dental College - Pharmaceutical College - Nursing College - Laboratories and Diagnostic Centers - Blood Banks - Health Research Institutes	- Staff Residences (medical and paramedic) - Separate Hostels for Boys and Girls - Auditoriums, seminar halls, workshop spaces - Community facilities (parks, playgrounds, schools, clinic, neighborhood commercial) - Support facilities (gym, health club, bus stops, taxi stand, banks, fueling stations)
Applicable SBCA Bylaws[22]	**Prohibited Uses**
- Plot Sizes: 1.0 acre or above - FP: 50% - FAR: 1:1.5 - Floors: G+2 (max)	- Private residential housing schemes - Large commercial activities

-

[22] Amenity Plots, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.5, page no 145.

4.4.7 Educational Zone

This zone accommodates large scale educational land uses aligned with contemporary and future learning needs. The objective is to establish a knowledge hub that delivers quality education across diversified fields for Moro and the wider region.

The Level II secondary zoning of educational land use will be as follow:

- **New Educational Areas**

  Two public sector university zones are proposed. One lies at the intersection of the Daulatpur Distributary and the Lundki Branch. The second is located between National Highway N-5 and Gachero Road. Initial fields of study include languages, humanities, applied sciences, arts, commerce and social sciences, with later expansion into additional departments and blocks as demand evolves. Each zone will include administration, sports grounds, health clubs, student and staff housing with community facilities, libraries, data and information centers and scientific research institutes. Additional facilities comprise new government degree colleges for boys and girls with libraries, laboratories, playgrounds and washrooms; polytechnic colleges for boys and girls; a women's development center with working-women hostels and day care; certified computer and IT training centers; and vocational training centers for skills and technical education. As the job market evolves, the scope will extend to engineering, business and management, finance, media, IT and software.

  The following guidelines are for educational zone development:

Permitted Uses	Allied Permissible Uses
- Large scale educational areas - General Education Universities - Scientific Research Institutes - Engineering colleges / universities - Business and management schools - Finance and accountancy institutes - IT and media Institutes - City level libraries, book banks, data and information centers	- Staff Residences (teaching and non-teaching) - Separate Hostels for Boys and Girls - Auditoriums, seminar halls, workshop spaces - Community facilities (parks, playgrounds, clinics, schools, neighborhood commercial) - Support facilities (gym, health club, bus stops, taxi stand, banks, fueling stations)
Applicable SBCA Bylaws[23]	**Prohibited Uses**
- Plot Sizes: 1.0 acre or above - FP: 50% - FAR: 1:1.5 - Floors: G+2 (max)	- Private residential housing schemes - Large commercial activities

[23] Ibid

4.4.8 Religious Zone

In the proposed master plan one religious site is allocated in the Moro city; which is along Qamaraba-Moro Road. This is not necessarily to be developed soon, as presently there are sufficient religious places. This will be grand religious monumental buildings and structures, to enhance aesthetic of the town. Further it is suggested to fulfill the future requirement of different religious groups in sub divisions of other areas.

The following guidelines are for religious zone development:

Permitted Uses	Allied Permissible Uses
- Religious buildings like mosques, imam barghahs, mandir, churches, etc. - Religious teaching areas - Religious preaching grounds - Orphanage	- Residences for religious leaders - Accommodation for religious scholars, students - Small parks, playgrounds, clinics, commercial - Support facilities (bus stops, taxi stand, banks, fueling stations)
Applicable SBCA Bylaws[24][25]	**Prohibited Uses**
- Plot Sizes: 1.0 acre or above - FP: 50% - FAR: 1:1.5 - Floors: G+2 (max)	- Private residential housing schemes - Large commercial activities

4.4.9 Public Administration Zone

The exiting offices of Public Administration are mostly along Old National Highway, almost in the center of the city. Considering future requirements, the proposed public administration zone is given on west of city at Dadu-Moro Road.

The Level II secondary zoning of public administration land use will be as follow:

- **Public Administration**

  The public administration offices will include District Secretariat, Development Authority, Town Committee Offices, Line Departments, Local Government Offices, Town Planning Department, Judiciary Complex, Circuit House etc.

  The area for public employee housing is also suggested here to cater the need of housing for public employees. This will include houses and walkable apartments for all employees, according to their grade levels and status.

[24] Ibid

[25] Religious Buildings, Plots, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.13, page no 156.

The following guidelines are for public administration zone development:

Permitted Uses	Allied Permissible Uses
- Development Authority - Town Committee Complex - Line Departments - Local Government Offices - Town Planning Department - Judiciary Complex - Circuit House	- Employees Residences (for all grades) - Auditoriums, seminar halls, workshop spaces - Community facilities (parks, playgrounds, clinics, schools, neighborhood commercial) - Support facilities (gym, health club, bus stops, taxi stand, banks, fueling stations)
Applicable SBCA Bylaws[26]	**Prohibited Uses**
- Plot Sizes: 1.0 acre or above - FP: 50% - FAR: 1:1.5 - Floors: G+2 (max)	- Private residential housing schemes - Large commercial activities

*4.4.10 **Recreational Zone***

In the existing towns, disappearance of open spaces and non-provision of planned open spaces are seen. Thus, in the proposed master plan, recreational land use has been given a vital importance in order to create a healthy environment. Several types of regional level recreational activities are recommended like sports and cultural complex, amusement and theme parks, festival grounds etc.

The Level II secondary zoning of recreational land use will be as follow:

- **Sports and Cultural Complex**
  Along N-5 Sports and Cultural Complex is proposed. It will include cricket, football, hockey and other ground, cultural center and gymnasium. A large park could also be accommodated in the heart of the proposed complex. This will be a general public park; however, its sub portions could be reserved for families (ladies and children). Thus, it will also contain area for swings, sitting, walking, jogging with allied facilities of washrooms, tuck shops, parking etc.

- **Grand Park**
  A large Grand Park is proposed in the eastern part of Moro, near the Lundki branch. This will function as a city-level public park with designated sub-areas for families, women, and children. Facilities will include swings, seating, walking and jogging tracks, washrooms, tuck shops, and parking areas.

[26] Ibid

- **Amusement, Theme Parks and Festival Grounds**

  The recreational area specifically for amusement and theme parks is designated in north of the city at along N-5. In this area large scale amusement facilities like thrilling rides in a safe and pleasant manner will be provided. Moreover, theme parks like art park, ice park, floral garden, glow garden etc. could also be introduced as per the demand of the region.

  Considering local tradition and types of festivals, a space could also be designated for such events. These grounds will be used for large population events like carnivals, Eid festivals, in addition considering

The following guidelines are for recreational zone development:

Permitted Uses	Allied Permissible Uses	Prohibited Uses
- City scale parks - Large public squares - Sports facilities - Cultural activities - Amusement area - Special theme parks - Regional level gardens like botanical, zoological	- Ancillary structures - Accommodation for caretakers / workers - Related commercial activities - Fueling stations - Parking - Public washrooms	- Other than permitted and permissible

*4.4.11 **Graveyards Zone***

Moro presently has multiple graveyards with sufficient near-term capacity. To meet long-term needs, two additional sites are reserved: one at the junction of the katcha area and the proposed ring road on the western side, and one in the north-west near Dadu–Moro Road. Both locations lie on the urban periphery with direct access from existing roads. Each site may be subdivided to accommodate the requirements of different practicing religious groups.

The following guidelines are for graveyard zone development:

Permitted Uses	Allied Permissible Uses	Prohibited Uses
- Graveyard area	- Related commercial activities - Accommodation for caretaker	- Other than permitted and permissible

*4.4.12 **Transportation Zone***

Road network is considered as a vehicle for economic development and social change. Efficient road network not only develops a quick and efficient transportation system but also opens up new areas previously remained closed. It brings about social integration among rural and urban sectors and greatly assists in providing access to basic amenities such as education, health facilities, etc. It brings rural areas in constant touch with urban segment of a society and creates better understanding necessary for social change and economic activities.

The provision of airport in Moro not seems viable, as Nawabshah and Sukkur Airports are fulfilling the required demand. However, revival of railway is recommended for public as well as goods transport for trading activities in the region.

The Level II secondary zoning of transportation land use will be as follow:

- **Proposed Road Network**
  In Moro City, transportation is primarily road-based, supported by key terminals and intersections. Roads serve as the backbone of economic development and social integration, improving mobility, opening new areas, and enhancing access to essential services such as education, health, and commerce. The broader regional connectivity aspects have already been detailed in Section 4.3.3, while this section focuses on the internal hierarchy of roads and transport facilities within Moro.

  Primary Roads:
  The Ring Road is considered as Primary Road, running on the periphery of the town. Its different segments are serving as bypasses without entering in the town. It will have a right of way of 200 feet (min) with initially a four-lane divided road, service road, median, parking, and cycle/pedestrian track and local tree plantation on both sides.

  In addition to the 200 feet ROW, urban forestation of 200 feet on both sides are also proposed, to avoid direct / upfront development along primary roads. All primary roads crossings will be initially roundabouts with enough space for grade separated junctions in the future.

  Secondary Roads: The secondary roads, are radial roads connecting one part of town with the other part. It will have a right of way of 150 feet (min) with three lanes, service road, median, footpaths, parking and cycle/pedestrian tracks.

  Tertiary Roads: The tertiary roads will have a right of way of 100 feet (min) with at least two lanes, median, footpaths, parking and cycle/pedestrian tracks.

- **Truck Terminal**
  A separate truck terminal at outer side on the Ring Road, in north part of the town, adjacent to containers terminal. Since from this point all industrial and economic activities are connected, it found more appropriate location for heavy traffic and goods transport. This proposed terminal will help in transporting goods from / into the town, which will benefit and boost the economic activities of the town.

- **Public Transport Terminal**
  At N-5 and outer side of the Ring Road, public transport terminal is placed in order to provide better and nearby multi-intermodal transport connectivity. Since major regional communication of general public is expected via Ring Road; as most of residential, educational and health related traffic will be generated. This will be comprises of the parking for public buses, hiace, wagons, taxis; with allied facilities like ticking booths, sitting / waiting areas, washrooms, shops and required residence for the drivers and other staff.

The following guidelines are for transport zone development:

Permitted Uses	Allied Permissible Uses
- All types of parking areas - Designated ROW - Green belts - Footpaths - Traffic management devices	- Drivers and staff accommodation - Support offices, rest areas, washrooms, shops etc. - Street furniture like lights, trash bins, benches etc.
Applicable SBCA Bylaws[27]	**Prohibited Uses**
- No direct access to major roads will be allowed except through service road - No structure or part of a structure may project beyond building line	- Any kind of encroachment

4.4.13 Utilities and Services Zone

This zone reserves land for large scale utilities and municipal services required by the Master Plan.

The Level II secondary zoning of utilities and services land use will be as follow:

- **Water Supply**
  As Moro city lack proper water supply network and the entire population relies on groundwater, which is contaminated and unsuitable for use, a designated water supply area has been identified at the intersection of Dad branch, Dualatpur Distributary and Lundki. This site has been reserved for the development water reservoirs, allied infrastructure, and treatment facilities, including filtration and advanced purification plants, to meet future demand.

[27] Highway Major Roads, General Standards, as per Sindh Building & Town Planning Regulations, Chapter 21, page no 126.

- **Sewage Treatment Plant**
  Two sites are designated for sewage treatment: one in the southwest near the Katcha area and another one on Bandhi Road. These sites are located at lower elevations relative to the main drains, allowing reliance on gravity flow. Initially, simple **oxidation ponds** are proposed, with phased progression toward advanced wastewater treatment systems as demand increases.

- **Landfill Site**
  As in Development master plan for Nausharho Feroze has been notified by the Government of Sindh, it is noted that the distance of landfill site of Naushahro Feroze and Moro is approximately 20 km. it is therefore proposed that the same landfill site be utilized for disposal from Moro. This is more cost-effective and environmentally sound than creating a small, local dump, ensuring waste is disposed of in a single, properly managed facility.

The following guidelines are for utilities and services zone development:

Permitted Uses	Allied Permissible Uses	Prohibited Uses
- Land use for Utilities and Services like Water Supply, Filtration, Oxidation Ponds, Sewage Treatment, Landfill Sites, Grid Station etc.	- Related land development and building activities - Accommodation for staff, operators and labors. - Specific parking area.	- Other than permitted and permissible

4.4.14 Urban Forestation Zone

Urban forestation along Ring Road is proposed to avoid rapidly increasing disorganized private development. Instead planned residential areas as per building control rules and regulations which are proposed on both sides of Ring Road after urban forestation reserved areas.

In order to protect the Ring Road from uncontrolled development, urban forestation of two hundred feet at both sides of the road should be planted. It is advised to restrict development in this area and implement the rules and regulations to keep the town green.
In addition to the Ring Road, urban forestation of 50 to 100 feet on both side of the major roads are also proposed depending upon their ROW, to avoid direct / upfront development along roads. All major roads crossings will have initially green roundabouts with enough space for grade separated junctions in the future.

The following guidelines are for urban forestation zone development:

Permitted Uses	Allied Permissible Uses
- Land use for horticulture, landscaping, plantation, green belt, forestation.	- Related land use and activities, while no land development or buildings. - Temporary accommodation for labor and security persons. - Specific parking area for any accident and unplanned incident.

*4.4.15 **Agricultural Zone***

In order to limit the town development agricultural reserved areas are proposed. In this manner not only town spatial growth will be confined but also essence of agriculture activities will remain close to the town. It will also create a healthy environment and less burden will be on spread of infrastructure network. The existing villages or settlements in the periphery of the town will also be benefited and not removed from their place of livelihood.

The following guidelines are for agriculture zone development:

Permitted Uses	Allied Permissible Uses
- Land use for proposed agricultural and its necessities.	- Related land activities with respect to its rules and regulations. - Accommodation for farmers and labor in associations with MC.

*4.4.16 **Water Bodies***

The branch of Rohri Canal is passing from the east of the Moro city. It is suggested to protect the water courses in and around the city area, further canal/branch beautification is highly recommended. It includes:

- Protection of its right of way and removal of encroachments
- Control on incompatible development in its surrounding
- Restriction on disposal of waste water
- Restriction on dumping of solid waste
- Provision of roads on both sides of its course
- Native plantation on both sides of its course

The following guidelines are for Water Bodies zone development:

Permitted Uses	Allied Permissible Uses
- Land use for water bodies like rivers, tributaries, canals, water channels, irrigation network, ponds, lakes, water courses.	- Related land use and activities, while no land development or buildings. - Temporary accommodation for labor and security persons.

*4.4.17 **Vacant Zone***

The objective of providing vacant area with in the town limit is to cater the emergency need at time of any disaster. With this respect a huge land parcel is kept reserved for emergency need, which could be utilized for portable homes, mobile health care facilities, camping for vulnerable of calamities, temporary storage of bulk material etc. The proposed vacant area is within the Moro city but being on the peripheral area, would not disturb the town activities in general and it is directly accessible N-5.

However, the control on vacant land is extremely important, leap-frog development create pressure to utilize for other uses. Thus, there is a need to make sure that no development would take place in these types of reserved areas.

The following guidelines are for vacant zone development:

Permitted Uses	Allied Permissible Uses
- Land use for proposed emergency and imminent necessities	- Related land development and building activities. - Temporary accommodation for operation and maintenance staff in associations with MC.

5. HOUSING

5.1 Existing Situation

Adequate housing is fundamental to improve living standards among poor and low-income households because it is one of the major components of the social infrastructure, the lack of which begins to offset the positive effects of economic development. Without adequate shelter, families are condemned to poverty, poor health, low educational attainment, vulnerable to natural disasters and the chaos of civil conflict. Lack of safe, affordable, decent housing is a major contributor to poverty and affects all aspects of a family and community's life.

The general housing condition of the surveyed houses was satisfactory. A sample survey of the town reveals that approx. 20% of the houses were constructed in between 6 to 10 years and 37% of the houses were falling in the 81-120 sq. yards range with average 2 rooms. As far as the utility services in the houses are concerned, basic services need improvement as the sample survey reveals 37% of the houses have drained (flush system) in their houses while 60% of the houses have un-drained toilets which require manual cleaning.

Table 5-1: Housing Statistics

City	Census 2023				Estimated Population 2025 (Current year)		Projected Population – 2045	
	Population	Average Growth Rate	HH Size	Housing Units	Population	Housing Units	Population	Housing Units
Moro MC	1,42,685	7%	5.78	24,702	163,207	28,237	625,685	108,250

This section further elaborates on the general housing condition of Moro Town. The major reasons for the housing backlog in Moro include limited availability of resources, gaps in planning capacity, and land development policies that have not effectively addressed the needs of all socio-economic groups. General housing condition of surveyed houses was satisfactory although major reasons for the housing backlog are lack of resources, inadequate planning, and wrong land development policies. In Moro urban area the problem manifests as unstoppable growth of squatter settlements through encroachment of state and private land. Up gradation of Katchi Abadis and policy/strategic guidelines need to be formulated for stoppage of this practice.

Based on the existing housing stock, household size, sanitation deficits, and informal settlement trends, the housing strategy for Moro Must prioritize (i) expansion of serviced land supply, (ii) upgrading of Katchi abadis, (iii) sanitation improvements within residential areas, and (iv) affordability mechanisms for low-income households.

Katchi abadis in Moro City

Within the municipal committee boundary limits of Moro City, the following two katchi abadies are existing in Moro Municipal Committee, which are as under:

1) Moro Dastagir Colony No 1 (Un-notified) Katchi Abad
2) M.T Park Katchi Abady (Un-notified)

In Moro Dastagir Colony No 1 Katchi Abady several Katcha Pacca houses are constructed and regarding M.T Park Katchi Abady it is told by the concerned authority that this is not a Katchi Abady and the area surrounded by this Abady is private property in which some area acquired by Government in which Government Girls College Moro, Assistant Commissioner Office & Residence Bungalow and two other bungalows of Highway Department are constructed and the remaining area in which several Katcha Pacca Houses are constructed.

Both of these katchi abadies are not declared as katchi abadies by the Sindh Katchi Abadies Authority (SKAA) and Moro Dastagir Colony is old katchi Abady which came into being to provide shelter to the shelter less people of the city.

5.2 Issues

The following are the major issues in the housing sector:

- Low Supply of Public Housing.
- High prices of houses in private sector.
- The informal housing sector lacks provision of utility services like gas supply, clean water and drainage facilities.
- The households below poverty line have remained neglected, in all housing policies.
- Poor land administration with inadequate legal and regulatory systems.
- Unchecked growth of squatter settlements: Katchi Abadis encroachment on state and vacant land is a direct outcome of the housing shortage.
- Legal documentation procedures for property transactions are very tough and costly.
- Real estate investors and builders is another reason for boosting land prices.

5.3 SWOT Analysis

HOUSING			
Strengths	**Weakness**	**Opportunity**	**Threats**
1. 82% of the population lives in self-owned houses 2. 67% houses are less than 19 years of age	1. 44% houses are Semi-Pucca (stone) and Katcha (mud bricks thatched roof 2. Haphazard growth	1. Infrastructure Development 2. Demand for low-income housing 3. Demand for public housing projects	1. Increased housing prices and rents 2. Development of informal housing in vacant pockets available within city

HOUSING			
Strengths	**Weakness**	**Opportunity**	**Threats**
3. The trend of new housing schemes construction by private sector is increasing 4. More than half (56%) of the city population is living in RCC & Pacca houses 5. The trend of rental housing is low 16% residents are living in rental housing 6. There are only two un-notified katchi abadies in the city	3. Absence of water supply network 4. Only 12% houses have the kitchen facility in their houses 5. Absence of supply of public housing 6. High prices of houses in private sector 7. Existing housing stock is not enough to meet the housing demand of existing and future population	4. More housing for local people of the city 5. Opportunity for local micro financing for housing 6. Installation of basic utility services through new projects	3. Increased urban sprawl 4. Increase land prices 5. Shortage of open spaces in the city 6. Formation of urban slums

5.4 Need Assessment

The projected population of Moro MC for 2025 is estimated at 163,207, based on an average growth rate of 7% and a household size of 5.78. To accommodate this population, 108,250 housing units will be required. By 2045, the population is expected to reach 625,685, reflecting substantial growth over the next two decades. Meeting the housing demand at that stage will necessitate approximately 83,548 units.

Table 5-2: Existing and Projected Population of Moro MC by the Year 2045

City	Census 2023				Estimated Population 2025 (Current year)		Projected Population – 2045	
	Population	Average Growth Rate	HH Size	Housing Units	Population	Housing Units	Population	Housing Units
Moro MC	**1,42,685**	**7%**	**5.78**	**24,702**	**163,207**	**28,237**	**625,685**	**108,250**

Thus, between 2025 and 2045 the city will require an additional 80,013 housing units (108,250 – 28,237), excluding replacement of dilapidated stock and requirements for de-densification and relocation from hazardous areas. Meeting this need requires not only new construction but also:

- Upgrading and regularization of existing katchi abadis
- Rehabilitation of old housing stock in core urban area; and
- Improving infrastructure and services to transform "houses" into livable, serviced "neighborhoods".

5.5 Policy Guidelines[28]

Housing sector is divided in various sub sectors. Policy guidelines for all sub sectors are given below:

5.5.1 Policy Measures for Land

- Employing the Land Banking Approach
- Land Pooling by Engaging the Small Landowners
- Growth Boundaries and Green Belts
- Land Hoarding and Speculation
- Land Consolidation and Comprehensive Land Information Systems

5.5.2 Policy Measures for Housing Finance[29]

- Flexible & small loans with low or zero-interest rates to build or improve homes incrementally.
- Micro-financing could be provided through NGOs in line with the Akhuwat and Kashf foundation's models.
- Fixed Term loans for different periods like 5, 10 and 20 years.
- Re-introduce the option of mark-up subsidy for low cost and affordable housing. This subsidy could only be for the eligible poor income class emanating from a credible data base such as BISP (Benazir Income Support Program).

5.5.3 Policy Measures for Katchi Abadis, Squatter Settlements & Slums[30]

[28] Strategic National Housing Policy Framework 2025
[29] Strategic National Housing Policy Framework 2025
[30] Strategic National Housing Policy Framework 2025

These are two planning approaches to effectively deal with slums and squatter settlement issues in a sustainable manner. These effectively tackle not only the physical upgradation of the area, but also promotes its social, economic and environmental development.

The wide-ranging and far-reaching policy measures to overcome the issue of slums and squatter settlements in major cities of Pakistan:

- High-rise with Mixed Land Use Development:
- Land/Apartment Ownership Rights
- Preference to Apartment Buildings

5.5.4 Policy Measures for Low Income Housing[31]

- Part of the sale proceeds of valuable public land shall be set aside to provide plots for low-income housing and housing for the poor and needy at concessionary rates
- The land identified for low-cost housing shall be physically accessible preferably near the city centre, socially acceptable, economically affordable and environmentally resilient
- Only one house for one low-income family in life in entire country will be allowed
- Low-cost houses shall be allowed to use certain part i.e. upto 25% of the house for commercial activity to earn livelihood for the family at home without compromising the local environment.
- The minimum size of the house shall not be fixed.
- Slums / Katchi abadies upgradations and regeneration must be carried out

5.5.5 Policy Measure for Rural Housing[32]

- The provincial and local Govt. departments shall identify state land (Shamlat Deh) for rural housing in and around the existing villages, settlements and towns preferably towards the growth patterns of the existing settlements which is free from all sort of encumbrances
- Dedicated low-cost housing programs for rural areas should be launched
- Microfinance initiatives should be launched to provide small, low-interest loans for rural home construction and renovation.
- Local Government departments, rural local councils, shall provide standard and cost-effective designs and plans to the prospective home builders
- Union councils with the help of tehsil councils will prepare drawings of road/street network in advance in rural areas/settlements for planned future growth/development
- Schemes for solar and wind energy, particularly for rural housing, keeping in view the local conditions, needs to be launched by the Govt.

[31] Strategic National Housing Policy Framework 2025

[32] Strategic National Housing Policy Framework 2025

5.6 Strategic Development Plan

The of this strategic development plan is to facilitate all for the provision of housing, in this regard following strategies need to be focused:

- Incremental housing schemes on the lines of Orangi, Qasba, Khuda Ki Basti etc. in Karachi should be initiated based on lessons of experience.
- Development of indigenous and cost-effective approaches particularly for low-income group and mass production.
- Regularize notified Katchi Abadis complemented by policies to restrain the emergence of new Katchi Abadis.

i. Long Term Plan:

- Development of indigenous and cost-effective approaches particularly for low-income group and mass production.
- Capacity building of institutions involved in housing provision and related sectors, to safeguard against malpractices, inefficiencies, weaknesses and mafia assaults.
- Land bank to be formed to facilitate availability of suitable, affordable, safe and secure land parcels within the town for the development of housing schemes.
- Concepts of small towns should be worked out to minimize the housing requirement in secondary cities.
- An affordable housing program for low-income group in different phases up to 2045, through one window operation (including technical guidance, easy loan provisions, legal procedures)
- Formulation of Green Building Byelaws for future housing to address water conservation, low energy consumption, waste recycling etc.

ii. Short Term Plan:

- Incremental housing schemes on the lines of Orangi, Qasba, and Khuda Ki Basti should be initiated based on lessons of experience.
- One stop facilitation center should be established to facilitate public, especially for unprivileged and poor households.
- Increase in proportion of small size plots could be made for low-income groups in all new housing schemes.
- Low-income Housing Funds would be established to provide sufficient and affordable credit for housing to meet the needs of shelter less poor. Example is Grameen Bank which is a microfinance organization and community development bank founded in Bangladesh. It makes small loans to the impoverished without requiring collateral.

5.7 Priority Projects

- **Construction of Housing Schemes for Low Income People**

According to the 2023 Census, the total housing stock in Moro is 24,702 units, of which 4,002 (16%) are rented houses. A significant portion of households have low incomes, which restricts their ability to acquire adequate housing and has contributed to the proliferation of slums and informal settlements.
Living conditions in these areas are poor, with residents facing numerous challenges, including a lack of essential utility services. To address these issues, it is imperative for the public sector in Moro to implement an affordable housing program specifically designed for low-income households as part of an overarching urban strategy. The program should be launched in areas where slums already exist. It will be developed in phases and is expected to target at least 400 families in the first phase.
The purpose of this project is to

- Provide affordable shelters to the poor people
- Through this process alternate resettlement of the congested part of the city may be possible
- Improvement in living standards, with enhances access to basic services

To ensure affordability and efficient land utilization, the housing scheme is proposed on 80 sq. yd. plots. This size strikes a balance between providing adequate living space for a nuclear family and maintaining affordability in construction costs. Each house will include two small rooms, kitchen, bathroom, and living area, meeting minimum housing standards for low-income families while keeping costs manageable.

- **Scope**

The project focuses on providing affordable and secure housing for low-income households currently residing in slums and informal settlements in Moro. Phase 1 aims to resettle 400 families into planned urban environment, improving their access to essential services and overall living standards. The housing units will be developed on 80 sq. yd. residential plots and will include two rooms, a kitchen, a bathroom, and a living area. The project scope also includes the development of supporting infrastructure such as road networks, water supply, sewerage, drainage, electricity, and community amenities.

To support financial sustainability, commercial plots will be integrated within the scheme, enabling partial recovery of capital investment through commercial property sales. The initiative will be executed in phases to ensure smooth relocation and systematic upgrading of informal area.

- **Size**

The Affordable Housing Project will accommodate 400 residential units in phase 1, benefiting approximately 2,400 – 2,800 residents (based on an average household size of 6 – 7 persons). Each housing plot will measure 80 sq. yd., ensure an efficient use of land while maintain acceptable living space standards for low-income households.

In addition to residential units, a limited number of commercial plots and buildings will be included to support economic activity and help offset development costs. The total project area will encompass residential, commercial, and community service components, along with the necessary physical infrastructure to ensure a safe, healthy, and sustainable living environment.

- **SDG's Alignment**

I. GOAL 3 – Good Health and well Being

Improved living environments through access to clean water, sanitation, better housing, and reduced overcrowding will directly reduce the incidence of communicable diseases and improve public health. Healthier communities lead to increased productivity and reduced healthcare costs, contributing to overall societal well-being.

II. Goal No.11: Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

The low-income housing project will promote inclusive, safe, and sustainable living environments, directly contributing to SDG 11.1, which focuses on ensuring access to adequate, safe, and affordable housing for all. By addressing the needs of vulnerable populations through resilient infrastructure and community-based planning, the project supports the development of sustainable cities and communities, especially in urban areas affected by housing shortages and inequality.

- **Implementing Authority**

Government of Sindh, Moro MC, etc.

- **Preliminary Cost Estimate**

Estimate Cost: **1,200 million Approx**

a) Phase 1: Low Income Housing Project 1- Site and Services. 1,200 million approx**.** Short Term

Table 5-3: Housing Projects - Estimated Cost

S. No.	Project Name	Estimated Cost in Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Housing						
# 1	Phase Wise land acquisition for low-income public housing project	500	**-**	Non ADP	**Short Term**	-
# 2	Phase wise Master Planning & infrastructure Designing of low-income public housing project for additional population	700	-	Non ADP	-	**Long Term**

5.8 Immediate Action Plan for Core Urban Area

- **Improvement of Housing in Core Urban Areas**

  The core urban areas of Moro MC, Particularly the older sections, are experiencing decay and face significant housing challenges. Revitalization of these neighborhoods is essential to improve residents living conditions. According to Census 2023, semi-pacca housing (stone/brick in mud mortar with thatched roofing) makes up 21% of the housing stock in the core urban area. The Immediate Action Plan (IAP) proposes two tiers of interventions:

  Tier 1: Quick-win Improvements (Priority Streets – 4,525)

  Targeted interventions along high-density, high-visibility corridors including Jatoi Colony front street of Wisdom House Public School, Sachal Colony Street towards Dastagir Colony front of Ali Public School, Dastagir Colony street front of Bilal Masjid, Dastagir Colony Street opposite of Akbari Eidgah, Chahwan Colony form Madni Masjid Towards old National Highway Between THQ Moro and GGHS Moro, Circular street of Madani Masjid Towards Old National Highway, Front Street of Mukhtiarkar office towards intersecting Mallah Rd, Dastagir Colony Street from Khan House Moro Towards Mukhtiarkar office Rd, Street Between Girls Degree College and Grid Station and Street of oddh Colony and Irrigation Colony.

  Tier 2: Medium-Term upgrading for Entire Core Residential Area (281 Acres)

  Comprehensive rehabilitation of housing facades, pavements footpaths, utilities, stormwater drainage, sanitation lines, streetlights, street furniture, green pockets, and garbage collection facilities across the entire core residential area.

  These interventions support **SDG 11.1 (adequate housing), SDG 6.2 (safe sanitation), and SDG 7.2 (clean energy access).**

Unplanned Street network

Dilapidated houses

- **Scope**

  Tier 1-Priority Streets (Quick-Win IAP)

  These streets have been identified as **urgent action zones** due to high population density, heavy foot traffic, and severe deterioration.

a) Urban Face-Lifting Program

- Plastering, painting, and structural correction of front facades
- Alignment of uneven facades to improve visual appearance
- Minor structural reinforcement where necessary
- Government-funded façade interventions, internal improvements covered by homeowners

b. Street & Pavement Rehabilitation

- Use of paver blocks, flooring, or brick tiles.
- Sub-base re-grading and utilities corridor correction prior to paving,
- Improvement of pedestrian accessibility.

c. Solar Street Lighting

- Installation of 235 Solar LED street lights along the km priority network.
- Poles: 16-18 ft, 150-200W LED heads.

d. Greenery & Environment Improvement

- Plantation of native shade trees along priority corridors.
- Creation of micro-green spaces and community pocket gardens.
- Designation of micro garbage collection points along priority streets
- Linkage with MC's primary collection route.

Tier 2 – Medium-Term Upgrading for Entire Residential Area (281 Acres)

This phase covers the wider core urban area and is intended for ADP-funded implementation.

Key Interventions:

- Upgradation of internal streets (~33 km total).
- Pavement rehabilitation in all unpaved lanes.
- Installation of Solar lights.
- Housing front facades improved.
- Tree plantation of native trees across neighborhoods.
- Utility upgrades: minor drainage correction, covered drains, sanitation improvements.

Table 5-4 List of Priority Streets and Estimated Houses

Sr. No	Street	Length (m)	Estimated Houses
1.	Jatoi Colony front street of Wisdom House Public School	500	70
2.	Sachal Colony Street towards Dastgir Colony front of Ali Public School	300	42
3.	Dastgir Colony street front of Bilal Masjid	430	60
4.	Dastgir Colony Street opposite of Akbari Eidgah	300	42
5.	Chahwan Colony from Madni Masjid Towards old National Highway between THQ Moro and GGHS Moro	510	71
6.	Circullar Street of Memon Muhalla	390	55
7.	Circullar Street starting and ending at the road connecting Gachero Rd	220	31
8.	Southern Street of Madani Masjid Towards Old National Highway	380	53
9.	Street front of Mukhtiarkar office towards intersecting Mallah Rd	345	48
10.	Dastgir Colony street from Khan House Moro Towards Mukhtiarkar office Rd	300	42
11.	Street B/W Girls Degree College and Grid Station	560	78
12.	Street of oddh Colony and Irrigation Colony	450	63
	Total	4,685	656

I. Size:

The program will target approximately 281 acres of residential land in the core urban area (63.14% of total 445.53 acres, as per Land use Table below, covering streets, utilities, and public spaces within residential clusters.

Tier 1: 4,685 meters of priority streets impacting 656 households.
Tier 2: ~33 km internal neighborhood network covering 281.33 acres of residential area

II. Preliminary cost estimate

The preliminary cost estimate will include itemized costs for each component:

Rehabilitation work	Cost
Urban Face-Lifting Program	**100**
Street and Pavement Rehabilitation	**100**
Solar Street Lighting and Greenery	**50**
Total	**250**

Note:

The 250 million PKR estimate covers Tier 1 (Priority Streets) only.
Tier 2 will require detailed engineering designs and a separate PC-I, for ADP-funded projects.

Total Estimated Cost: 250 million

III. Implementation Framework

- **Funding:** Municipal budgets, provincial ADP allocations, PPPs, and external development partners (aligned with SDGs).
- **Execution:** Phased approach – short-term quick wins, medium-term infrastructure upgrades, long-term smart systems and redevelopment.
- **Monitoring & Evaluation:** Sector-specific KPIs (e.g., 0% households with piped water, number of schools rehabilitated, km of roads upgraded, improved patient outcomes).
- **Sustainability:** Dedicated O&M budgets, community participation, and revenue generation (waste fees, parking, commercial activity).

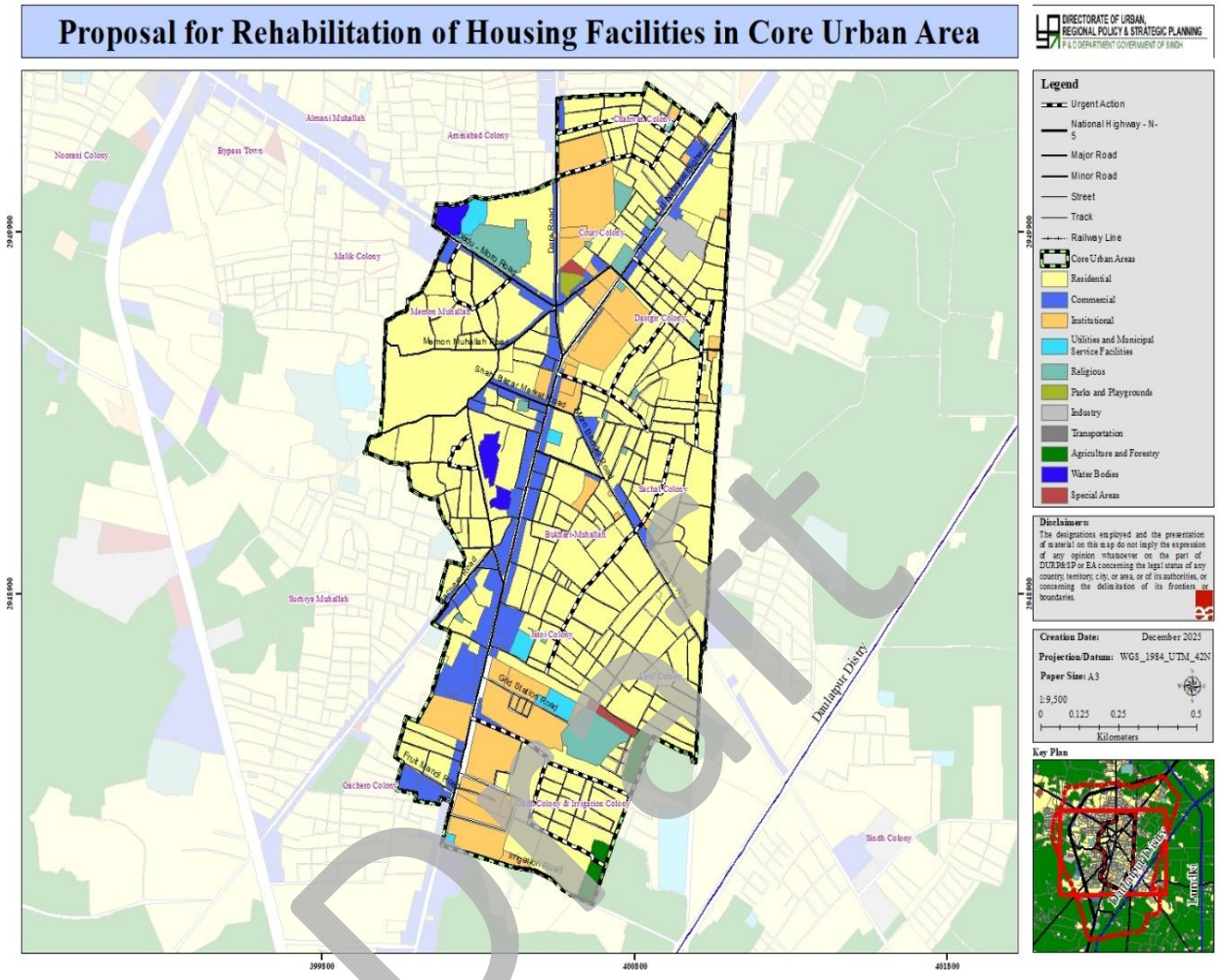
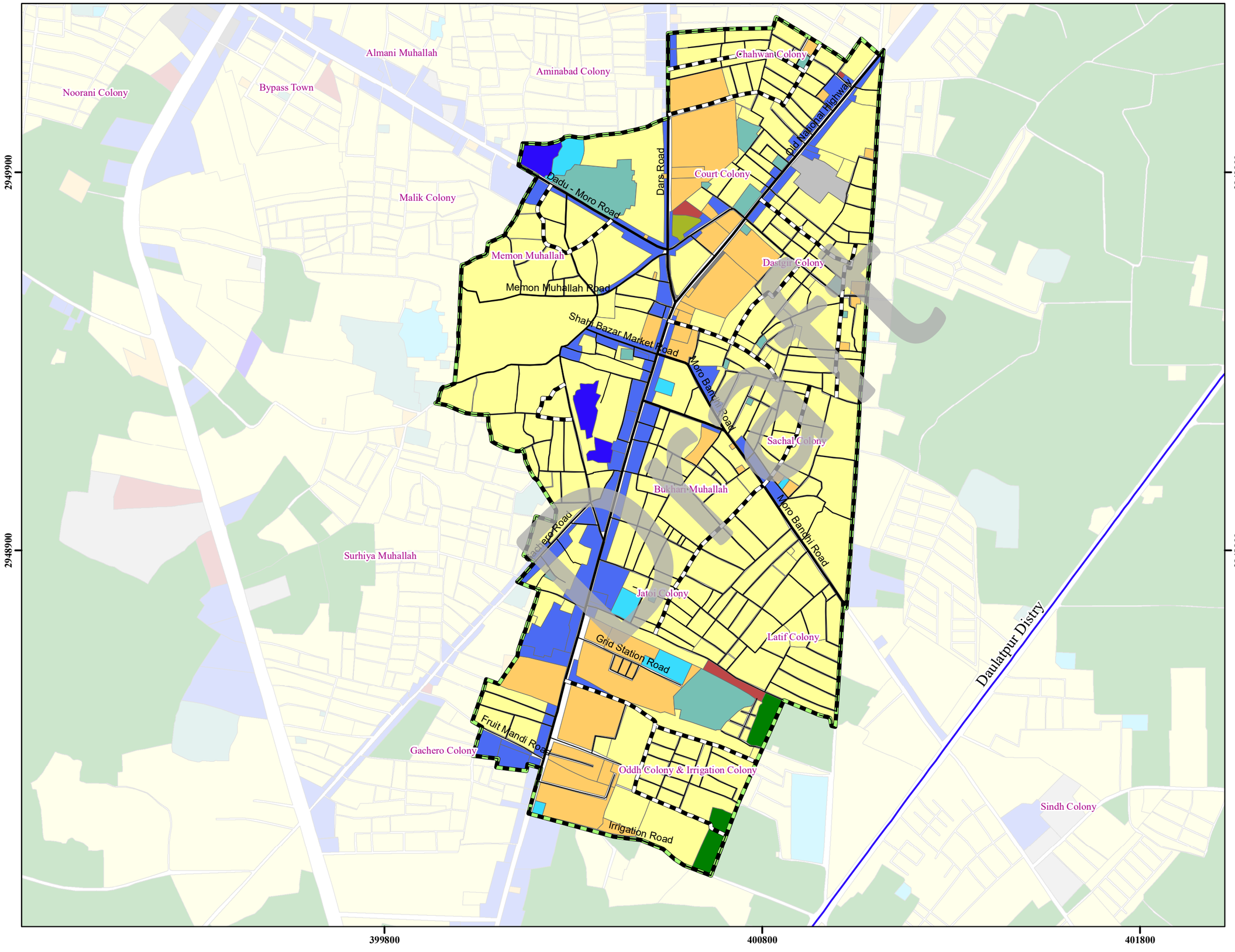


Figure 7: Proposal for Rehabilitation of Housing Facilities in Core Urban Areas

Proposal for Rehabilitation of Housing Facilities in Core Urban Area

DIRECTORATE OF URBAN, REGIONAL POLICY & STRATEGIC PLANNING
P & D DEPARTMENT GOVERNMENT OF SINDH



Legend

- Urgent Action
- National Highway - N-5
- Major Road
- Minor Road
- Street
- Track
- Railway Line
- Core Urban Areas
- Residential
- Commercial
- Institutional
- Utilities and Municipal Service Facilities
- Religious
- Parks and Playgrounds
- Industry
- Transportation
- Agriculture and Forestry
- Water Bodies
- Special Areas

Disclaimers:
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of DURP&SP or EA concerning the legal status of any country, territory, city, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Creation Date: December 2025

Projection/Datum: WGS_1984_UTM_42N

Paper Size: A3

1:9,500

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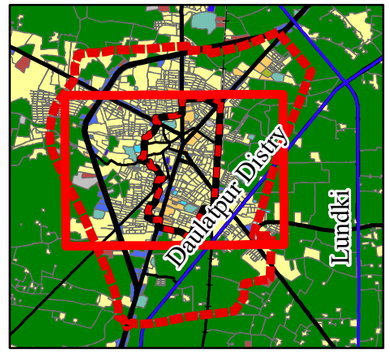
Kilometers

Key Plan



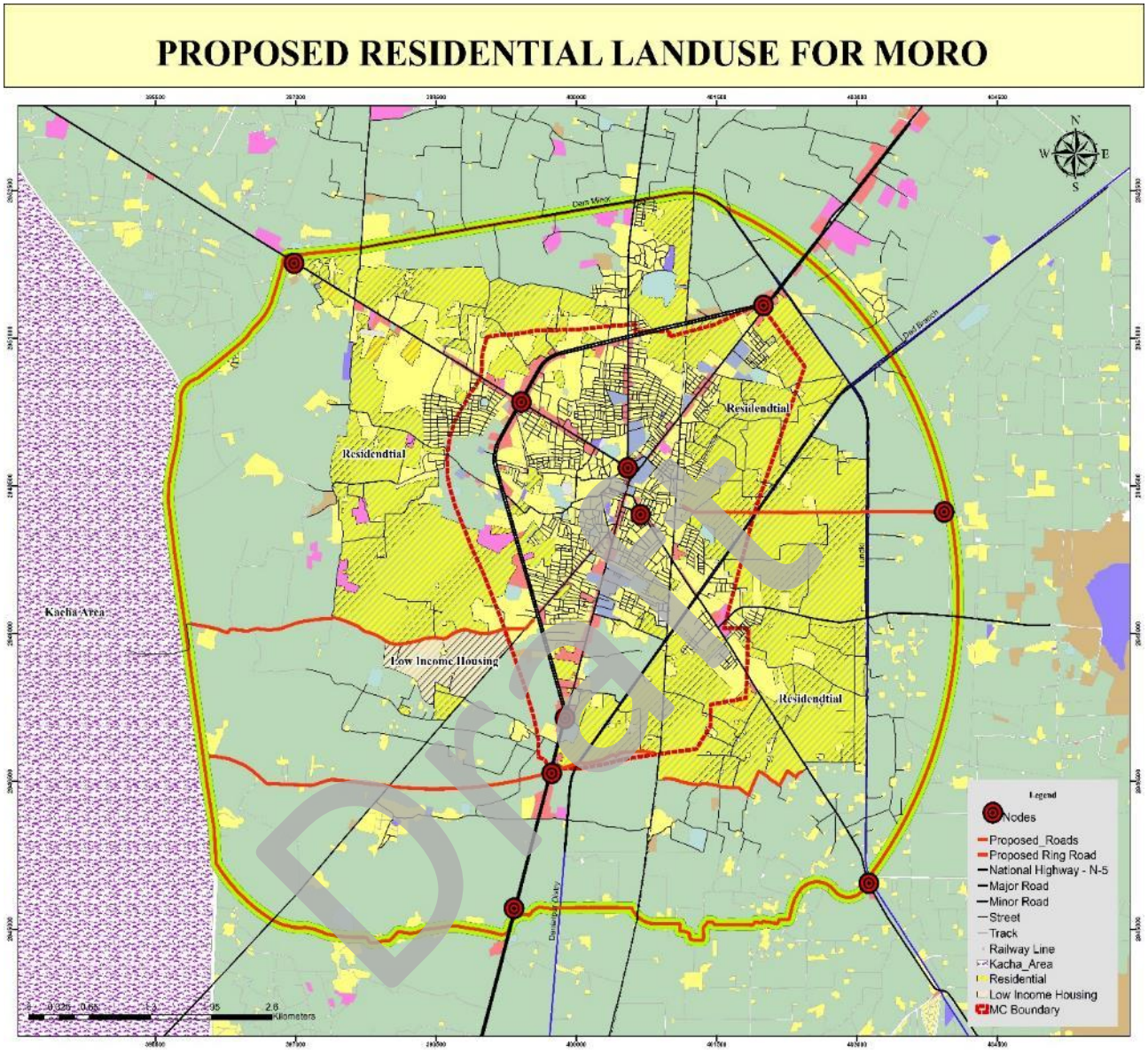
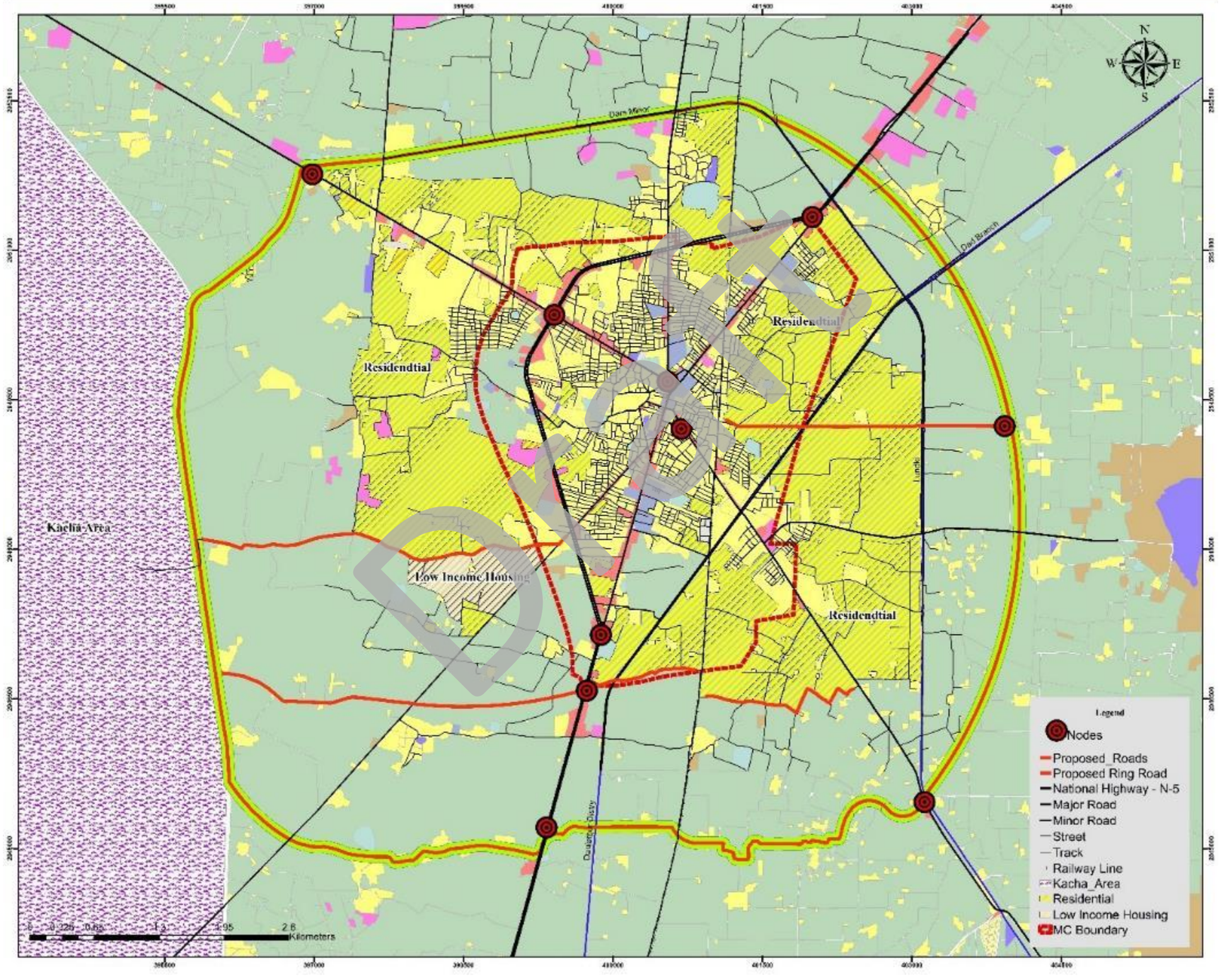


Figure 5-2: Proposed Residential land use plan for Moro City

PROPOSED RESIDENTIAL LANDUSE FOR MORO



6. SOCIAL INFRASTRUCTURE

6.1 Education

*6.1.1 **Existing Situation***

The education sector in Moro reflects both the wider challenges of Sindh's system and the city's specific urban–rural dynamics. While public sector institutions dominate numerically, they are often under-resourced, poorly maintained, and fragmented. This has allowed private schools to expand, creating a dual system that reinforces inequalities in access and quality.

Girls Primary and Co-Education Schools: The total number of students enrolled in 13 schools is 2,253 pupils and the number of class rooms given is 45, which is indicating that student class room ratio 45 students per class is prevailing. The total number of teachers in all these schools is 103, giving a ratio of 1:22 i.e. one teacher for 22 students, whereas the drop out ratio reported by each school to the education department is 3%. This 3% dropout rate needs further study to find out what are the reasons of drop out at primary level of education. The other accessories required for schools is paly ground, it can be observed that none of the thirteen schools have playground and library for students in the school. The condition of buildings structures and furniture is also not satisfactory rather it is recommended that new furniture should be provide and, buildings in all the schools needs to be reconstructed.

Girls High School and Co-Education Schools: Girls and co-education high schools in Moro serve a total of 10,605 students in 131 classrooms, with an overcrowded average of 81 students per room. With 107 teachers, the student-teacher ratio is approximately 1:99, indicating a shortage of teaching staff. Most schools suffer from poor infrastructure, including buildings needing major repairs and insufficient or damaged furniture. Several schools lack essential academic facilities such as libraries and laboratories, while basic utilities like electricity and toilets are present, but water supply and sewerage systems are missing in key schools. Dropout rates vary significantly, with some schools reporting as high as 23% and others as low as 0%, suggesting the need for focused interventions. The absence of playgrounds and poor overall conditions point to the urgent need for improvements in educational facilities across the region.

Boys Govt. High School: Government Boys High School (Moro) plays an important role in shaping the educational landscape of the city, catering to a total enrollment of 3,493 students operates in 36 classrooms with a student capacity of 60 per room. The school reports a commendable teacher-student ratio of 1:47, indicating not a conducive learning environment and school authorities have indicated 24 additional class rooms to carry out routine academic activities. The availability of essential amenities such as playgrounds, toilets, water/sewerage, electricity, library, and laboratory is reported adequate, contributing to a well-rounded educational experience. The school boasts a significant student drop-out ratio of 10%, reflecting the need to find out reason.

Colleges in Moro: Moro City falls in the category of secondary cities of Sindh and being a secondary city there are two colleges, which are enough for a secondary city like Moro, one for girls and the other for

boys are providing college level educational services to the people of city. Of these two, In Government Mehran Degree College 3,200 students are enrolled and take classes in 10 class rooms, and the capacity of class room is 50 students per class. A total of 27 teachers are delivering their service to educate all students enrolled in the college. The other prerequisites for college necessary are available, however building is in poor condition and furniture is also in fair condition. Both building and furniture needs reconstruction and new furniture respectively. The other college for girls has enrollment of 1,855 pupils and 6 class rooms are serving as place to sit and enlighten the future of students through learning. The sitting capacity is 70 students per class and the number of teachers in college is 12. In this college, condition of building is poor, furniture is of low quality and unmaintained. The utmost important component playground is not available; the concerned authorities should address this issue of Girls College and other institutions of the city.

At the tertiary level, one notable institution is **Allama Iqbal Open University GN Morai Regional Campus** is located outside the municipal limits in the extreme north of Moro City near Tando Adam Mehrabpur Branch Line (Defunct Railway Line).

Government Special Education and Rehabilitation Center Moro

Government Special Education and Rehabilitation Center Moro is an institute operating in Moro for persons with disabilities (PWD) in the city. The enrolment of PWDs is sixty-seven (67) persons and the following types of disabilities are found in people of Moro:

- Hearing Impaired
- Physically Impaired
- Visually Impaired
- Mentally Retarded.

The following facilities are provided in this center:

- Sign Language
- Normal Education
- Braille Education
- Vocational Work
- PT

A total staff of 18 persons on different posts under the supervision, administration and management of a Vice Principle are employed in this Government Special Education and Rehabilitation Center Moro.

Given the quantified classroom deficits, deteriorated infrastructure, inconsistent WASH/electricity, and limited vocational pathways, the education strategy must prioritize:

I. Rehabilitation and safety upgrades of existing institutions
II. Classroom expansion to reduce overcrowding against NRM standards
III. Provision of allied facilities (WASH, electricity, Boundary wall, labs/libraries, playgrounds) with inclusion features; and

IV. Strengthening of technical/vocational training aligned with local employment needs.

*6.1.2 **Issues***

In Moro City, several education-related issues are identified based on the comprehensive overview of the education sector provided:

- Parallel Education System: the coexistence of public and private sector education, along with donor-led projects, creates disparities in income and education quality. This dual system results in unequal access to quality education.
- Infrastructure Challenges in Primary Schools: For both boys and girls, schools in Moro face infrastructure challenges. Many buildings require repairs, and essential facilities like water, sewerage, and playgrounds are lacking. Additionally, the absence of libraries and laboratories indicates a gap in educational resources.
- Accessibility and affordability Issues: Financial constraints, geographical barriers, and the unavailability and affordability of education varies across different levels, with primary and university education perceived as less affordable.
- Limited Facilities for Persons with Different Abilities (PWD): A significant portion of the population believes that educational facilities for PWD are inadequate, highlighting a gap in inclusive education.
- Preference for Government/Public Educational Institutions: A majority of respondents prefer or are satisfied with government/public educational institutions, though private institutions also have a considerable preference.
- Appropriate Number of Teachers and Gender Diversity: Most educational institutions reportedly have an appropriate number of teachers, but there is a gender imbalance in the teaching staff, with a lower representation of female educators.

6.1.3 *SWOT Analysis*

EDUCATION			
STRENGTHS	**WEAKNESS**	**OPPORTUNITY**	**THREATS**
1. At Naushahro Feroze District level the literacy ratio is 66% and at the Sindh level it is less (64%) 2. Urban literacy rate is higher than rural i.e. 67.47% and 49.41% respectively[33] 3. Significant (49%) proportion of population demand private school education system 4. 73% of people want separate schools for boys and girls in the area 5. Availability of Allama Iqbal Open University (GN Morai Regional Campus)	1. In District Naushahro Feroze[34] the male literacy rate is 56.8% and female literacy rate is 25.5% 2. In Moro City it was found that literacy rate[35] of male is 61% and the female is 39% 3. Most of the primary schools does not have their own buildings 4. Most of the schools' buildings are in deteriorated conditions and are not properly maintained 5. Most of the high schools does not have library and laboratory facility 6. Lack of operation and maintenance of existing buildings and other accessories necessary for educational institutes 7. At primary level the dropout rate ratio is 3% and at girls secondary level of education it is 18%, which at boy's secondary schools is 10% 8. The availability of essential facilities such as playgrounds, toilets, water/sewerage, electricity, libraries, and laboratories are also inconsistent	1. Openings of more educational institutes 2. People will migrate to urban areas for education 3. More PPP is required for educational sector 4. Opening of Separate schools for girls and boys	1. Enrolment of students at primary level will not increase in future to cope the projected population 2. Migration of qualified people to other major urban centers of the province 3. Migration of qualified and trained professionals to other areas of the country

[33] Sindh Vision 2030
[34] Factsheet: Sindh Integrated Health and Population Project (worldbank.org)
[35] Sindh District Profile 2021

*6.1.4 **Need Assessment***

In conducting the Education Need Assessment of Moro City, an evaluation was carried out based on the National Reference Manual (NRM) standards, which recommend a student capacity of 30 students per classroom. The analysis uncovered notable discrepancies between the existing student capacity per room and the prescribed standard across different education levels. Specifically, the Primary School, High School, and College levels demonstrated variations in student-teacher ratios. To further gauge the adequacy of infrastructure, the actual room required was calculated following the NRM standards. The findings highlight potential needs for infrastructure development and optimization, particularly in the High School and College levels, to ensure alignment with national educational standards and facilitate an optimal learning environment for students in Moro City.

I. Current Scenario (2025)

In the current educational background of Moro City in 2025, a thorough evaluation of classroom needs has been conducted, taking into account crucial factors such as enrolment, existing classrooms, student capacity per room, number of teachers, and teacher-student ratios across various education levels. Following the standards set by the National Reference Manual (NRM), which recommends a student capacity of 30 students per classroom, the analysis reveals a notable inconsistency between the current classroom capacity and the recommended standard.

The findings underscore a significant gap, emphasizing the potential necessity for additional infrastructure development. To further gauge the situation, the actual rooms required were calculated, assuming all students attend government schools and considering that 50% of students opt for private schools. The results indicate substantial disparities, emphasizing the urgency of addressing the shortage of classrooms, particularly in Primary Schools, High Schools, and Colleges.

The addition of required classrooms, after deducting existing ones, highlights the scale of the challenge and emphasizes the imperative need for strategic planning and investment in educational infrastructure to meet the growing needs of Moro City.

Table 6-1: Need Assessment Class Rooms in Moro City 2025

Education Level	Enrollment	Class rooms	Student Capacity per Room	Number of Teachers	Teacher-Student Ratio	Actual Room required	Attainment	Current 2025 Required class room	Additional Required class room
Primary School	2,253	203	11	336	07	75	21,321	710.71	508
High School	11,639	104	112	321	50	388	18,584	619	515
College	6,477	35	185	62	104	216	15,550	389	354
Note: As per NRM (National Reference Manual) recommended students per class room occupancy is 30 students per class room									

II. Future Need Assessment (2045)

In anticipation of the growing educational needs of Moro City in 2045, a comprehensive future needs assessment was made. The assessment took into account factors such as population growth, enrolment patterns, and the desired level of attainment, presuming that 50% of students would opt for private schools. The outcomes indicate a significant surge in the demand for classrooms across all education levels.

Specifically, Table 6-2 depicts that in future by the year 2045, additional 2,039 classrooms in Primary Schools are to be provided, 1,654 classrooms in High Schools, and 1,029 classrooms in colleges will be needed for the projected population of 625,685 persons. These findings highlight the imperative for strategic planning and substantial investment in educational infrastructure to accommodate the anticipated educational needs of Moro City in the future.

Table 6-2: Need Assessment Class Room of Moro City 2045

Education Level	Enrollment	Classrooms	Student Capacity per Room	Number of Teachers	Teacher-Student Ratio	Actual Room required	Attainment	2045 Required Class Room	Additional Required Classroom
Primary School	8,279	203	41	336	25	276	81,739	2,725	2,522
High School	8,339	104	80	231	36	278	71,247	2,375	2,271
College	6,477	35	185	62	104	216	59,615	1,455	1,455

Source: As per NRM (National Reference Manual) recommended students per class room occupancy is 30 students per class room.

The need assessment confirms that the education response cannot rely on new construction alone; it must be delivered through a two-track approach: (i) Rehabilitation and functional upgrading of existing institutions (safety, WASH, electricity, boundary/security, furniture), and (ii) targeted classroom additions to reduce overcrowding in priority levels/locations. This phased approach supports both immediate service continuity and long-term attainment targets.

6.1.5 Policy Guideline[36]

- Development of Teachers and professional substitutes
- Encourage young women and girls through opportunities and facilities for participation in sports; develop women development centers.

[36] Sindh District Profile 2021

- Construct required schools and higher education institutions in all districts. Take stock of operational and staffed schools and eliminate ghost schools.
- Ghost Schools and absentee teacher should be identified and removed.
- Maintenance of existing depilated schools and buildings should be given top priority.
- For girl's literacy and women education, informal system of homeschool may be encouraged.

6.1.6 Strategic Development Plan

This Strategic Development Plan aims to strengthen existing schools' system to bring socio-economic and sustainable development in the region. The focus of this plan is centered chiefly on improving education standard at primary and secondary levels and providing extra curriculum opportunities to address the needs of youth in rural and remote areas. This will increase the literacy ratio, living standard, employment opportunities of the future population.

i. Long Term Plan

- Sustainable construction of new schools with all facilities available to cater additional future enrolment.
- Cater to the high demand rate for private schooling education system.
- To bring universal education ratio there is need to bauble the efforts by engaging teachers, increasing capacity of schools, operationalization of existing closed school and opening of new schools.
- Increasing equitable access to quality ECE, primary and secondary education, with the aim of eliminating social exclusion, enhancing transitions, promoting social cohesion and providing greater opportunities for access, participation and learning to marginalized groups, particularly girls.
- Strengthening governance and service delivery by improving the functioning capacity from the school community level up to district and province level.
- Enhancing the equity of resource allocation and improving the fiscal sustainability and effectiveness of educational expenditure, thereby fostering transparency and accountability in the use of public resources.

ii. Short Term Plan

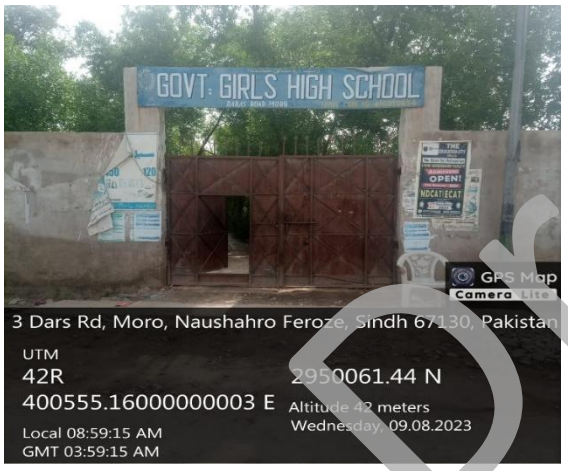
- Most school buildings are in dilapidated conditions and without Toilets, drinking water, furniture etc. While it is important to construct new schools in Time, sufficient funds should be provided for rehabilitation of dilapidated school buildings.
- A large number of schools going age children are currently out of school. The provincial government should device incentives to attract out of school children in schools such as free Lunch and drinks and some gifts.

- In far off remote rural areas, some educated local persons (female or male) should identified to new home schools with some encouragement from the Government including salary, books, stationary etc.
- Ghost schools and absentee staff should be brought to the mainstream in collaboration with the private sector.

*6.1.7 **Priority Projects***

➢ **Extension and Rehabilitation of Schools and Allied Infrastructure (Excluding IAP Schools)**

The education sector in Moro faces severe infrastructure and capacity challenges. Many schools operate in unsafe or deteriorated buildings, lack essential facilities, or are overcrowded. According to the secondary data and need assessment, urgent rehabilitation and additional classrooms are required, particularly in high schools and selected primary schools. Without timely intervention, student-classroom ratios will remain above the **NRM standard of 30:1,** Further undermining learning outcomes.



Government Girls High School

Government Boys High School

➢ **Scope**

- Rehabilitation of Existing Infrastructure: Structural repairs of classrooms, roofs, toilets, boundary walls, electrical and water supply systems.
- Classroom Expansion: Construction of additional classrooms to meet NRM recommended student-classroom ratio of 30:1.
- Access to Essential Educational Facilities: Development of science labs, libraries, and IT learning spaces in targeted high schools.
- Inclusive Learning Features: Installation of ramps, accessible toilets, and safety enhancements for all learners including children with disabilities.
- Service Upgradation: Provision of clean drinking water, sanitation systems, playgrounds, and improved access roads where necessary.

- **Size**
  - ~272 new classrooms planned to reduce overcrowding and improve educational access.
  - More than 50,000 beneficiaries, including students, teachers, and parents who directly gain from improved learning environments.
  - Focused support to high schools and selected primary institutions with the highest infrastructure deficits.
  - Comprehensive upgrades covering building rehabilitation, service improvements, and educational facility enhancements.
- **SDG's Alignment**
  - **Goal No.4 – Quality Education (4.1, 4.a):** Ensure inclusive and equitable quality education and safe, effective learning environments.
  - **Goal No.6 – Clean Water and Sanitation (6.1, 6.2):** provide access to clean water and functional sanitation in schools.
  - **Goal No.11 – Sustainable Cities and Communities (11.7):** Promote inclusive, safe, and accessible public infrastructure.

- **Project List and Locations**

I. Girls Primary and Co-Education Schools

1. Government Girls Primary School Ahmed Colony – Moro (Private Building, poor furniture).
2. Government Girls Primary School New Plot – Moro (Building/furniture need repair).
3. Government Girls Primary School Allahyar Siyal – Moro (Private Building, poor furniture)
4. Government Girls Primary School Ali Bux Seehar – Moro (4 Classrooms needed)
5. Government Girls Primary School Muhammad Suleman Korai – Moro (2 classrooms needed)
6. Government Girls Primary School Jam Imam Bux Colony – Moro (3 classrooms needed)
7. Government Girls Primary School Urdu – Moro (8 classrooms needed)
8. Government Girls Primary School Muhammad Hassan Leghari – Moro (8 classrooms needed)

II. High Schools (Girls & Co-Education)

1. Government Girls High School – Moro (Rehabilitation +56 classrooms)
2. Government Girls High School Town Campus – Moro (Rehabilitation + 78 classrooms)
3. Government Boys High School – Moro (Rehabilitation +14 classrooms)
4. Government Boys High School Daris – Moro (Shortage of furniture +13 classrooms needed)
5. Government Girls High School Ward No:1 – Moro (Rehabilitation + 6 classrooms needed)

III. Boys High School

1. Government Boys High School – Moro (80 classrooms Needed)

IV. Facility upgrades only:

1. GGPS Ahmed Colony – Moro (furniture, playground, repair)
2. GGPS New Plot – Moro (furniture, playground, repair)
3. GGPS Allahyar Siyal – Moro (furniture, playground, repair)
4. GGPS Ghanwar Khan Chandio – Moro (furniture, playground, repair)
5. GGPS Pir Rehmatullah – Moro (furniture, playground, repair)
6. GGPS Muhammad Suleman Korai – Moro (furniture, playground, repair)
7. GGPS Shaheed Ubedullah Samo – Moro (furniture, playground, repair)

- **Implementing Authority**

Department of the Education , Government of Sindh. District Government Naushahro Feroze, Moro MC.

- **Preliminary cost estimate**

Estimate Cost: 1,800 million Approx

Table 6-3: Preliminary Cost Estimates for Education Projects – Moro

Sr	Component	Units	Subtotal (PKR Million)
1	Structural rehabilitation (9 schools)	Lump sum	400
2	Classroom Construction (~272 rooms total)	272	400
3	WASH & electricity upgrades	4 school	400
4	Libraries & labs (7 HS)	7	300
5	Furniture replacement & Inclusive education facilities	Lump sum	300
		Total Estimate	1,800

- **Feasibility Study for Public Library**

Moro Currently has no public library, leaving a critical gap in access to educational and learning resources for students, researchers, and the wider community. A feasibility study is essential to assess the need, potential usage, suitable locations, costs, and sustainability of establishing a public library. This study will guide informed decision making and ensure that any future investment meets the actual needs of the community, promoting literacy, digital access, and lifelong learning in Moro.

➢ **Scope**

- **Needs Assessment and Demand Analysis**
  - Assessment of current availability of educational and learning resources in Moro
  - Identification of target user groups including students, researchers, teachers, and the general public
  - Estimation of potential library usage, membership, and service demand
- **Site Identification and Location Analysis**
  - Identification and evaluation of potential sites within Moro for establishing a public library
  - Assessment of accessibility, connectivity, land availability, and proximity to educational institutions
  - Evaluation of site constraints and future expansion potential

- **Concept Planning and Design Considerations**
  - Development of preliminary concepts for library size, layout, and functional spaces
  - Identification of key facilities such as reading halls, children's section, digital library, and study areas
  - Consideration of inclusive design, accessibility, and safety standards

- **Technical and Infrastructure Assessment**
  - Evaluation of basic infrastructure requirements including electricity, water supply, internet connectivity, and sanitation
  - Assessment of furniture, equipment, ICT systems, and digital resource needs
  - Identification of sustainability and energy-efficient options

- **Financial and Economic Analysis**
  - Estimation of capital costs for construction, furnishing, and equipment
  - Assessment of operational and maintenance costs, including staffing and utilities

- **Institutional and Operational Framework**
  - Assessment of staffing requirements, management structure, and governance model
  - Evaluation of operational policies including opening hours, membership, and services
  - Identification of partnerships with educational institutions and cultural organizations

- **Risk Assessment and Sustainability Analysis**
  - Identification of technical, financial, and operational risks
  - Evaluation of long-term sustainability and scalability of the public library
  - Development of recommendations and implementation roadmap for future investment

- **Size**

  - Preparation of a city-wide feasibility study for the establishment of a public library in Moro. Covering educational, social, and cultural needs of the population.
  - Assessment of multiple potential sites within Moro to identify the most suitable location for a future public library.
  - Evaluation of one proposed public library facility, including analysis of appropriate scale, space requirements, and service capacity.
  - Analysis of current and projected demand for library services among students, researchers, and the general public.
  - Estimation of capital investment, operational costs, staffing needs, and long-term financial sustainability for the proposed library.
  - Review of infrastructure and digital resource requirements, including ICT systems and internet connectivity.
  - Engagement with key stakeholders and community groups to inform study findings.
  - Delivery of a comprehensive feasibility report to guide decision-making for future development of a public library in Moro.

- **SDG's Alignment**

  - **Goal No.4 – Quality Education (4.1, 4.5, 4.a)**: Ensure inclusive and equitable quality education, promote lifelong learning opportunities, and provide safe, inclusive, and effective learning environments through access to books, digital resources, and knowledge centers.
  - **Goal No. 11 – Sustainable Cities and Communities (11.7):** Promote inclusive, safe, accessible, and green public spaces such as libraries that serve as cultural and educational hubs for communities.

- **Implementing Authority**

  Department of the Education, Culture, Tourism, Antiquities & Archives Department, Government of Sindh, District Government Naushahro Feroze, Moro MC.

- **Preliminary Cost Estimate**

Estimated Cost: 300 million Approx.

Table 6-4: Public Library Projects – Estimated Cost

S. No.	Project Name	Estimated Cost in Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Public Library						
1.	Feasibility study for construction of Public Library.	100	-	Non ADP	**Short Term**	-
2.	Procurement for land acquisation process for Public Library	200	-	Non ADP	**Short Term**	-

6.1.8 Immediate Action Plan for Core Urban Area

- **Improvement of Educational in Core Urban Area**

Schools in the core urban area of Moro MC, including Government Girls High School Moro, Government High School Moro Town, and Government Girls High School Ward No.1 Moro, face deteriorating facilities that compromise student safety and hinder learning. Overcrowded classrooms, poor infrastructure, and outdated facilities highlight the urgent need for rehabilitation.

Govt. Girls High School

To improve educational outcomes, the Immediate Action Plan focuses on rehabilitation and systemic upgrades that create a safe, inclusive, and effective learning environment. This aligns with SDG 4 (Quality Education), especially SDG 4.1 (universal access to primary and secondary education) and SDG 4.4 (skills for employment and entrepreneurship).

Immediate Action Plan to help improve the education situation of the core urban areas and needs quick action. Therefore, rehabilitation of the educational institutions will be implemented in the core urban area of Moro MC which include the following measures:

- **Scope**

The IAP for education includes the following targeted measures:

- **Infrastructure Upgradation:** Expansion of existing schools by adding classrooms and facilities through new blocks or additional floors.

Table 6-5: School Infrastructure and Facilities

S.No	Name of School	Enrollment	Class Room	Student Capacity per Room	No. of Teachers	Condition of Building	Condition of Furniture	Playground available	Toilets	Water/ Sewerage Available	Electricity / Power Available	Library	Laboratory
1	GGHS Moro	2475	26	40	55	poor	poor	Available	yes	Not Available	Available	Not Available	Available
2	GHS MORO TOWN CAMPUS	628	11	60	38	Repairable	Repairable	Available	Yes (Repairable)	Available	Available	needed	Needed
3	GGHS WARD NO: 01 Moro	350	5	40	14	poor	poor	Available	Yes (Repairable)	Not Available	Available	Not Available	Available

- **Rehabilitation of Existing Facilities:** Repair of classrooms, roofs sanitation, and utility systems main gate and boundary wall in priority schools like Government Girls High School Moro, Government High School Moro Town, Government Girls High School Ward No.1 Moro.
- **Technology Integration:** Establishment of library at all schools, smart classrooms, and digital learning tools.
- **Community & Stakeholder Engagement:** Active involvement of parents, teachers, and NGOs to ensure solutions reflect community needs.

- **Size:**

The rehabilitation and upgradation of building and furniture will focus on three priority educational institutions located within the core urban area of Moro MC. Collectively, these schools occupy approximately 4.23 acres.

A **condition assessment** was conducted to identify infrastructure gaps and prioritize investment needs. The assessment provides a concise overview of enrollment pressure, classroom conditions, building deterioration, sanitation issues, furniture needs, and availability of essential services.

Target Institutions:

- Government Girls High School Moro – 3.09 Acres
- Government High School Moro Town Campus – 0.82 Acres
- Government Girls High School Ward No.1 Moro – 0.32 Acres

S. No	Education Facility Name	Area (acre)	Repair & Rehabilitation – Activity Wise Cost in Millions
			Cost in Million
1	**GGHS Moro**	3.09	300
2	**GHS Moro Town**	0.82	150
3	**GGHS Ward No. 1 Moro**	0.32	150
Total		**4.23**	**600**
Total PKR Rs. Million			**600**

- **Preliminary cost estimate: 338 million**
- **Implementation Framework**

  - **Funding:** To be mobilized through municipal allocations, provincial ADP funds, and external development support.
  - **Execution:** Works will be phased, starting with the schools in most urgent need.
  - **Monitoring & Evaluation:** KPIs will include number of classrooms rehabilitated, student-teacher ratios improved, and successful technology integration.

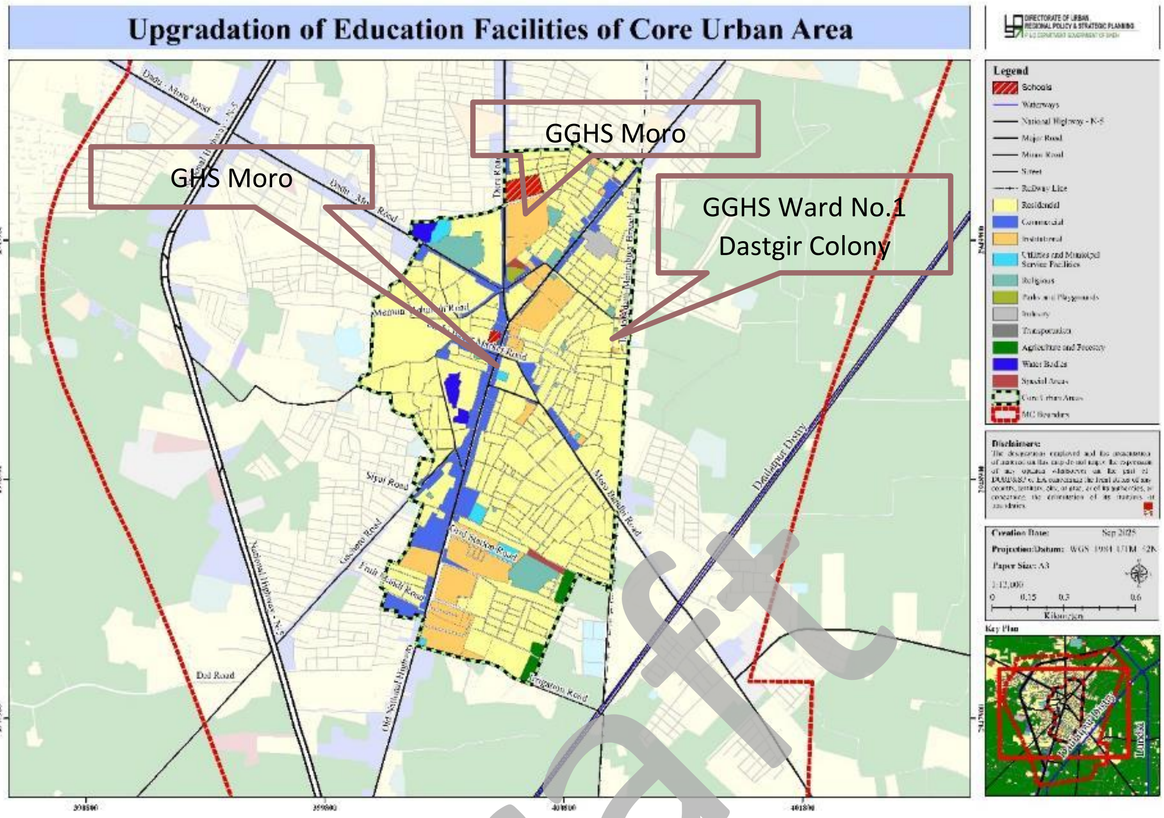
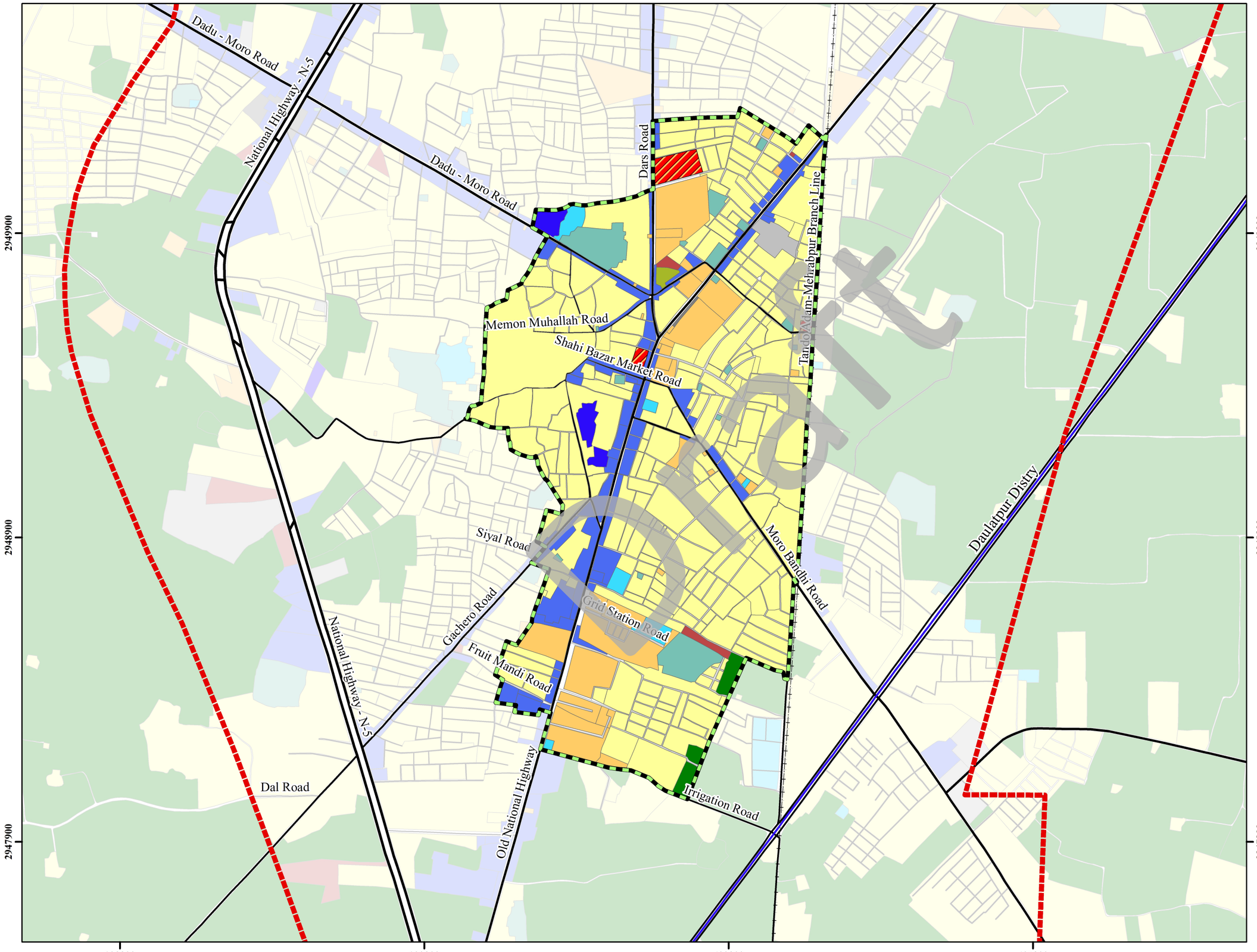


Figure 6-1: Upgradation of Educational Facilities of Core Urban Area Map

Upgradation of Education Facilities of Core Urban Area

DIRECTORATE OF URBAN, REGIONAL POLICY & STRATEGIC PLANNING
P & D DEPARTMENT GOVERNMENT OF SINDH



Legend

- Schools
- Waterways
- National Highway - N-5
- Major Road
- Minor Road
- Street
- Railway Line
- Residential
- Commercial
- Institutional
- Utilities and Municipal Service Facilities
- Religious
- Parks and Playgrounds
- Industry
- Transportation
- Agriculture and Forestry
- Water Bodies
- Special Areas
- Core Urban Areas
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Creation Date: Sep 2025

Projection/Datum: WGS_1984_UTM_42N

Paper Size: A3

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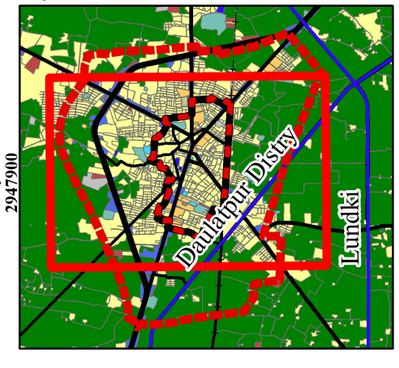
Kilometers

Key Plan



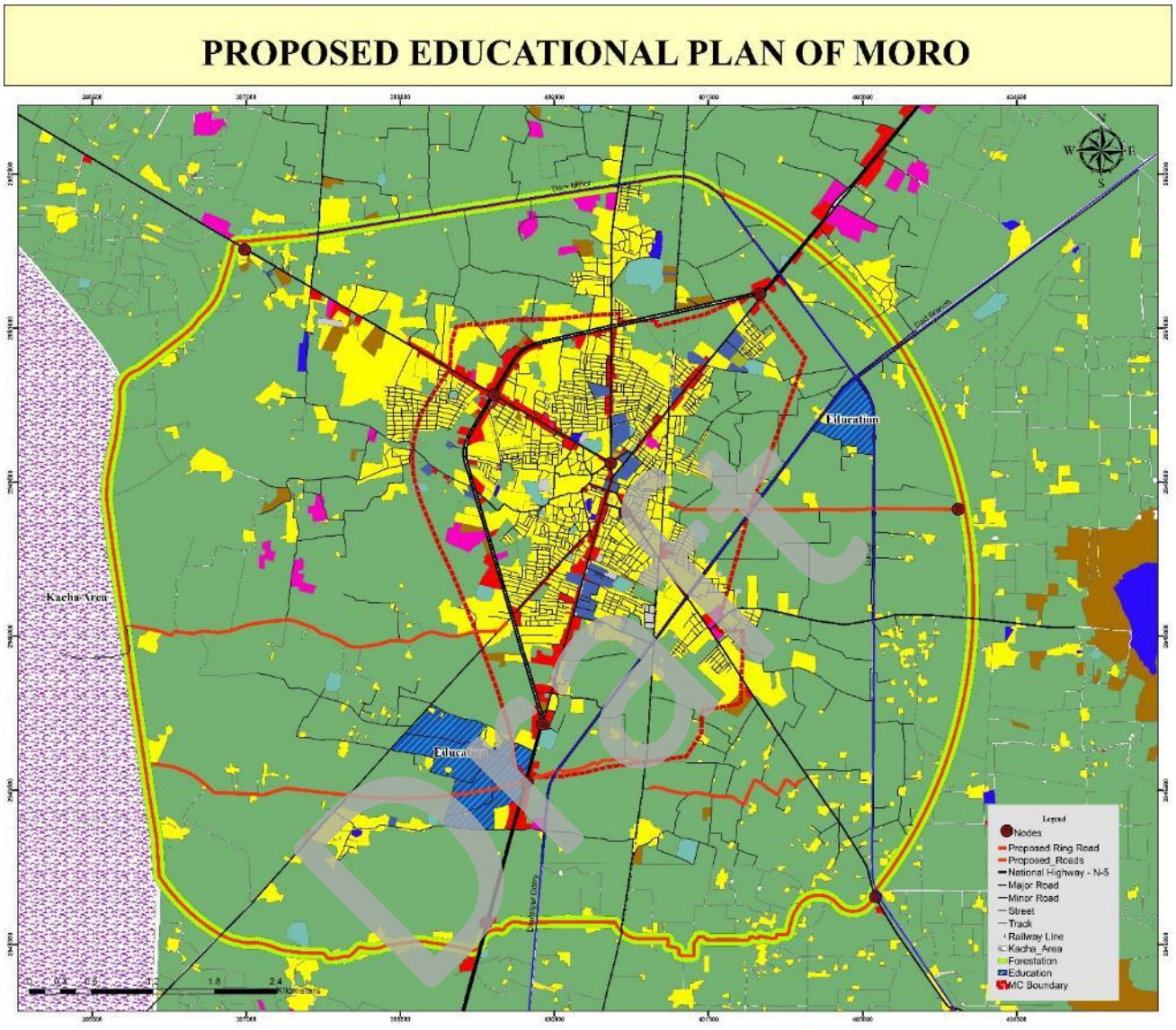
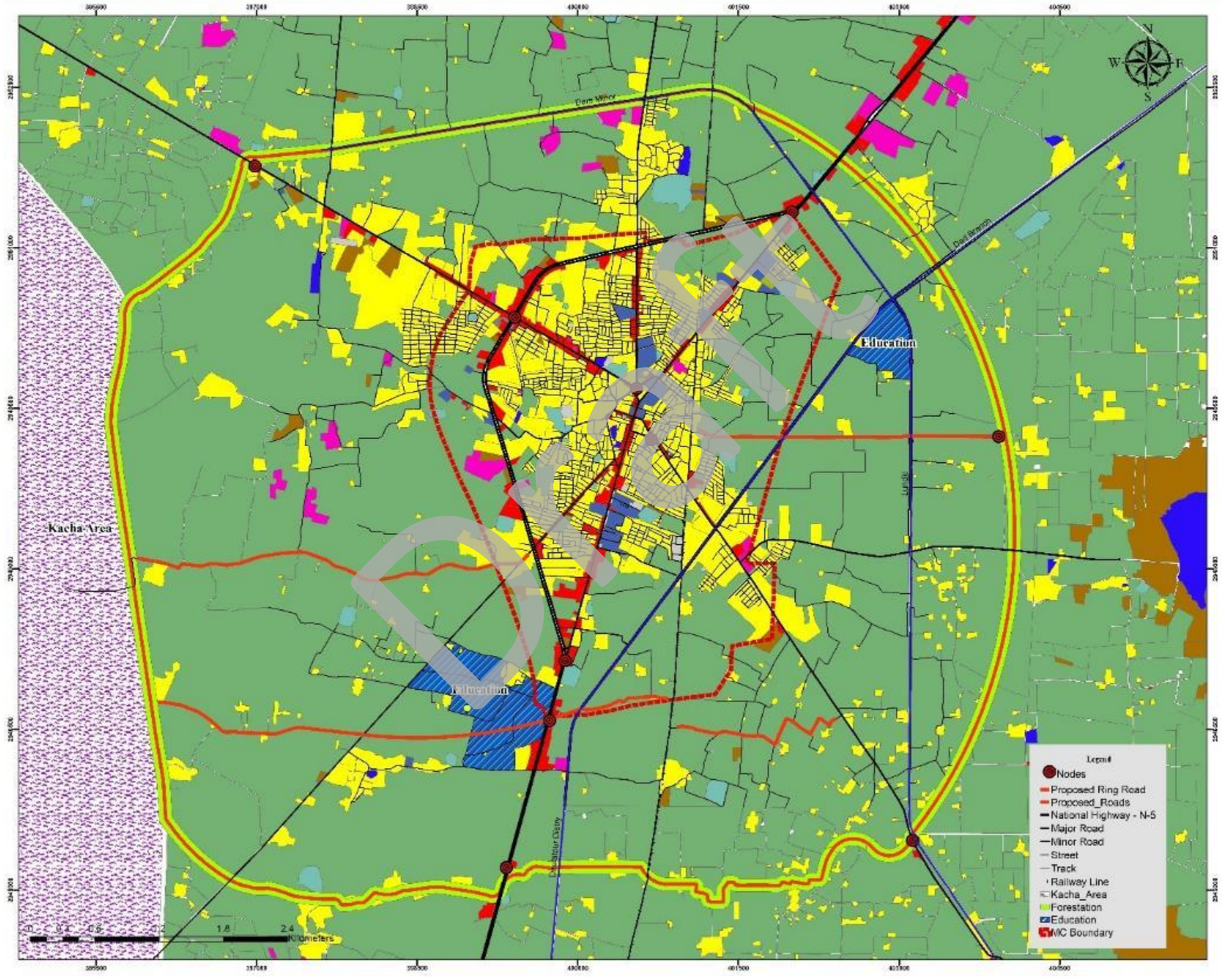


Figure 6-2: Proposed Educational Plan of Moro

PROPOSED EDUCATIONAL PLAN OF MORO



6.2 Health

*6.2.1 **Existing Situation***

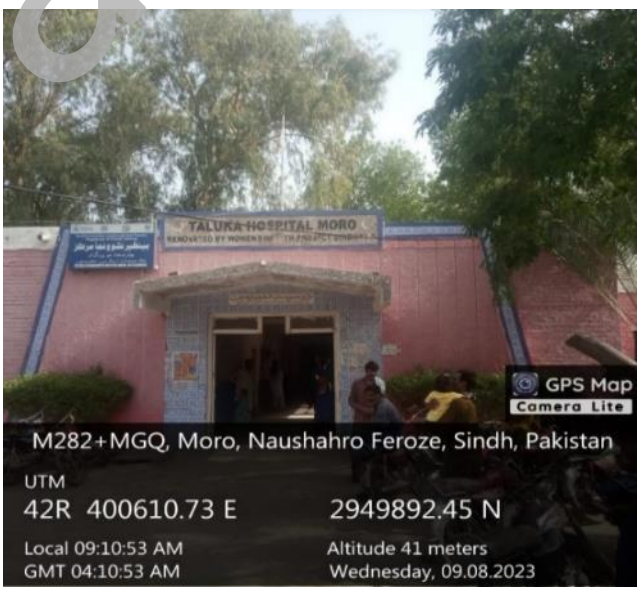
Sindh, is home to a predominantly youthful population, with a growing percentage in the working-age bracket. While the region has shown some progress in child health and maternal healthcare indicators, there are notable disparities in access to healthcare services, depending on factors like district, economic status, education, and rural/urban residence. Low contraceptive usage, inadequate healthcare infrastructure and quality in rural areas, and obstacles faced by women when accessing healthcare, such as financial constraints and societal norms, are among the important challenges. Moreover, the devastating floods in 2022 have inflicted significant damage on the health system in Sindh. Hundreds of healthcare facilities are damaged or inoperable, making healthcare inaccessible. As a result, diseases like malaria, dengue, diarrhea, cholera, skin diseases, and malnutrition are on the rise, posing additional burdens on an already stretched healthcare system.

*6.2.2 **Health Sector at District Level***

District Naushahro Feroze has to face numerous health challenges and inequalities in comparison to the broader Sindh region. The district has a total of 32 Government, Departmental, Private and Local Bodies Hospitals with a capacity of 364 beds compared to 684 Hospitals in Sindh with a capacity of 30,126 Beds.

*6.2.3 **Health Sector at Moro MC***

In Moro City, the healthcare sector relies mainly on tertiary-level facilities, which primarily include the Taluka Hospital (TH) and private health facility to meet the healthcare needs of the local population of Sindh. Both of these Taluka Hospital and the private health center provide a total facility of 49 beds to the current population 152,673 persons residing in Moro City and these are also accessible to the people squatting in peripheral areas of the city. The existence of 49 beds for a population of 163,207 persons indicates that currently one (1) bed is available for more than 3,330 persons in the city which is not sufficient for existing population as per NRM the minimum bed ratio is one bed for 500 persons or two beds for 1,000 persons.



Taluka Hospital in Moro City

Table 6-6: Government and Private Departmental with Bed Capacity in Naushahro Feroze District[37]		
Description	**Medical Centers**	**Beds**
BASIC HEALTH UNITS (BHUS)	**45**	**90**
RURAL HEALTH CENTRES (RHCS)	**12**	**169**
DISPENSARIES	**76**	**3**
Government	43	0
Semi Government	2	3
Local Bodies	31	0
Private	0	0
TB CLINICS	**11**	**0**
Government	11	0
Private	0	0
MOTHER AND CHILD HEALTH CENTRES (MCHC)	**3**	**0**
Government	1	0
Semi-Government	0	0
Local Bodies	2	0
Private	0	0
MATERNITY HOMES (GOVERNMENT)	**0**	**0**

In Taluka Hospital, currently only a total of 34 doctors are providing their services to the residents of Moro. Out of the total, 24 are employed at Government Taluka Hospital while the rest of 10 doctors are serving in AD Medical Center, which is a private health center. It is disheartening to know that out of the sanctioned 68 posts of doctors only 24 doctors are employed and 44 vacancies of doctors are lying vacant in Taluka Hospital of Moro i.e. about 65% of sanctioned posts of doctors are vacant including male and female doctors. It is learned from data received from the Medical Superintendent that out of sanctioned posts, one post of Medical Officer and five posts of Female Medical Officers are lying vacant. It is also to

[37] Secondary data collection proformas

be noted that all the posts; of surgeon, ENT, Gynecologist, Cardiologist, Orthopedic, Child Specialist, Ophthalmologist (2 Post), Pathologist, Skin, Psychiatrist and Radiologist; are lying vacant.

Based on the existing health services, shortage of medical staff, lack of wards, laboratories and operating theatres, the health strategy for Moro must prioritize (i) Extension of THQ for more specialized wards/sections (ii) provision of mobile health unit for the peripheral area of Moro City (iii) Provision of diagnostic facilities, ambulance, pharmacy in THQ

*6.2.4 **Issues***

The following are the major issues in the health sector include:

- The availability of hospital beds is insufficient compared to the recommended standards, leading to overcrowding and challenges in patient care.
- Many essential medical positions, in particular to doctors and medical staff, are lying vacant within healthcare institutions, affecting service delivery.
- The health sector faces challenges in acquiring and maintaining diagnostic equipment, which affects the accuracy and efficiency of patient care.
- There is a lack of proper training opportunities and housing facilities for medical and paramedical staff, impacting their morale and performance.
- Essential healthcare facilities such as wards, laboratories, and operating theaters are lacking in both quantitative and qualitative term.
- The resources to transfer seriously ill patients from rural areas to hospitals are insufficient and often inefficient.
- Shortage of funds limit the sector's ability to improve infrastructure and provide essential healthcare services.
- There is a pressing need for capacity-building initiatives to enhance the overall performance of healthcare institutions.

Addressing these challenges is essential to enhance healthcare services and ensure the well-being of the local population in Moro City.

6.2.5 SWOT Analysis of Moro City Health Sector

HEALTH			
Strengths	**Weakness**	**Opportunity**	**Threats**
1. Availability of THQ hospital in the city 2. Availability of private (AD. Medical Center) health facility 3. Majority (52%) of population is highly satisfied and satisfied with existing health facilities	1. Currently the hospital is not provided with sufficient funds 2. Un-availability of Specialized Neonatal and Emergency (SNE), Neurology, and a dedicated SNE Trauma Centre. 3. The hospital building structure is in deteriorating condition 4. There are 49 beds for total population which are insufficient for the existing population 5. Only 24 posts of doctors are filled out of sanctioned posts for doctors 6. Shortage of Doctor and para medical staff 7. The THQ hospital is facing shortage of funds for drugs & medicine and in the existing budget amount can only meet the expenses incurred on annual salary expenses	1. 44 sanctioned posts for doctors are lying vacant 2. 15 sanctioned posts of Dispensers and Paramedics & Non-Paramedic Staff are lying vacant 3. More investment is required through PPP in health sector	1. Lack of emergency response to health incidents 2. Increased Death rate due to multiple factors 3. Difficult to control eradication of epidemics 4. Lack of hospital bed may cause overcrowding and hinder timely medical care

*6.2.6 **Need Assessment***

Present Need Assessment (Population, Bed Ratio)

The NRM (National Reference Manual) recommends 2 beds per thousand as the medium-term target. On this basis approximately 326 beds are required to serve the existing population of about 163,207 persons. The shortage of doctors and para medical staff, laboratory equipment, diagnostic services and quality of buildings are an evident problem in small towns and will need to be tackled with increase in beds.

Table 6-7: Present Health Need at Moro MC (2025)

Present Population	Beds			Doctors		
	Available	Present need	Required	Available	Present Need	Required
163,207	49	277	326	28	153	163

Source: Calculation based on National Reference Manual (NRM)

According to WHO (World Health Organization) standards, doctor to population ratio is 1:1000 so taking that as a reference point currently there are 34 doctors in the city and the required number of more doctors to serve the existing population of Moro City is 153 which is indicating that more than the three times of existing number of doctors are required to serve the exiting population of the city.

Future Need Assessment at District Level (Population, Bed Ratio, Doctor Ratio) 2045

The consultant considered it appropriate to consider the catchment population of the entire city to work out the present health facilities and health professionals required to serve the existing and as well as the future requirement of population by the year 2045 i.e. the planned period.

The NRM (National Reference Manual), which is the only so far available document at the national level for the planning and infrastructure standards, recommends 2 beds per thousand population as the medium-term target. To meet these criteria of 2 beds/1000 people a total of 1,251 beds will be required to serve the projected population of 625,685 persons to meet their health needs.

As already discussed above according to WHO (World Health Organization) standards ratio of doctor to population is 1:1000, henceforth so taking that, as a reference point the future requirement of doctors comes out is 598 doctors provide health services to the projected population of 625,685 persons by the year 2045 of Moro City.

Table 6-8: Future Health Need at Moro City (2045)						
Future Population	**Beds**			**Doctors**		
	Available	**Future need**	**Required**	**Available**	**Future Need**	**Required**
625,685	49	**1,202**	**1,251**	**28**	**598**	**626**
Source: Calculation based on National Reference Manual (NRM)						

Thus, by the year 2045, Moro City, with projected population of 625,685, will require a total of 1,251 hospital beds, against the existing 49 beds, indicating an additional requirement of 1,202 beds. Similarly, the future requirement of doctors is estimated at 158, compared to the currently available 28 doctors, resulting in an additional need for 598 doctors. Addressing this gap will require not only the expansion of physical health infrastructure but also strengthening of human resources, services delivery capacity, and access to healthcare facilities.

*6.2.7 **Policy Guidelines**[38]*

- Enhance basic health care by making it more accessible & affordable, efficient, effective and timely.
- Regulate protection from disease and the quality of healthcare across the province. In this context the Health Department will regularly survey and analyze healthcare statistics, particularly on women, children and the elderly
- Protect people against pollutions of all forms and types, and infectious diseases by promoting public health and by upgrading curative care facilities.
- Enhance and improve existing emergency care facilities and trauma centers, including ambulatory services and paramedic forces.

*6.2.8 **Strategic Development Plan***

The aim of this strategic development plan is to improve health indicators and also Ensuring sound access to primary and secondary health facilities for the target population with a medical care system that is effective, efficient and responsive to the needs of all socio-economic groups, in particular, those of low-income communities and women of reproductive age. Some strategies include:

a) Long Term Plan

- Provision of Mobile Health Unit for the peripheral area of Town (under supervision of taluka Hospital)
- Health awareness programme for the deprived population
- Research and development programme for doctors and paramedics staff

[38] Sindh Water and Sanitation Policy 2017

- Provision of diagnostic facilities, ambulance, pharmacy in all hospitals
- Accommodation facilities for Doctors and Paramedic Staff

b) Short Term Plan

- Improve access to healthcare facilities as due to long journeys to hospitals many patients die on the way.
- Ensure availability of adequate and skilled workforce to fulfill population health needs,
- Improving functionality of equipment and availability of quality medicines.
- Health is the fundamental need of the people. Currently health institutes of City are facing lot of problems due to unavailability of Laboratorial facilities. Shortage of Specialized doctors, surgical instruments, and lack of machinery are the major issues. There should need to be rehabilitation of these institutes to provide sufficient and high-quality health to the people of Moro.

6.2.9 Priority Projects

➢ **Rehabilitation/Construction of Health Institutes**

Health is a fundamental need of the people, yet existing health institute in Moro face severe challenges. Major issues include the absence of modern diagnostic and laboratory facilities, shortage of specialist doctors (Particularly female doctors and female staff). Inadequate surgical instruments, and outdated machinery. The condition of the Taluka Headquarters (THQ) Hospital is poor, limiing its ability to deliver quality healthcare. To provide sufficient and high-quality medical services to the people of Moro. It is essential to rehabilitate existing health institutes and expand their capacity with modern diagnostic facilities and equipment.

➢ **Scope**

- Rehabilitation of Existing Infrastructure: Repair and upgrading of hospital buildings, wards, emergency rooms, and maternity facilities.
- Diagnostic & Treatment Enhancments: Installation of essential laboratory equipment, X-ray, ultrasound, and other modern diagnostic systems.
- Medical Equipment Upgradation: Provision of surgical instruments, life-saving machines, and essential hospital supplies.

- Human Resource Strengthening: Recruitment of specialist doctors, especially female doctors and nurses, and additional paramedical staff.
- Medicine & Health Support Services: Availability of free or subsidized medicies and improved pharmacy and storage facilities.
- Patient-Centered Improvements: Upgrades in Sanitation, waste disposal systems, security, power backup, and accessibility features.
- Establish new health facilities on both sides of the city to ensure equitable access and adequately serve the population residing across all areas.

➢ **Size**

The proposed intervention aims to enhance healthcare services across Moro through comprehensive, city-wide improvements. It includes the rehabilitation of key existing health facilities such as the THQ Hospital, maternity units, and basic health centers along with the establishment of modern healthcare institutions. Together, these upgrades and new developments will strengthen the overall healthcare capacity, offering improved diagnostic, emergency, and inpatient services to better meet the needs of the community.

The program will target the rehabilitation and expansion of the Taluka Headquarters (THQ) Hospital, including the new specialized wards, installation of modern diagnostic equipment, and deployment of mobile health services to peripheral settlements, thereby significantly enhancing health coverage for the entire urban and adjoining rural population of Moro.

➢ **SDG's Alignment**

I. Goal No.3: Good Health and well-being

This is the most directly impacted goal. Rehabilitation of health facilities and provision of modern diagnostic equipment, surgical tools, and specialist services will improve access to essential healthcare. Addressing the shortage of female doctors and staff will ensure gender-sensitive care, particularly in maternal and child health. This supports SDG 3.1, 3.2, 3.8, and 3.c, which aim to reduce maternal and child mortality, achieve universal health coverage, and increase the health workforce.

II. Goal No.8 – Decent work and economic growth

Rehabilitation and expanding healthcare services will create direct employment opportunities in the health sector. In the long term, healthier populations contribute to higher productivity and economic growth. This supports SDG 8.3 and 8.5, which focus on job creation and equal access to decent work.

➢ **Project List and location**

Taluka Headquarters (THQ) Hospital, Moro – Short Term Priority Projects

1. **Extension of THQ for specialized wards and sections –** expansion of maternal, child health, and emergency wards.
2. **Provision if Mobile Health Unit –** to serve peripheral areas to Moro City, under supervision of THQ.
3. **Provision of diagnostic facilities, ambulances, pharmacy –** equipping THQ with laboratory, imaging, ambulances, and an in-house pharmacy.

Capacity Building (Long Term)

4. **Research and development programs –** for doctors and paramedical staff, linked with provincial health training institutes.

- **Implementing Authority**
  Department of the Health, Provincial Government
- **Preliminary Cost Estimate**
  Estimate Cost: Rs.1000 million approx.

S. No.	Project Name	Estimated Cost in Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Health						
1	Extension of Taluka Hospital for more specialized wards /sections	300	-	Non ADP	**Short Term**	-
2	Provision of Mobile Health Unit for the peripheral areas	200	-	Non ADP	**Short Term**	-
3	Up gradation of equipment in THQ Moro	300	-	Non ADP	**Short Term**	-
4	Provision of diagnostic facilities, ambulance, pharmacy in THQ Moro	200	-	Non ADP	**Short Term**	-

6.2.10 Immediate Action Plan for Core Urban Area

- **Improvement of Health in Core Urban Areas**

Health facilities in Moro's core urban areas remain inadequate, with limited access to essential medical services. The male Dispensary requires urgent rehabilitation, while the Taluka Headquarter (THQ) Hospital, located outside the core area, needs significant upgrades to meet growing demand. To bridge these gaps, the Immediate Action Plan focuses on strengthening infrastructure, improving service delivery, and modernizing medical systems. Planned interventions include upgrading facilities, procuring advanced equipment, introducing electronic health records (EHR), and expanding telemedicine services.

These interventions will support the creation of integrated health networks, improving coordination among providers and leading to better patient outcomes. This program aligns with Sustainable Development Goal 3 (SDG 3), particularly SDG 3.d (capacity for emergency preparedness).

THQ Moro

THQ Moro

- **Scope**
  - **Repair & Rehabilitation of Dispensary & THQ:** Comprehensive upgrades will be undertaken to fix structural issues, modernize facilities, and improve service delivery. The work will specifically include repairing roofs, sanitation systems, utility lines, the main gate, and the boundary wall of the THQ Hospital.
  - **Medical Equipment & Technology:** diagnostic imaging, lab systems, electronic health records and telemedicine.
  - **Emergency Preparedness & Response:** Emergency response plans, staff training, and essential supplies for crises.
  - **Capacity Building:** Dedicated emergency units, trained professionals, and resilience measures.

- **Size:**

  The repair and rehabilitation efforts will focus on the THQ Hospital Moro, covering an area of 8.71 acres. The scope of work includes:

Repair & Rehabilitation of THQ Hospital			
S. No.	**Area / Locality / Address**	**Area (acre)**	**Repair & Rehabilitation - Activity Wise Cost in Millions**
			Cost
1	**Repair & Rehabilitation of THQ Hospital Moro**	8.71	500
		Total PKR Rs. Million	**500**

- **Preliminary cost estimate: 500 million**

- **Implementation Framework**
  - **Funding:** Municipal budgets, provincial ADP allocations, and external health development funds (aligned with SDG 3).
  - **Execution:** Phased implementation, prioritizing critical infrastructure and emergency preparedness.
  - **Monitoring & Evaluation:** KPIs will include number of patients served, improved patient outcomes, operational readiness of equipment, and emergency preparedness indicators.

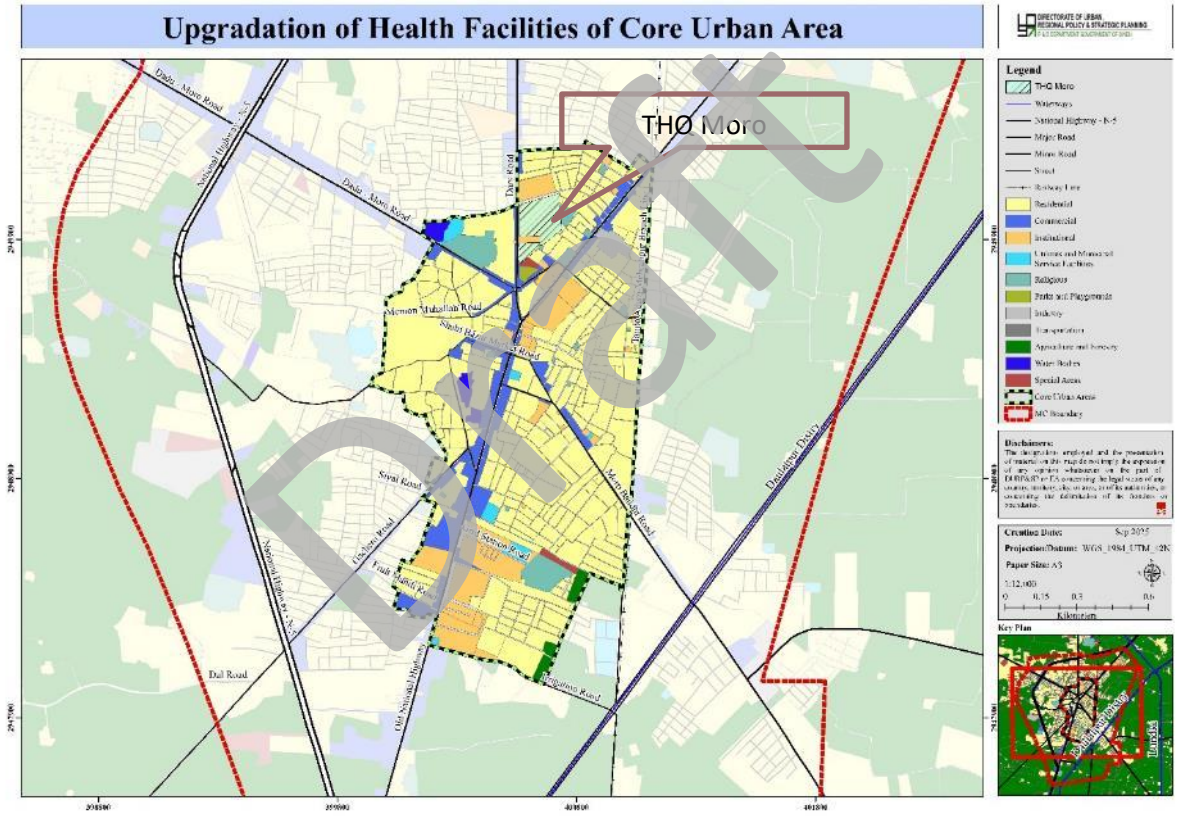
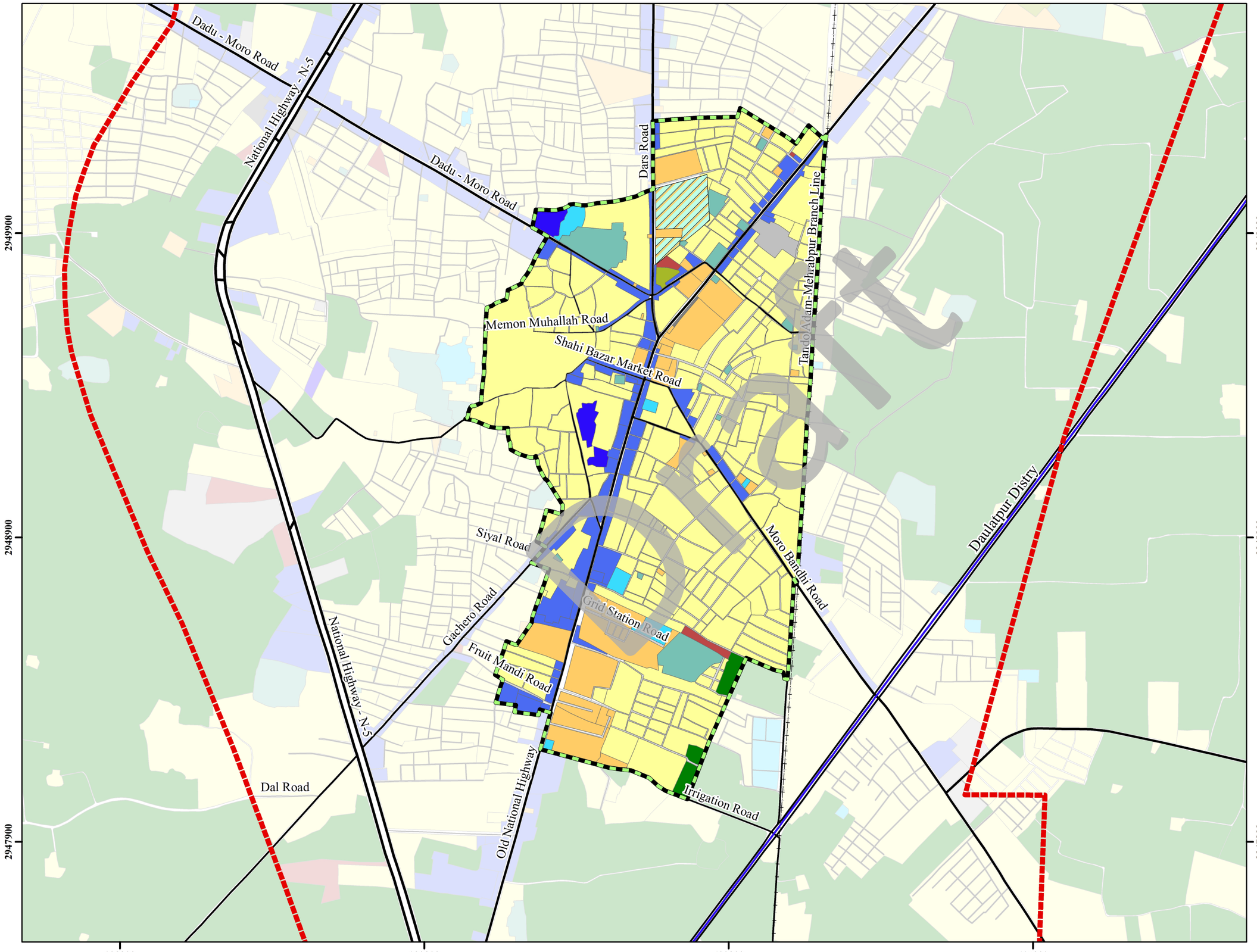


Figure 6-4: Upgradation of Heath Facilities of Core Urban Area Map

Upgradation of Health Facilities of Core Urban Area

DIRECTORATE OF URBAN, REGIONAL POLICY & STRATEGIC PLANNING
P & D DEPARTMENT GOVERNMENT OF SINDH



Legend

- THQ Moro
- Waterways
- National Highway - N-5
- Major Road
- Minor Road
- Street
- Railway Line
- Residential
- Commercial
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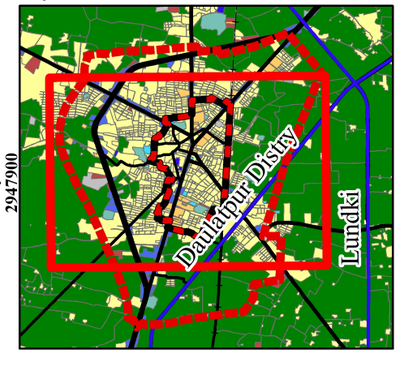


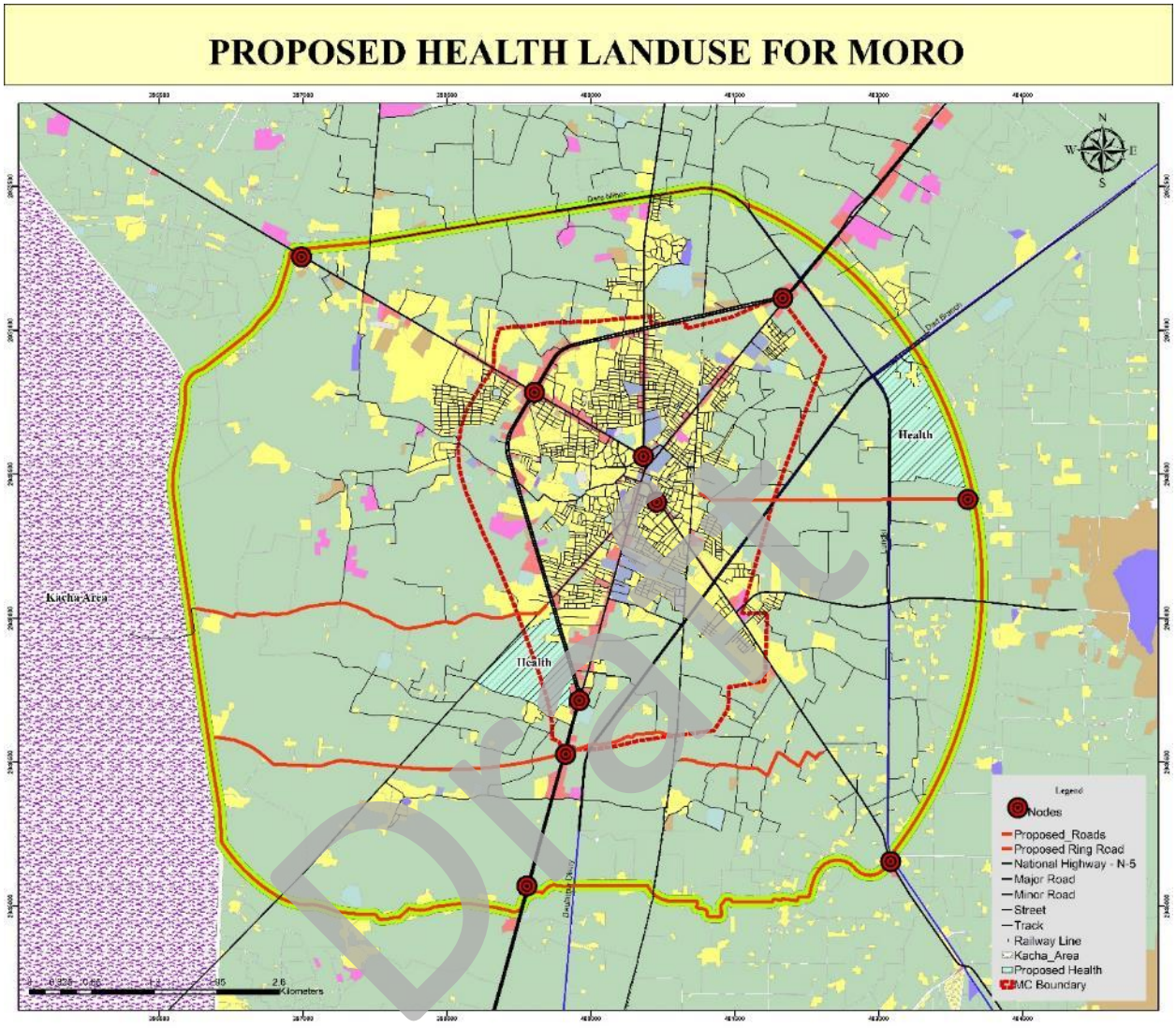
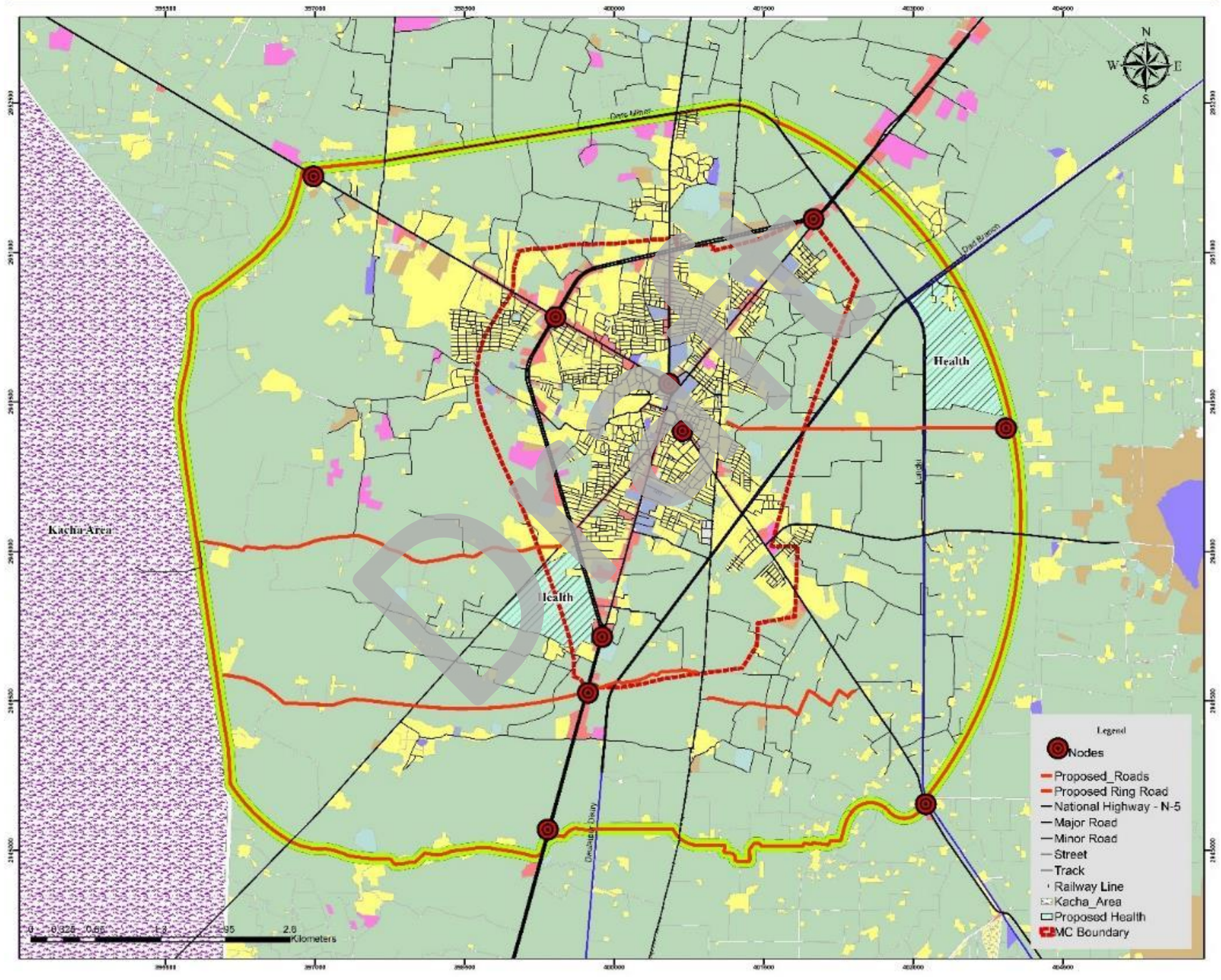


Figure 6-5: Proposed Health Land use for Moro

PROPOSED HEALTH LANDUSE FOR MORO



6.3 Recreational/Tourism

*6.3.1 **Existing Situation***

Currently Moro City has only two recreational places, one is stadium and the other is Shaheed Benazir Bhutto Park. Although, for the stadium only a site was allocated and might be developed in past but at present the situation is different, it is without the boundary wall. The other space Shaheed Benazir Bhutto Park at Moro is also not provided any recreational accessories and amenities except the grass.

1. Stadium
2. Shaheed Benazir Bhutto Park at Moro

In addition to the above mention two recreational areas, the third recreation and tourism space available, Water Park, which is located on Dadu-Moro Road. The water park is available outside the municipal limits and far from the city.

Stadium and Shaheed Benazir Bhutto Park need development and improvement like construction of walls around stadium, sitting area for visitors and audience etc. Similarly, the park needs park benches and seating, shaded structures, litter receptacles, parking area for vehicles, city monument for making big first impression, health and safety measures, play area etc.

*6.3.2 **SWOT Analysis***

Strength	Weakness	Opportunity	Threats
SPORTS AND RECREATION			
1. Currently Moro City has three recreational places, one is stadium, second is Shaheed Benazir Bhutto Park and the third is Blue Water Park 2. Local environment of city supports green urbanism	1. Shortage of Recreational Facilities 2. Shortage of water supply to maintain green spaces, green belts and plantation 3. Unavailability of sports infrastructure 4. None of the three existing recreational facility is properly maintained 5. Absence of rest houses or resting place for visitors	1. Blue Water Park is located outside the MC limits a bit far from city 2. Good health of local communities 3. Healthy environment, the local environment is free from air pollution[39] 4. Protection of natural habitat	1. Give birth to passive recreation 2. Impact on mental and physical health of people (Increased Cardio vascular diseases) 3. Increased rate of Obesity 4. Environmental pollution (Air pollution) 5. Crimes

[39] Sindh Water and Sanitation policy 2017

Strength	Weakness	Opportunity	Threats
CULTURE			
1. It is renowned for its rich heritage of traditional crafts like embroidery, block printing and pottery 2. The indigenous cultural activities of various social groups and minorities encompass many events that attract people from their surrounding localities 3. Strong potential for producing culturally ornamented products used in daily life	1. Poor Management for organizing cultural events. 2. Lack of infrastructure to accommodate visitors to such events 3. Lack of opportunities to commercialize / merchandize cultural goods	1. If organized appropriately could generate handsome amount of revenues with other spin-off effects 2. Provision of full security and rest house for the visitors can attract people towards the city	1. Security Threats. 2. Departure of cultural values and norms 3. Feeling of loneliness, which results adverse health consequences (depression, poor sleep quality, impaired immunity, poor cardiovascular function etc.)

*6.3.3 **Need assessment***

Moro requires more green and recreational spaces to meet the needs of its growing population. Existing parks and sports complexes are insufficient and poorly maintained. Priority should be given to developing new parks in underserved areas, upgrading existing facilities, ensuring access to women and children, and creating cultural spaces for events.

*6.3.4 **Policy Guidelines**[40]*

The planning and development of recreational and sports facilities in urban areas should align with the Sindh Sports Policy, which aims to promote physical fitness, enhance sports culture, and develop talent across the province.

Key policy directions include:

- **Infrastructure Development**: Establishment and upgradation of parks, playgrounds, gymnasiums, and multipurpose sports complexes to ensure equitable access for all communities.
- **Inclusivity**: Recreational and sports facilities must be accessible for women, children, marginalized groups, and persons with disabilities.
- **Youth Engagement & Talent Development**: Local-level training programs, sports clubs, and tournaments should be introduced to nurture talent and engage youth productively.
- **Cultural and Traditional Sports**: Preservation and promotion of traditional games alongside modern sports, fostering local identity and heritage.

[40] Solid Waste Management Policy for Sindh.
Sindh Water and Sanitation Policy 2017

- **Collaboration & Partnerships**: Public–private partnerships (PPPs) and cooperation with educational institutions and civil society should be encouraged to strengthen recreational services.
- **Sustainability**: Recreational spaces should be designed with environmental considerations, including provision of green belts, plantation, and use of renewable energy in facilities.

By adopting these guidelines, master plans for cities across Sindh can ensure that recreation and sports become an integral part of urban development, contributing to healthier lifestyles, community well-being, and social cohesion.

6.3.5 Strategic Development Plan

The Strategic Development Plan for recreation, and tourism in Moro aims to create regionally competitive recreational infrastructure, and promote local identity through art, language, and cuisine.

Long-Term Strategies

- Promote sustainability by installing solar panels in parks and recreational complexes, along with solar-powered pumps and fountains.
- Encourage sustainable architecture in new tourism and recreational facilities.
- Build supporting tourism infrastructure such as restaurants, marketplaces, and visitor amenities.
- Establish a multi-functional sports and wellness complex for gyms, training, and regional tournaments.
- Host regional cricket, soccer, and athletics tournaments to strengthen Moro's sports profile.

Short-Term Strategies

- Develop new community parks in underserved areas and upgrade existing parks with better walking paths, lighting, and seating.
- Provide multi-purpose sports fields and playgrounds to enhance youth engagement.
- Ensure regular maintenance of parks and recreational facilities, including eco-friendly water and sanitation management.

*6.3.6 **Priority Projects***

- **Construction/ Rehabilitation of Recreational Facilities**

Stadium in detreated condition

Benazir Children Park Moro

Moro City faces a significant shortage of recreational spaces, with only one small park and one ditorirated Sports ground currently available. To improve urban livability and provide leisure opportunities, a city park featuring greenery is proposed on southern part of city at Main National Highway N-5. This project is envisioned as a multi-porpose recreational hub that enhances quality of life, supports community well-being, and boosts the city's urban appeal.

- **Scope**

- **Site Planning and Land Development**
  - Identification and confirmation of a suitable site on the southern side of Moro City along National Highway N-5
  - Detailed site planning, land leveling, and zoning for recreational, sports, and green areas
  - Provision for future expansion and phased development
- **Construction and Rehabilitation Works**
  - Rehabilitation of the existing deteriorated sports ground
  - Construction of a city-level public park with landscaped green spaces
  - Development of multipurpose open areas for community gatherings and events
- **Recreational and Sports Facilities**
  - Development of walking and jogging tracks
  - Provision of sports facilities such as playgrounds, open courts, and exercise zones
  - Installation of outdoor fitness equipment for different age groups

- **Green Infrastructure and Landscaping**
  - Plantation of trees, shrubs, and lawns to enhance urban greenery and microclimate
  - Development of shaded seating areas and resting zones
  - Incorporation of environmentally friendly and low-maintenance landscaping solutions
- **Public Amenities and Accessibility**
  - Provision of benches, drinking water points, toilets, and waste bins
  - Development of barriet-free access, including ramps and accessible pathways for persons with disabilities
  - Installation of adequate lighting for safety and extended usability
- **Safety, Security, and Management Measures**
  - Installation of boundary fencing where required
  - Provision of security arrangements and signage
  - Development of basic management and maintenance facilities
- **Environmental and Social Measures**
  - Promotion of inclusive and gender-sensitive recreational spaces
  - Integration of public health awareness and community outreach activities
  - Measures to ensure cleanliness, safety, and long-term sustainability of facilities
- **Community Engagement and Sustainability**
  - Engagement with local communities and stakeholders during planning and design
  - Development of an operation and maintenance framwork to ensure long-term functionality
  - Integration of the recreational facilities into Moro City's long-term urban development strategy

➢ **Size**

- City-scale recreational facility expected to benefit the majority of residents in Moro.
- Water lagoon as the central attraction, designed to be environmentally safe and linked to long-term drainage management.
- Provision of multiple recreational zones including green spaces, play areas, pathways, seating areas, and small business outlets.
- Designed to accommodate both daily visitors and tourism-based recreational activities, supporting local economic growth.
- Implementation will begin after completion of stormwater drainage works, ensuring climate resilience and public safety.

➢ **SDG's Alignment**

I. GOAL 3 – Good Health and well-being Goal

Access to recreational facilities directly contributes to improved physical and mental health. Parks and open spaces encourage physical activity, reduce stress, and promote social well-being. These facilities are preventive health infrastructure, supporting SDG 3.4, which targets reducing non-communicable diseases and promoting mental health.

II. **GOAL NO.11: Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable**
Recreational spaces are a core component of inclusive and sustainable urban planning. They enhance urban resilience, promote community cohesion, and improve the overall quality of urban life. This supports SDG 11.7, which aims to provide universal access to safe, inclusive, and accessible green and public spaces, particularly for women, children, older persons, and persons with disabilities.

- **Implementing Authority**

  Sindh Government, Local Government and private investors

- **Preliminary Cost Estimate**

  Estimate Cost: **750 Million Approx.**

- **Beautification of Canals at Moro**

The canals in Moro, though vital for irrigation, have suffered from neglect, resulting in environmental degradation and poor aesthetics. Beautifying these canals will enhance the urban landscape, improve water quality, and promote environmental sustainability.

- **Scope**
  - Canal Corridor Beautification: Landscaping, tree plantation, pedestrian walkways, and seating areas along canal edges.
  - Pollution Reduction Measures: Installation of waste collection points, removal of solid waste, and improvement of drainage connections to prevent direct sewage discharge.
  - Environmental Conservation: Strengthening embankments, protecting aquatic ecology, and maintaining water flow quality in coordination with irrigation authorities.
  - Public Use Enhancements: Creation of safe recreational stretches for walking, cycling, and social activities where feasible.
  - Lighting & Safety Features: Pathway lighting, railing installation, and community surveillance to ensure security along canal routes.

- **Size**
  - Dualatpur distributary, Dars Minor and Dad Branch Urban canal Sections prioritized for beautification based on population density and condition assessments.
  - The proposed intervention will directly benefit several densely populated communities.
- **SDG's Alignment**

I. **GOAL 3 – Good Health and well-Bieng:** Improving the aesthetic quality and cleanliness of the canals will create healthier public spaces, reducing environmental pollution and encouraging outdoor activities. This supports SDG3.9, which aims to reduce the number of deaths and illnesses form pollution, and enhances the overall well-being of the community.

II. **GOAL 11 – Make cities and human settlements inclusive, safe, resilient and sustainable:** The transformation of the canals into aesthetically pleasing and functional spaces will enhance urban resilience, foster community engagement, and create a more sustainable living environment for Moro's residents.

- **Implementing Authority**

Irrigation Department, MC Moro, District Government

- **Preliminary Cost Estimate**

Estimated Cost: 200 million PKR Approx.

S. No.	Project Name	Estimated Cost in Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Recreational Areas						
1.	Rehabilitation and construction of Stadium	200	-	Non ADP	**Short Term**	-
2.	Feasibility study for New Recreational places	50	-	Non ADP	**Short Term**	-
3.	Procurement for land acquisition process for Recreational Facilities	500	-	Non ADP	-	**Long Term**
4.	Beautification of Canals (landscaping, walkways, seating, lighting)	200	-	Non ADP	**Short Term**	-

6.3.7 Immediate Action Plan for Core Urban Area

- **Improvement of Open Spaces and Parks**

The existing open spaces, such as Shaheed Benazir Bhutto Park in the core urban area of Main Moro, will be restored and maintained. Additionally, new open spaces will be identified and developed within the core urban area of Moro Municipal Committee (MC). The aim is to create environmentally friendly green spaces by using native plants and drought-resistant landscaping, which require less water and maintenance, thereby promoting sustainability and enhancing the urban environment.

Shaheed Benazir Bhutto Park

- **Scope**

The improvement of open spaces and parks will involve the following key actions:

- **Shade Structures:** Install shade structures, such as arches or shade sails, to provide protection from the sun and make outdoor spaces more comfortable for visitors. This will encourage greater use of parks during hot weather.
- **Seating Options:** Provide a variety of seating options, including picnic tables, and shaded areas for relaxation and socializing. This will make parks more inviting and user-friendly for families and individuals alike.
- **Aesthetic Enhancements:** Incorporate decorative elements like fountains or small streams to enhance the aesthetic appeal and create a calming environment. These features will also serve as focal points within the park.
- **Accessibility:** Ensure that pathways and trails are well-maintained and wheelchair-accessible, with ramps and smooth surfaces to facilitate ease of movement for all visitors, including those with disabilities.
- **Energy-Efficient Lighting:** Upgrade to energy-efficient LED lighting throughout the parks to enhance safety and visibility during evening hours, while also reducing energy costs and contributing to environmental sustainability.
- **Stormwater Management:** Incorporate rain gardens, permeable pavements, and bioswales to effectively manage stormwater and reduce runoff. These features will help prevent flooding and promote groundwater recharge.

- **Cultural and Visual Interest:** Incorporate sculptures or other art installations to add cultural value and visual interest to the parks. These installations will reflect the local heritage and community identity

Model of Park

Model of Playground

➢ **Size:**

The scope of work for the preservation and improvement of recreational facilities includes:

Recreational Facilities Preservation				
S. No	**Recreational Preservation Site Name**	**Area / Locality /Address (acre)**	**Area (sft)**	**Rehabilitation Required Area wise or job wise cost (PKR)**
				Cost
1	Shaheed Benazir Bhutto Park	**0.81**	35,283	150
Total PKR Rs. Million				**150**

Note:

The rehabilitation activities will cover:

- Street / Road / Parking Improvements: Rehabilitation of lanes, streets, and connection to minor and major roads to improve accessibility to the parks.
- Utility Infrastructure: Rehabilitation of basic services including water supply, electricity, and gas supply to ensure the parks are fully functional and accessible.
- Public Facilities: Rehabilitation and provisioning of public toilets, proper seating arrangements, and other amenities to enhance visitor experience.
- Security Enhancements: Implementing security measures in line with local law and order requirements to create a safe and secure environment for park visitors

➢ **Preliminary cost estimate: 150 million Approx.**

➢ **Implementation Framework**

- **Funding:** To be mobilized through ADP allocations, municipal budgets, and possible PPP/CSR contributions.

- **Execution:** Rehabilitation will be phased, starting with Shaheed Benazir Bhutto Park as pilot projects.
- **Monitoring:** KPIs will include area rehabilitated (acres), number of parks made functional, user satisfaction, and reduction in encroachment/misuse.

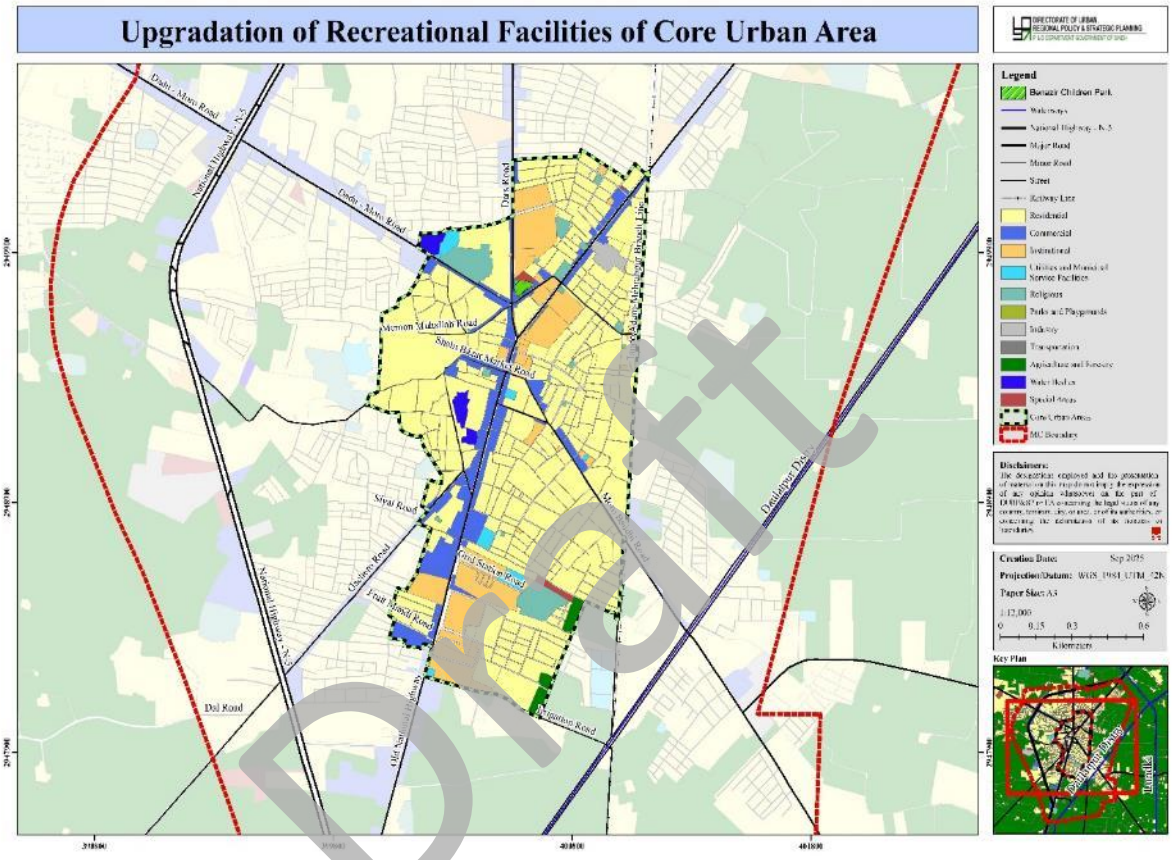


Figure 6-6: Upgradation of Recreational Facilities of Core Urban Area Map

Upgradation of Recreational Facilities of Core Urban Area

DIRECTORATE OF URBAN, REGIONAL POLICY & STRATEGIC PLANNING
P & D DEPARTMENT GOVERNMENT OF SINDH

Dadu - Moro Road
National Highway - N-5
Dadu - Moro Road
Dars Road
Tando Adam-Mehrabpur Branch Line
Memon Muhallah Road
Shahi Bazar Market Road
Siyal Road
Moro Bandhi Road
Daulatpur Distry
Grid Station Road
Gachero Road
Fruit Mandi Road
National Highway - N-5
Old National Highway
Irrigation Road
Dal Road

2949900
2948900
2947900
398800
399800
400800
401800

Legend

- Benazir Children Park
- Waterways
- National Highway - N-5
- Major Road
- Minor Road
- Street
- Railway Line
- Residential
- Commercial
- Institutional
- Utilities and Municipal Service Facilities
- Religious
- Parks and Playgrounds
- Industry
- Transportation
- Agriculture and Forestry
- Water Bodies
- Special Areas
- Core Urban Areas
- MC Boundary

Disclaimers:
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of DURP&SP or EA concerning the legal status of any country, territory, city, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Creation Date: Sep 2025
Projection/Datum: WGS_1984_UTM_42N
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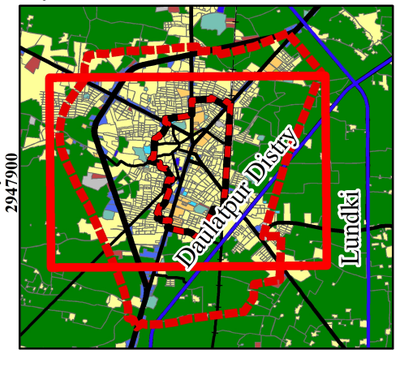
Kilometers

Key Plan



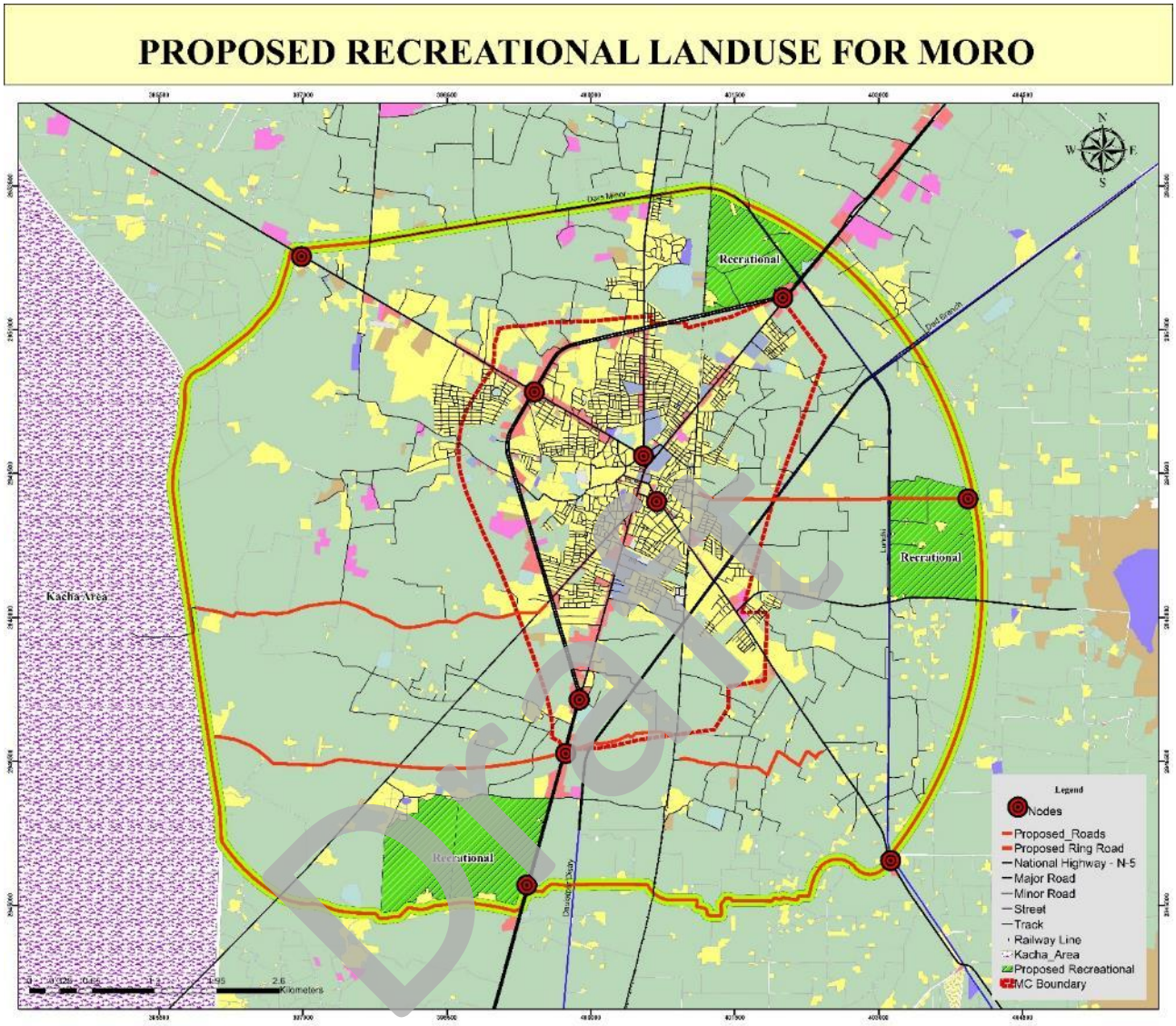
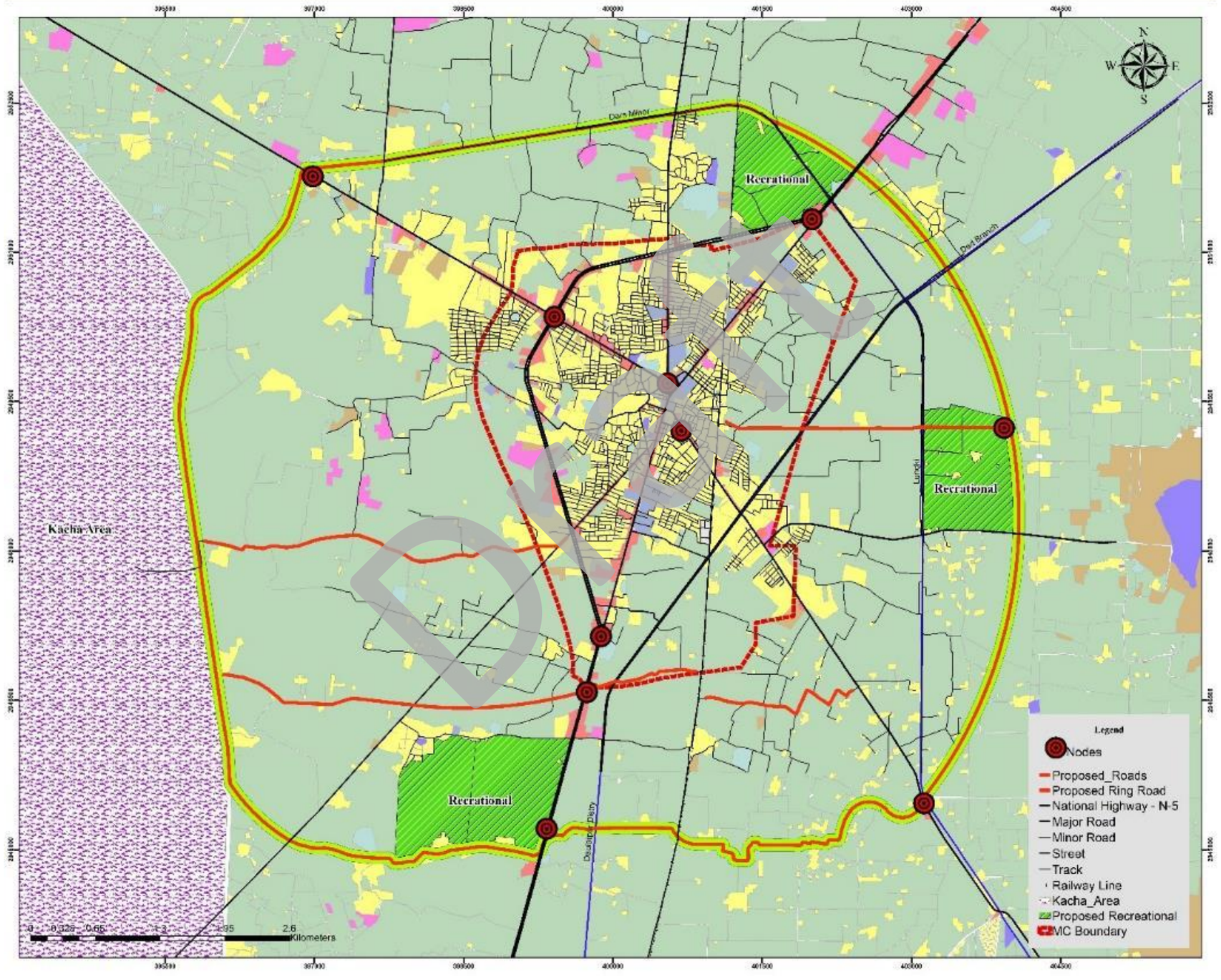


Figure 6-7: Proposed Recreational Land use for Moro City

PROPOSED RECREATIONAL LANDUSE FOR MORO



7. BASIC UTILITIES

7.1 Water Supply

*7.1.1 **Existing Situation***

As per 2023 Census the population of Moro MC was 142,685 persons, it is also learned during the field visit to the city that since then time till now, at present in 2025 the estimated population is 163,207 persons and the people deliberately have to depend on groundwater to meet their daily demand of water. The water is extracted through tube wells and hand pumps, installed within the dwelling units as well as outside the houses or stand posts, which are established at appropriate locations accessible to the city dwellers. At present no water supply scheme or network is existing in Moro MC to meet the daily most vital need of the citizens.

Currently, Moro City has no water supply network and the majority of the people use groundwater to meet their daily demand of water for drinking and domestic purposes. During the sample socioeconomic survey, it was found that majority of the population use hand pumps to meet the water demand, i.e. 88%. Out of this 88% population, 11% are using hand pumps installed outside the house or community stand posts. It was found 3% of the households are supplied water through pipe in the form of a community connection outside the house and a very little population (6%) of the households does not have pumps, they fulfill their water demand from other sources.

*7.1.2 **Issues***

- The available ground water is not good quality; it is not fit for drinking purposes due to bacterial contamination and for other uses as well
- There is no water supply infrastructure available for water supply purposes. It is necessary to lay down the water supply network in the city
- The surface water is available in the form of Daulatpur Distributary which is passing in the South-East of the city perpendicular to Moro-Bandhi Road, which needs supply and distribution network
- O&M costs are not determined for new investments, and, are not reconciled with the ability of the MC to meet those costs
- No consideration appears to have been given to the adverse impact on budgetary and O&M resources or tariffs of the MC due to these new schemes

*7.1.3 **SWOT Analysis***

WATER SUPPLY & DISTRIBUTION			
Strength	**Weakness**	**Opportunity**	**Threats**
1. The ground water is extracted through tube wells and hand pumps, inside and outside the dwelling units at appropriate locations. 2. 88% of the population is using hand pumps to meet their water demand	1. Dependency on ground water, at present no piped water supply scheme or network is available 2. The water is unfit for drinking purposes due to bacterial contamination 3. Lack of administrative setup for water supply system 4. Health issues like Diarrhea, gastrointestinal problems, and typhoid fever are prevalent, pointing to the severe impact of water quality on public health	1. Rohri canal is passing through the center of district. 2. Water does not contain heavy metals like Cadmium, Lead, Aluminum and Manganese. 3. The surface water is available in the form of Daulatpur Distributary in South-East of Moro City. 4. PPP in service delivery	1. Negative externalities on human health 2. Excessive groundwater extraction can cause land subsidence 3. Damage to infrastructure, buildings and roads

7.1.4 Need Assessment

It is expected that the town of Moro will have a population of about 625,685 persons by 2045 and the daily demand of the town will be about (18.77 mgd) for a whole-day supply.
Estimated water demand for the period till 2045 is shown below:

Table 7-1: Population, Current Water Supply & Demand Projected up to Year 2045

Description	Years				
	2025	2030	2035	2040	2045
Population	163,207	228,373	319,557	447,148	625,685
Per Capita daily demand @30 gped)	4.89 mgd	6.85 mgd	9.58 mgd	13.41 mgd	18.77 mgd

Source: Consultant Estimation

The need assessment indicates that meeting the future water supply requirements of Moro City cannot depend on existing limited and fragmented sources alone; rather, it must be addressed through a planned and phased approach aligned with rapid population growth and rising demand. With the population projected to increase from approximately 163,207 in 2025 to about 625,685 by 2045, daily water demand is expected to rise substantially from around 4.89 mgd to nearly 18.77 mgd. This escalating demand highlights the inadequacy of current supply arrangements to sustain a whole-day water supply in the long term.

Accordingly, a dual-track strategy is required to development of a comprehensive, citywide water supply system designed to progressively meet projected demand up to 2045, particularly in rapidly expanding and underserved areas. This approach should prioritize demand-based planning, equitable service coverage, and phased capacity expansion to match population growth. In parallel, measures such as water quality monitoring, efficient operation and maintenance, and institutional strengthening will be essential to ensure reliability, sustainability, and long-term water security for Moro's growing population.

7.1.5 Sindh Drinking Water Policy 2017[41]

Principles:

- Population should be using an improved drinking water source which is accessible i.e. located on premises, available when needed and safe that is free of faecal and priority chemical contamination.
- Access to safely managed drinking water is a fundamental right of every citizen and that it is the responsibility of the Government to ensure its provision to all citizens.
- Water allocation for drinking purposes shall be given priority over other uses.

[41] https://words.pk/moro

- In order to ensure equitable access, special attention shall be given to removing the existing disparities in coverage of safe drinking and for addressing the needs of the poor and the vulnerable.
- A supportive policy framework shall be developed that encourages alternate options through private provision, public-private partnerships, the role of NGOs and community organizations.
- Low-cost technologies in water and sanitation, that are easy and cost-effective to maintain shall be developed and used.

Objectives:

- Develop criteria for installation of new drinking water supply schemes and ensure that all new schemes are safely managed, rationalized and constructed through need-based criteria so that all areas and communities are served.
- Develop standardized service delivery models for both urban and rural drinking water supply schemes to improve efficiency, cost-effectiveness, improve monitoring and sustainability.
- Develop mechanisms for reuse, recycle and recharge of wastewater for other municipal and productive uses.
- Ensure that all drinking water supply systems are designed and constructed in line with the national drinking water quality standards and all municipal discharges comply with National Environment Quality Standards (NEQS).
- Install water treatment plants at existing drinking water supply schemes where required and incorporate water treatment facilities in all new drinking water supply schemes.
- Ensure development of water safety plans for all drinking water supply systems.
- Institute adaptation measures and disaster risk reduction and mitigation strategies to minimize the impact of climatic events on drinking water supply systems.

7.1.6 Strategic Development Plan

i. Long Term Plan

- Construction of water supply network of Whole city
- Municipality will adopt a demand led approach in providing access to safe water and sanitation to ensure that scarce resources are properly utilized and ownership and sustainability of schemes is ensured over the long-term.
- Frame a broad policy framework at the provincial level which encourages and supports city, district to design and implement policy which is in-keeping with the existing capacities and strengths of institutions.

ii. Short Term Plan

- The design and layout of water supply pipes, storage tanks should ensure that there is no contamination by overflowing sewerage systems, for example by maintaining a minimum distance between the two systems.
- Construction of water treatment plant for Town

- Feasibility Study for new water sources for town

7.1.7 Priority Projects

➢ **Construction of Water Supply System**

Currently, Moro City lacks a centralized water supply system, primarily due to the abundant availability of marginally fresh groundwater accessed through hand pumps and tube wells. Most of the households rely on this groundwater and consider it sufficient to meet their daily needs for drinking and domestic use.

However, chemical analyses of the groundwater have revealed that it is unfit for drinking due to bacterial contamination, which has contributed to a rise in health-related issues across the city. The surface water is available in Daulatpur Distributary, which brings water from Rohri Canal, passing in the South-East of city perpendicular to Moro-Bandhi Road.

➢ **Scope**

- **Water source Assessment and Planning**
  - Assessment of available surface water from Daulatpur Distributary (Rohri Canal System) for municipal water supply
  - Evaluation of water quantity, seasonal variation, and quality requirements
  - Identification of intake location and conveyance alignment to Moro City
- **Water Treatment Facilities**
  - Planning and design of a surface water treatment plant to ensure water meets drinking water standards
  - Provision of treatment units including screening, sedimentation, filtration, and disinfection
  - Incorporation of water quality monitoring and laboratory testing facilities
- **Transmission and Distribution System**
  - Design and development of raw water transmission mains from the distributary to the treatment plant
  - Construction of treated water transmission and distribution networks to cover the entire city
  - Provision of household connections and public standposts where required
- **Storage and Pressure Management**
  - Construction of overhead and ground-level reservoirs to ensure adequate storage and pressure
  - Zoning of the distribution network to maintain equitable water supply
- **Institutional and Operational Framework**
  - Assessment of operation and maintenance requirements, including staffing and capacity building
  - Development of management and tariff mechanisms for sustainable service delivery
  - Integration with existing municipal water management systems

- **Environmental and Social Safeguards**
  - Assessment of environmental impacts related to abstraction, treatment, and distribution
  - Implementation of measures to protect source water and minimize ecological impacts
  - Community awareness programs on safe water use and conservation
- **Public Health and Safety Measures**
  - Establishment of water quality surveillance and compliance with national drinking water standards
  - Promotion of hygiene and safe water handling practices among residents
- **Phasing and Future Expansion**
  - Development of phased implementation plan based on population growth and demand
  - Provision for future expansion of treatment and distribution infrastructure to meet long-term needs

➢ **Size**

- Development of a city-wide surface water supply system to serve the entire population of Moro City.
- Abstraction of raw water from the Dualatpur Distributary (Rohri Canal System) located to the south-east of the city.
- Construction of one surface water treatment plant designed to meet current and projected drinking and domestic water demand.
- Installation of raw transmission mains from the distributary to the treatment facility.
- Development of a treated water distribution network covering all residential, commercial, and institutional areas of Moro City.
- Construction of ground-level and overhead storage reservoirs to ensure adequate supply, pressure, and service continuity.
- Provision of household connections and public standposts, ensuring equitable access to safe drinking water.
- The project is sized to replace dependence on contaminated groundwater and provide a sustainable, long-term potable water solution with capacity for future population growth.

➢ **SDG's Alignment**

I. Goal No.3 – Good Health and well-being Goal

Improved access to safe water significantly reduces the prevalence of water-borne diseases, including diarrhea, cholera, and typhoid. This contributes to SDG 3.3 and 3.9, which aim to reduce illnesses caused by hazardous water and inadequate sanitation.

II. Goal No.6: Clean Water and Sanitation

This is the most directly aligned goal. The project supports SDG 6.1 and 6.4, which target universal and equitable access to safe and affordable drinking water, and improving water-use efficiency across sectors. By strengthening intake and supply infrastructure, the project directly addresses water scarcity and quality.

- **Project list & Locations**
  - Construction of Water Supply system
  - Feasibility study of water supply system
- **Implementing Authority**

  Government of Sindh, PHE Department and Moro MC
- **Preliminary Cost Estimate**

Estimate Cost: **1,600 Million Approx.**

S. No.	Project Name	Estimated Cost in Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Water Supply System						
1.	Feasibility study for water supply system	100	-	Non ADP	**Short Term**	-
2.	Construction of water supply system	1,500	-	Non ADP	**Short Term**	-

- **Installation of Water Filtration Plant**

Moro City currently lacks a water filtration plant, and residents rely on untreated groundwater, which often contains microbial and chemical contaminants beyond safe limits. With the growing population and increasing health risks associated with poor water quality, the establishment of dedicated water filtration plant has become essential. The proposed plant will provide a reliable system for treating surface water, ensuring safe and clean drinking water for the entire city. The project will include modern filtration technology, proper chemical dosing, instrumentation for quality control, and provisions for future expansion based on demand.

- **Scope**
  - **Source Water Assessment and Planning**
    - Identification and assessment of suitable surface water source for filtration
    - Evaluation of raw water quality, quantity, and seasonal variations
    - Determination of treatment standards in line with national drinking water guidelines

- **Design and Construction of Filtration Plant**
  - Planning, design, and construction of dedicated water filtration plant for Moro City
  - Installation of modern treatment units including coagulation, sedimentation, filtration, and disinfection
  - Incorporation of chemical dosing systems for effective water treatment
- **Mechanical, Electrical, and instrumentation Works**
  - Installation of pumps, motors, valves, and piping systems
  - Provision of electrical power supply, backup generators, and control panels
  - Installation of instrumentation and automation systems for water quality monitoring and process control
- **Water Quality and Monitoring and Control**
  - Establishment of laboratory and testing facilities within the plant
  - Continuous monitoring of microbial and chemical parameters to ensure compliance with drinking water standards
  - Implementation of safety and emergency response mechanisms
- **Transmission and integration with Distribution System**
  - Connection of the filtration plant with proposed water supply and distribution networks
  - Provision of treated water outlets and flow control arrangements
- **Operational and Institutional Framework**
  - Assessment of staffing requirements and operational procedures
  - Training and capacity building of plant operators and technical staff
  - Development of operation and maintenance (O&M) plans
- **Environmental and Safety Measures**
  - Implementation of environmental management measures for sludge disposal and chemical handling
  - Provision of occupational health and safety measures for plant staff
  - Compliance with environmental regulations and standards
- **Provision for Future Expansion**
  - Design of plant layout with modular components to allow capacity enhancement
  - Assessment of future water demand and scalability requirements
  - Integration of sustainability and energy-efficient technologies

➢ **Size**

- Establishment of a city-level water filtration plant designed to serve the entire population of Moro City.
- Development of one centralized filtration facility with modern treatment units capable of meeting current and projected drinking water demand.
- Installation of complete filtration systems, including coagulation, sedimentation, rapid/slow sand filtration and disinfection units.
- Provision of chemical dosing, instrumentation, and automated control systems for continuous water quality monitoring

- Integration of the filtration plant with the existing/proposed water supply and distribution network of the city.
- Construction of ancillary infrastructure, including pumping systems, electrical works, backup power supply, and laboratory facilities.

- Design of the plant with modular and scalable capacity, allowing future expansion in line with population growth.
- The project will significantly reduce reliance on groundwater and provide a sustainable, long-term solution for safe drinking water in Moro City.

➢ **SDG's Alignment**

I. **Goal No.3 – Good Health and well-being Goal**

Safe drinking water is fundamental to preventing communicable diseases. The project directly addresses SDG 3.3 (ending epidemics of waterborne disease) and SDG 3.9 (reducing illnesses caused by hazardous water), contributing to better health outcomes and reducing the burden on healthcare facilities.

II. Goal No.6: Clean Water and Sanitation

To ensure universal and equitable access to safe and affordable drinking water for all, improve water quality by reducing pollution, eliminate dumping and minimize release of hazardous chemicals, substantially increase water-use efficiency across all sectors, and ensure sustainable withdrawals and supply of fresh water.

➢ **Implementing Authority**

Government of Sindh, PHE Department and Moro MC

➢ **Preliminary Cost Estimate**

Estimate Cost: **700 Million Approx.**

S. No.	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Water Filtration Plant						
1.	Procurement for additional land for water works	300	-	Non ADP	**Short Term**	-
2.	Installation of Water Filtration Plant	400	-	Non ADP	**Short Term**	-

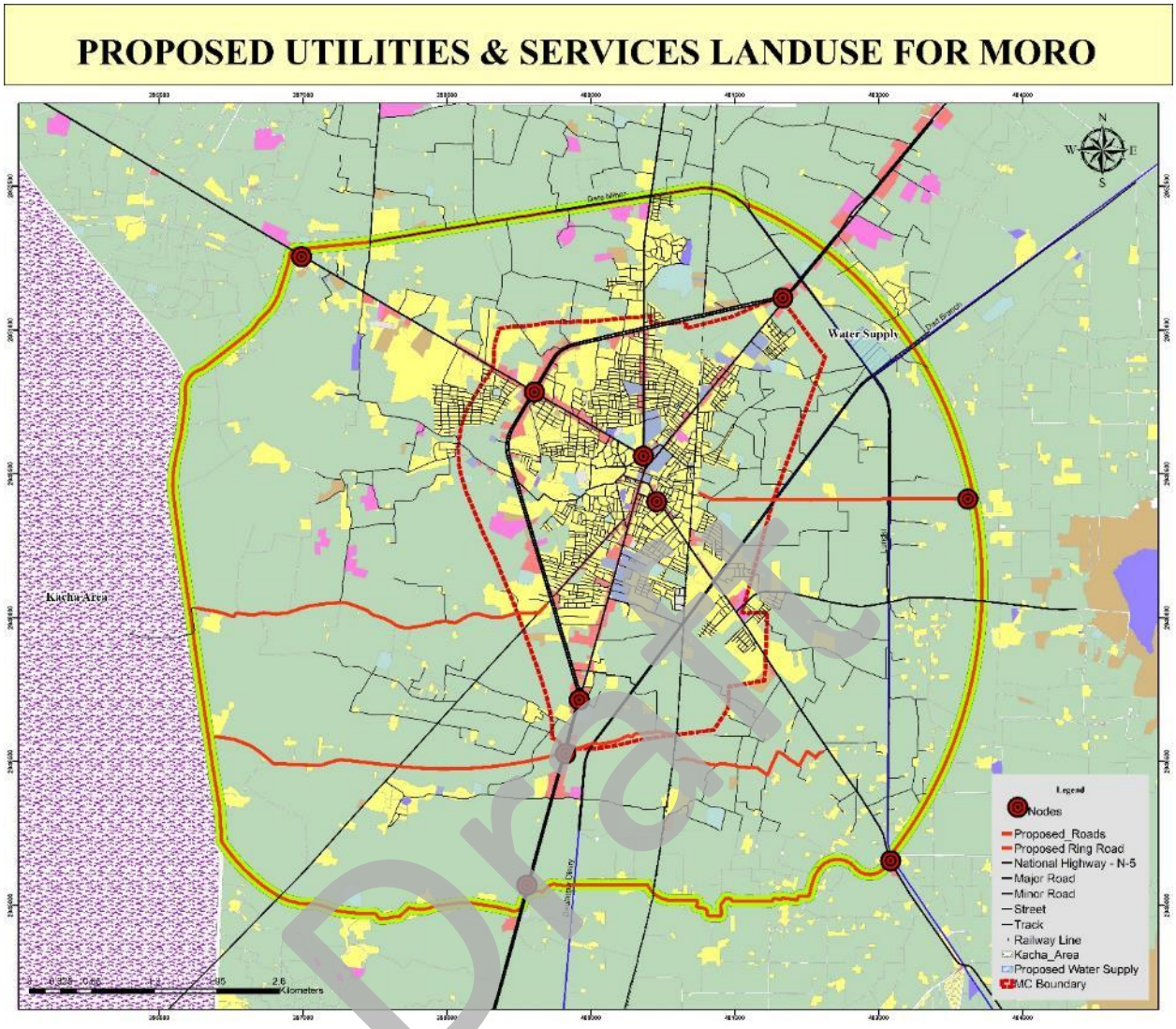
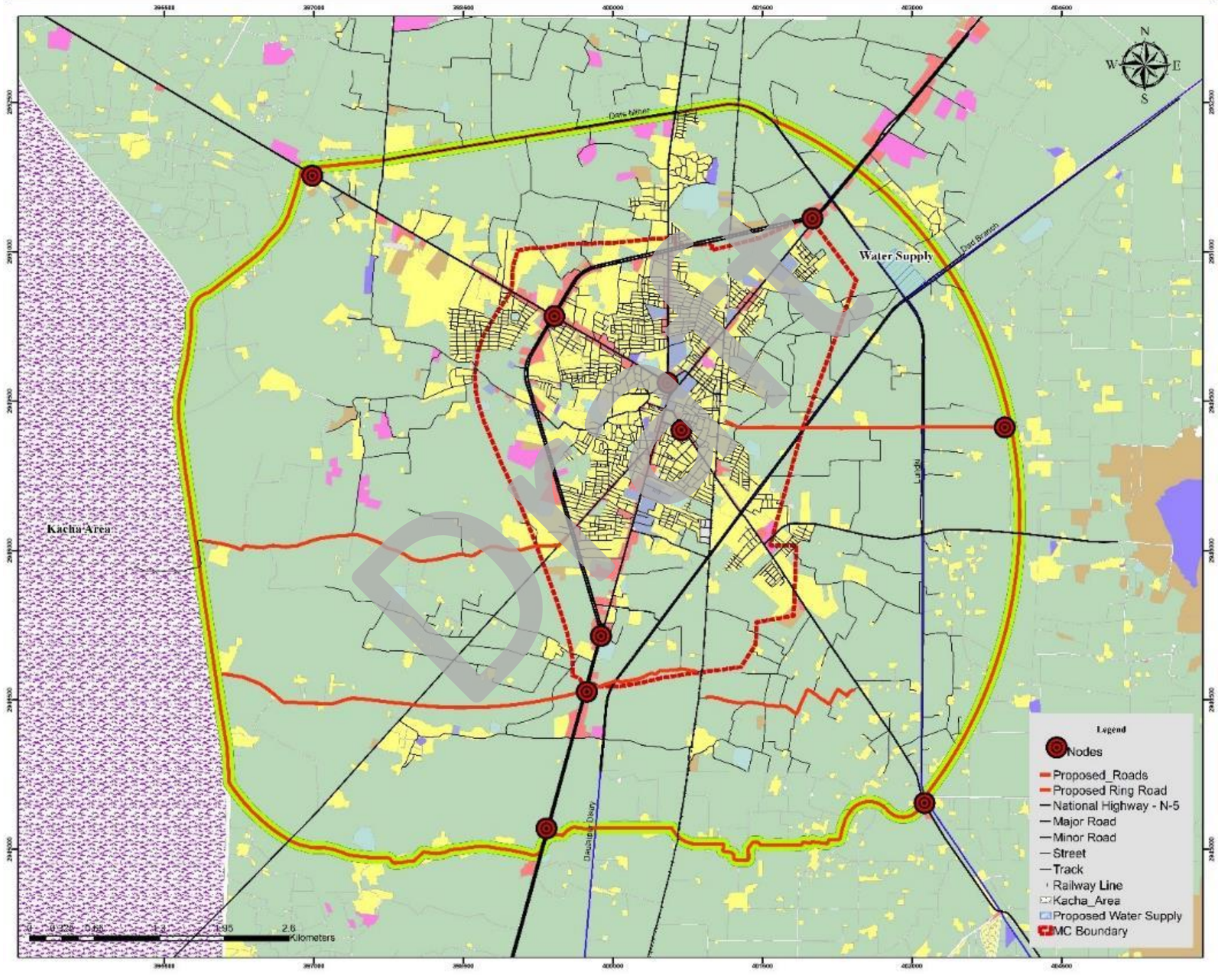


Figure 7-1: Proposed Water Supply for Moro City

PROPOSED UTILITIES & SERVICES LANDUSE FOR MORO



7.1.8 Immediate Action Plan for Core Urban Area

- At present no centralized water supply scheme exists for the Moro, reason being availability in abundance of marginally fresh ground water through hand pumps and tube wells. The main source of water is under ground water via hand-pumps and tube wells; the water quality is reasonable. Between 95 - 100% of households use hand-pumps as a source of water.
- The present water demand is 4.90 Mgd. On the basis of NRM (National Reference Manual), the daily water consumption to be over 30 gallons per capita per day or 136 liters / capita / day.
- It is expected that Moro City will have a population of about 625,685 persons by 2045 and the daily demand of the town will be about (18.77 Mgd) for a whole-day supply.
- Therefore, for the short-term plan, it is proposed to conduct alternate water supply study to meet the long-range water needs.

7.2 Sewerage and Drainage

*7.2.1 **Existing Situation***

At present Moro City is provided underground and open drainage system, it was told by the officials of Public Health Engineering Sub-Division Office that 25% area of the city is provided with sewerage system laid out on one side of the road whereas, 75% of the city is provided with open drainage system lying in the median of the road, and it serves for both storm water or surface water, and it also gets domestic sewage of the households residing in the city.

The urban drainage system of Moro City was developed in two planned phases a decade apart, allowing for gradual improvement in managing wastewater. Phase I (1990–2001) established the initial sewage network, while Phase II (2011–2016) expanded its reach to meet the needs of a growing population. Both phases built on earlier progress, and future efforts must now focus on upgrading aging infrastructure and increasing capacity to keep up with urban expansion and environmental requirements.

According to Socio-economic survey 56% of respondents gave their opinion that health issues arises due to lack of sanitation facilities or improper collection and disposal system of waste water in the city health is contributing in increasing health problems, the remaining 44% were of the negative point of view.

Amongst 56% of respondents who reported health issues, 54% itemized experiencing diarrhea, 33% parasitic infections like intestinal worms. Thus, it advocates that a total of 87% patients suffers from diarrhea and parasitic infections.

- **Wastewater Management**

The wastewater management system in Moro is structured around the four standard stages: collection, conveyance, treatment, and disposal.

In the collection stage, wastewater from households is discharged into open drains (labeled A, B, and C), which also carry stormwater and domestic sewage. These drains feed into underground trunk sewers (15 to 36 inches in diameter). The lack of septic systems and frequent solid waste dumping cause environmental and health issues, as well as infrastructure damage due to leaks and overflows.

Conveyance of wastewater relies mainly on gravity, using open drains and trunk sewers. However, the system is under severe stress due to the improper disposal of solid waste, which clogs the network and reduces its efficiency, requiring urgent attention.

In terms of treatment, Moro has two oxidation ponds—one within city limits in Sindh Colony Ward No. 8, and another outside the municipal boundary along Dadu-Moro Road. The location of these ponds near agricultural areas poses challenges for environmental safety.

Disposal is managed through four pumping stations, of which three Seehar Disposal, Bandhi Road Disposal, and Main Disposal are operational, while one remains non-functional. Treated wastewater is discharged by gravity at Daulatpur and Dadwah disposal points. Despite having treatment infrastructure, the system still faces issues due to solid waste, aging components, and agricultural encroachment around treatment areas.

The name and location of the three disposal are given in the following matrix.

I. Zone-A Main Disposal Works (Old Piri grid station)
II. Zone B Seehar Disposal Works (Sehar village)
III. Zone C Bandhi Disposal Works (Bandhi Road)

Given the extensive reliance on open drains and aging sewage infrastructure, frequent blockages caused by solid waste, deteriorated pumping stations, and limited coverage of covered or underground drainage, the sewerage and drainage strategy must prioritize: I. rehabilitation and modernization of pumping stations and pipelines to enhance operational efficiency; II. expansion and upgrading of drainage networks to reduce reliance on open drains and improve waste conveyance capacity; III. implementation of effective solid waste management practices to prevent system blockages and pollution; and IV. community awareness and engagement programs to reduce health risks and support sustainable maintenance of the system. V. Development centralized Stormwater drain.

*7.2.2 **Issues:***

- Dilapidated infrastructure: Large portions of the city rely on outdated, open, and smelly drains, with only 25% covered by underground systems.
- Untreated sewage discharge: Lack of treatment facilities leads to direct discharge into ponds, canals, and agricultural land.
- Poor operation and maintenance: Inadequate budgets and workforce shortages hinder effective maintenance of the system.
- Insufficient sewerage coverage: Existing facilities cannot support the current or projected population of over 625,500.
- Need for system expansion: Urgent requirement for new sewers, pumping stations, and a sewage treatment plant.
- Lack of facility information: Absence of updated technical data, drawings, and specifications in relevant offices.
- Inefficient record keeping: Poor documentation of maintenance activities, equipment uses, and operational data.
- No SOPs in place: Lack of standard operating procedures makes consistent service delivery and system management difficult.

7.2.3 SWOT Analysis

SEWAGE COLLECTION & DISPOSAL			
Strength	**Weakness**	**Opportunity**	**Threats**
1. 25% area of the city is provided with sewerage system 2. Sufficient land for disposal sites is available	1. 75% of the city is not provided sewerage system. 2. No treatment plant and untreated waste water is disposed into oxidation ponds (two oxidation ponds in South-East of Moro) 3. Poor maintenance condition, garbage enters into sewers, which requires desisting 4. Poor quality of infrastructure, broken drains and overflowing drainage system 5. No policy for re-cycling, and reduction in generation of sewerage. 6. Mixing of solid waste disposal into open drainage & sewerage	1. An appropriate sewerage system plan should be implemented 2. Improvement of general hygiene/public health by cleaning sewerage system 3. Development of will-designed trunk sewerage network with a smaller number of disposal station. 4. Planning for well-connected gravity based open drainage system covering ponds 5. Job opportunities for skilled staff for proper maintenance 6. Revenue can be generated through charging services for cleaning	1. Storm water flooding/ over flow of drains and sewers 2. Environmental degradation 3. Funding & policies
DRAINAGE & FLOOD CONTROL			
1. Moro City is served by combined drain and sewer system.	1. There is no separate sewerage and drainage system 2. Over flow of water drains 3. Poor administrative control for operating existing drainage system of the city 4. Depression areas causing permanent ponding 5. Reliance on existing sewer and drainage network 6. Lack of interest among stakeholders' involvement in disaster relief activities.	1. The city's existing old drainage system needs rehabilitation of the drainage network 2. Development of surface drainage network after treatment with easy disposal to Daulatpur Distributary	1. Open and overflowing drains have impact upon human health and give birth to epidemic diseases 2. Medium level flood disaster threat to local communities exists near Daulatpur Distributary

7.2.4 Need Assessment

The wastewater generation in Moro is projected to increase steadily over the years, reflecting the city's population growth and corresponding rise in water demand. According to discussions with the Public Health Engineering Department (PHED), there is no specific data available on the amount of waste generated in Moro City. Instead, the wastewater generation is typically estimated based on water demand, with 80% considered as wastewater and 20% as sludge.

In 2025, with a population of 163,207, the city's water demand is estimated at 4.90 MGD (Million Gallons per Day), leading to an expected sewerage flow of approximately 3.92 MGD, assuming 80% of the water supply converts to wastewater. As the population grows to 228,373 by 2030, the water demand is anticipated to rise to 6.85 MGD, resulting in a sewerage flow of about 5.48 MGD. This trend of increasing wastewater generation continues, with projections for 2035 showing a sewerage flow of 7.69 MGD corresponding to a population of 319,557 and a water demand of 9.59 MGD. By 2040, the population is expected to reach 447,148, driving the water demand up to 13.41 MGD and the sewerage flow to approximately 10.73 MGD. Finally, in 2045, the population is projected to be 625,685 with a water demand of 18.77 MGD, resulting in an estimated sewerage flow of 15.02 MGD.

Table 7-2: Water Demand Need Assessment

City	Description	2025	2030	2035	2040	2045
MORO	Population	163,207	228,373	319,557	447,148	625,685
	Water Demand	4.90	6.85	9.59	13.41	18.77
	Sewerage Flows @80 % water supply mgd	3.92	5.48	7.67	10.73	15.02

Thus, between 2025 and 2045 Moro City will experience a substantial increase in wastewater generation, with sewerage flows rising from approximately 3.92 MGD to 15.02 MGD, in line with population growth and increasing water demand. Addressing this growing requirement cannot be achieved through isolated or incremental interventions alone; it necessitates a comprehensive and phased approach that includes not only capacity expansion but also system-wide improvements. Meeting this need requires:

- Expansion and rehabilitation of the sewerage network, including trunk sewers and households' connections, to safely convey increased wastewater volumes;
- Development and upgrading of wastewater treatment and disposal facilities to handle projected flows and reduce environmental and public health risks; and

- Strengthening and improvement of the urban drainage system, including desilting, capacity enhancement, and climate-resilient design, to prevent flooding, wastewater overflows, and mixing of stormwater with sewage.

Together, these measures will enable the transition from fragmented and overburdened sewerage arrangements to an integrated, efficient, and sustainable sewerage and drainage system that supports public health, environmental protection, and long-term urban development in Moro City.

*7.2.5 **Sindh Sanitation Policy 2017***[42]

➢ **Targets**

Its key targets are:

- Eradicate Open Defecation from Sindh Province by 2025, while 70% villages of 13 high priority districts achieve the status of open defecation free by 2020.
- 100% households in Sindh have access to and use sanitary latrines by 2025, while 70% of rural households in high priority districts will achieve this by 2020.
- Strengthen and implement liquid waste management with sewer lanes and Covered/improved drains with 85% coverage of urban areas and 60% coverage in rural areas.
- Create and develop wastewater treatment mechanisms to cover 75% of urban areas and 40% in rural areas by 2025.
- More than 90% of rural households and 100% of urban households wash hands with soap at critical times by 2025.

Principles:

- The Policy aligns itself with the goals and targets of the SDGs for sanitation, which require sanitation services to be safely managed, have a private improved facility where faecal wastes are safely disposed on site or transported and treated off-site; plus, a hand-washing facility with soap and water.
- Safely managed sanitation services is a fundamental right for all persons in Sindh province, and should be ensured through enhanced access to marginalized and low resource areas with equitable distribution of resources. Recognition of inequities and rights-based programming will be given key emphasis during the planning, execution and monitoring of sanitation programmes.
- The policy seeks to prioritize the areas that pose the greatest risk to human health namely hygiene awareness and excreta disposal, and then address the environmental health risks that are posed by poor drainage and solid waste disposal.
- Increase access to high quality nutrition-sensitive services, including access to water, sanitation facilities, and hygiene.

[42] For detail please refer; The Sindh Empowerment of 'Persons with Disabilities' Act, 2018 (https://depd.sindh.gov.pk/sindh-empowerment-of-persons-with-disabilities-act-2018)

- The policy shall promote the community led approaches to strengthen the demand for safely managed improved sanitary conditions that emerges from local communities. The multi-stakeholder partnerships and collaborations comprising of citizens, governments, civil society, non-governmental organizations (NGOs), donors, academia, media, etc. be encouraged to maximize the synergies in designing and implementation of interventions.
- Affordable (in terms of designs as well as availability of water) and cost-effective technical solutions with necessary modifications and adaptations in technical standards to be consistent with cultural sensitivities of specific communities will be identified and marketed.
- The component sharing model as envisaged in the National Sanitation Policy will be Institutionalized gradually in which the community is responsible to construct lane and neighborhood level sewers (internal development) on self-help basis and the government focuses on trunks, disposal and treatment unit (external development).
- The role of women shall be an integral component of behavioral change communication strategies and project planning, implementing and monitoring through capacity development and social mobilization of relevant stakeholders.

*7.2.6 **Strategic Development Plan***

The Strategic Development Plan aims to provide adequate sewerage and drainage facilities through equitable, efficient, and sustainable sanitation services, while simultaneously addressing stormwater management to mitigate urban flooding. The approach integrates household-level sanitation, trunk sewer expansion, wastewater treatment, and climate-resilient drainage systems:

1) Long Term Plan

- Flood protection embankments should be enhanced up to greater extent to provide maximum protection to surrounding villages.
- Prepare a GIS-based Sewerage and Drainage Master Plan, integrating sanitary flows and stormwater runoff modeling to prioritize investments.
- Development of well-designed trunk sewerage network with a smaller number of disposal station.
- Planning for well-connected gravity based open drainage system covering pounds
- Gravity flow systems should be used for sewerage schemes so as to avoid pumping and O&M costs.
- Acquire Land & Provide Stabilization ponds for full treatment to produce acceptable quality of effluent for re-use.
- Complete removal or treatment of land where temporary pounds have been formed in main town area.

2) Short Term Plan:

- To raise living standards of community by providing improved drainage and Sewerage services.

- Priority for sanitation will be accorded to un-served, under-served areas, and disadvantaged areas.
- The plan will focus mainly on the details of the trunk sewers, treatment and disposals and re-use options. All other sanitation related agencies (cantonments boards, railways, etc.) will develop their plans in accordance with the overall plan
- Wherever existing sewerage systems discharge untreated sewage in storm water drains or irrigation canals it should be treated before discharging, and may be used for agricultural purposes or converted into lakes and ponds as part of recreational areas.
- An appropriate sewerage system plan should be implemented.
- Improvement of general hygiene/ public health by cleaning sewerage system
- PPP in service delivery
- Job opportunities for skilled staff for proper maintenance
- Revenue can be generated through charging services for cleaning.

*7.2.7 **Priority Projects***

➢ **Construction Of Sewage Treatment Plant**

Moro City lacks an effective sewage treatment system, with most wastewater discharged through open dains and partially treated or untreated in oxidation ponds that are insufficient and poorly located. The existing sewerage and drainage systems are under stress due to solid waste intrusion, frequent overflows, and lack of septic arrangements, causing serious health and environmental hazards. Constructing a dedicated sewage treatment plant is essential to ensure proper treatment, protect public health, and improve environmental sustainability in the city.

Dars Disposal

➢ **Scope**

- **Assesment and Planning**
  - Assessment of existing sewerage, drainage networks, and oxidation ponds in Moro City
  - Estimation of current and projected wastewater generation based on population growth
  - Identification and confirmation of a suitable site for the sewage treatement plant with buffer zones
- **Design of Sewage Treatment Plant**
  - Planning and design of a centralized sewage treatment plant (STP) for municipal wastewater

- Selection of appropriate treatment technology (e.g., activated sludge, stabilization ponds, or modular systems) based on local conditions
- Design of treatment units including screening, grit removal, primary, secondary, and disinfection processes

- **Collection and Conveyance Integration**
  - Integration of the STP with existing sewerage and drainage networks
  - Design and construction of trunk sewers and pumping stations, where required, to convey wastewater to the plant
  - Provision of bypass and emergency overflow arrangements
- **Sludge Management**
  - Development of treated effluent discharge arrangements in compliance with environmental standards.
  - Assessment of optionas for reuse of treated wastewater for agriculture, landscaping, or non-potable purposes
- **Treated effluent Management**
  - Development of treated effluent discharge arrangements in compliance with environmental standards
  - Assessment of options for reuse of treated wastewater for agriculture, landscaping, or non-potable purposes
- **Mechanical, Electrical, and Instrumentation Works**
  - Installation of pumps, blowers, motors, pipelines, and valves
  - Provision of electrical supply, control panels, and standby power systems
  - Installation of instrumentation for flow measurement and quality monitoring
- **Environmental and Health Safeguards**
  - Implementation of odor control, noise reduction, and vector control measures
  - Protection of nearby surface and groundwater resources
  - Compliance with national environmental and wastewater discharge standards
- **Operation, Maintenance, and Capacity Building**
  - Development of operation and maintenance (O&M) manuals and protocols
  - Training of municipal staff for plant operation and maintenance
  - Establishment of monitoring and reporting mechanisms

- **Provision for Future Expansion**
  - Design of plant layout with modular components to allow capacity expnasion
  - Incorporation of long-term sustainability and climate-resilient measures.

➢ **Size**

- Development of a city-level centralized Sewage Treatment Plant (STP) to serve the entire urban population of Moro City.
- Construction of one sewage treatment facility designed to handle current and projected municipal wastewater flows.

- Treatment capacity sized to accommodate exisitng sewage generation with provision for future population growth.
- Integration of the STP with the existing sewerage and draiange network, including trunk sewers and pumping stations where required.
- Development of complete treatment infrastructure, including preliminary, primary, secondary treatment units and disinfection facilities.
- Provision of sludge treatment and drying facilities within the plant premisies
- Construction of effluent discharge or reuse arragements in compliacne with environmnetal standards.
- Installation of mechanical, electrical, and instrumentation systems for efficient and continuous plant operation
- Allocation of adequate land area and buffer zones to ensure environmental safety and allow future expansion of treatment capacity.

- **SDG's Alignment**

I. Goal 3 – Good Health and well-Being Goal

Untreated wastewater is a major vector for diseases like cholera, hepatitis, and dysentery. This project aligns with SDG 3.9, which targets the reduction of illnesses caused by hazardous water and pollution, contributing to a healthier population across Moro.

II. Goal No.6: Clean Water and Sanitation

To ensure universal and equitable access to safe and affordable drinking water for all, improve water quality by reducing pollution, eliminate dumping and minimize release of hazardous chemicals, substantially increase water-use efficiency across all sectors, and ensure sustainable withdrawals and supply of fresh water.

III. GOAL 11 – Make cities and human settlements inclusive, safe, resilient and sustainable

The project strengthens the city's urban sanitation infrastructure, making Moro More livable and environmentally responsible. It aligns with SDG 11.6, which promotes reducing the adverse per capita environmental impact of cities, particularly concerning water and sanitation.

- **Implementing Authority**

Government of Sindh, PHE Department and Moro MC

- **Preliminary Cost Estimate**

Estimate Cost: **550 Million Approx.**

S. No.	Project Name	Estimated Cost in Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Sewage Treatment Plant						
1	Feasibility Study for Construction of sewage treatment plan	50	-	Non ADP	**Short Term**	-
2	Construction of sewage treatment plant	500	-	Non ADP	**Short Term**	-

- **Construction of Storm Water Drainage System**

Moro City currently lacks a dedicated storm water drainage system, resulting in the overloading of the existing combined sewerage and open drainage network. This system simultaneously handles both storm water and domestic sewage, leading to frequent overflows, blockages, and environmental hazards during rainfall. The construction of a separate storm water drainage system is essential to prevent urban flooding, protect infrastructure, and improve public health and sanitation.

Construction of Drainage Lines

- **Scope**
  - Development of a city-wide stormwater drainage network, focusing on low-lying and flood-prone areas and surrounfing localities
  - Construction of primary and secondary drainage channels, culverts, and outfalls to efficiently collect and convey rainwater
  - Integration with existing water bodies and natural catchments to ensure environmental sustainability and resilience
  - Installation of maintenance access points and flood control structures to facilitate system upkeep and emergency management

- **Size**
  - Construction of a stormwater drainage network covering the entire urban area of Moro, with special emphasis on vulnerable neighborhoods.
  - Expected to significantly reduce flooding impacts for communities particularly for residents living in flood-prone areas.

- The project will serve as a critical infrastructure upgrade to improve overall urban resilience and protect property, health, and city assets.

➢ **SDG's Alignment**

I. **GOAL No.3 – Good Health and Well Being**

Stagnant rainwater contributes to the spread of diseases like dengue, malaria, and cholera. This project aligns with SDG 3.9, which aims to reduce illnesses caused by water pollution and environmental hazards.

II. Goal No.6: Clean Water and Sanitation

To ensure universal and equitable access to safe and affordable drinking water for all, improve water quality by reducing pollution, eliminate dumping and minimize release of hazardous chemicals, substantially increase water-use efficiency across all sectors, and ensure sustainable withdrawals and supply of fresh water.

III. Goal No.11: Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

To enhance urban and suburban areas within cities, making them inclusive, safe, resilient, and sustainable through improved urban planning and management that incorporates the participation of the community.

➢ **Implementing Authority**

Government of Sindh, PHE Department and Moro MC

- **Preliminary Cost Estimate**

Estimate Cost: **1,250 Million Approx.**

S. No.	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Storm Water Drainage						
1	Feasibility Study for construction of Storm Water Drainage System	50	-	Non ADP	**Short Term**	-
2	Construction of Storm Water Drainage System	1,200	-	Non ADP	**Short Term**	-

7.2.8 Immediate Action Plan for Core Urban Area

- **Improvement of Sewerage and Drainage**

In the core urban area of Moro, inadequate sewerage and drainage systems result in untreated sewage flowing into low-lying swamps. Households face open drains, foul odors, and frequent flooding, particularly during the monsoon season. Seasonal overflows worsen sanitation conditions, increase the prevalence of waterborne disease, and expose residents to significant health risks. A modern, properly managed drainage system is urgently required to safeguard health, protect infrastructure, and support sustainable urban growth.

Broken Road and over flow of sewerage water

The Immediate Action Plan therefor focuses on upgrading the existing sewerage system and integrating stormwater management solutions. These interventions will reduce flooding risks, prevent environmental contamination, and enhance resilience against climate-induced rainfall events. This aligns with SDG 6 (Clean Water and Sanitation).

- **Scope**

The improvement plan for sewerage and drainage includes the following key actions:

- **Comprehensive Sewerage System Renovation:** A comprehensive rehabilitation of the sewerage system throughout the core urban area. This will involve upgrading the entire network, replacing outdated pipelines, constructing new manholes, and installing new pumping stations as required.

The objective is to ensure efficient management and proper diversion of wastewater to designated treatment facilities.

- **Provision for Stormwater Drainage:** Implement advanced stormwater drainage systems to effectively manage heavy rainfall and prevent flooding. This approach will include the installation of strategically positioned drains, catch basins, and retention ponds. Additionally, it will incorporate the use of permeable pavements and other green infrastructure solutions to manage runoff efficiently.
- **Preventive Maintenance and Monitoring:** Establish a routine maintenance schedule and monitoring system for the sewerage and storm water drainage systems. This will help identify potential issues before they become critical and ensure that the infrastructure remains in good working condition.
- **Public Awareness Campaigns**: Launch public awareness initiatives to educate residents about the importance of proper waste disposal and the impact of blockages in the sewerage and drainage systems. Engaging the community is crucial to maintaining the effectiveness of these systems.

➢ **Size:**

The sewerage and drainage improvement plan will cover the entire core urban area, which spans 445.53 acres. The current and projected wastewater generation data is as follows:

City	Description	2025	2030	2035	2040	2045
MORO	Population	163,207	228,373	319,557	447,148	625,685
	Water Demand	4.90	6.85	9.59	13.41	18.77
	Sewerage Flows @80 % water supply mgd	3.92	5.48	7.67	10.73	15.02

➢ **Preliminary cost estimate**

The detailed breakdown of the area and cost is as follows:

S. No.	Name	Area (m)	Cost (PKR)
Total Core Urban Area: 445.53 acre			
1	Sewerage System	21,484.59	2,300
		Total Cost (PKR). Million	**2,300**

Note:

- The rehabilitation of the sewerage system includes the entire urban core area network system, along with all related machinery and equipment required for the overhaul.
- The rehabilitation of the stormwater drainage system covers all core town areas, focusing on steep slopes and peak areas, and includes all necessary linking equipment and machinery.

Total Estimated Cost: 2,300 million PKR Approximate

- **Implementation Framework**
  - **Funding:** Municipal Committee allocations, provincial ADP grants, and international development funds for sustainable infrastructure.
  - **Execution:** Works will be executed by the Public Health Engineering Department (PHED) in coordination with the Municipal Committee.
  - **Monitoring:** A preventive maintenance system will be institutionalized, supported by periodic inspections and reporting.

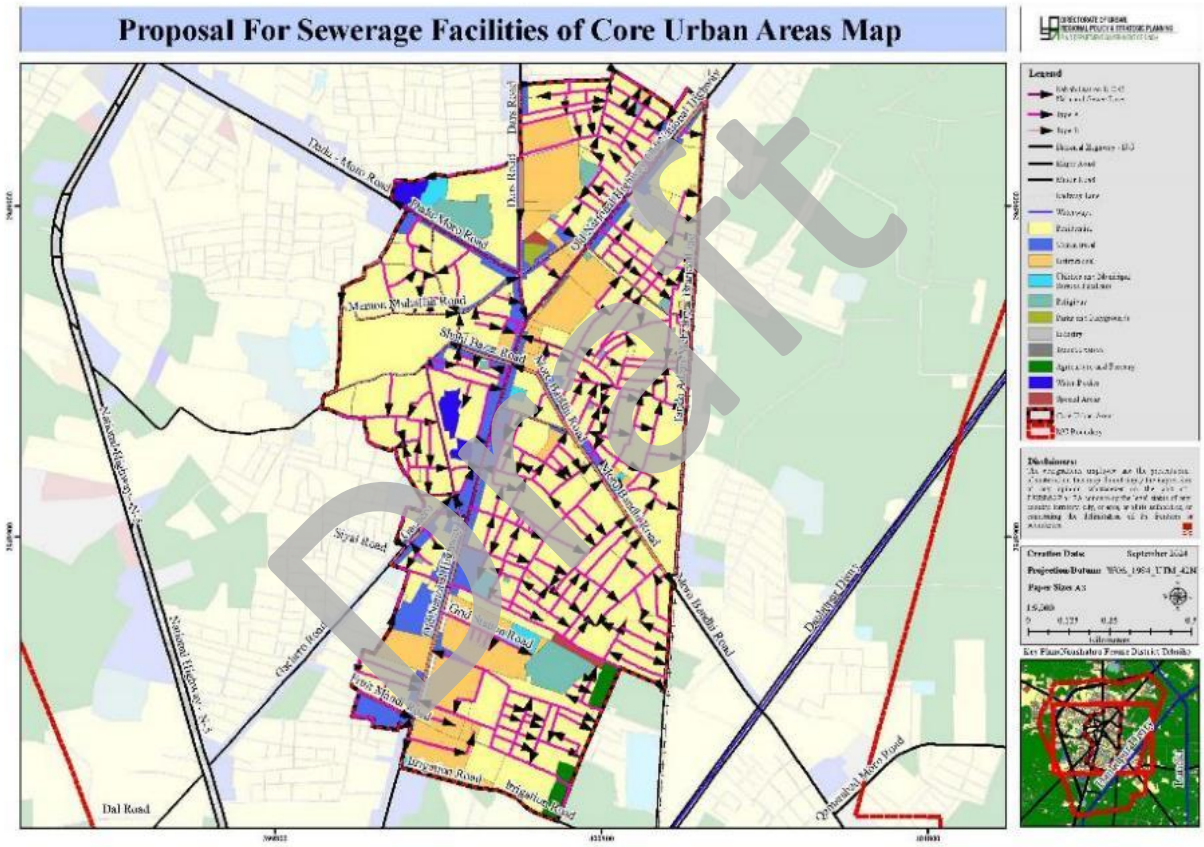


Figure 7-2: Proposal for Sewerage Facilities of Core Urban Area Map

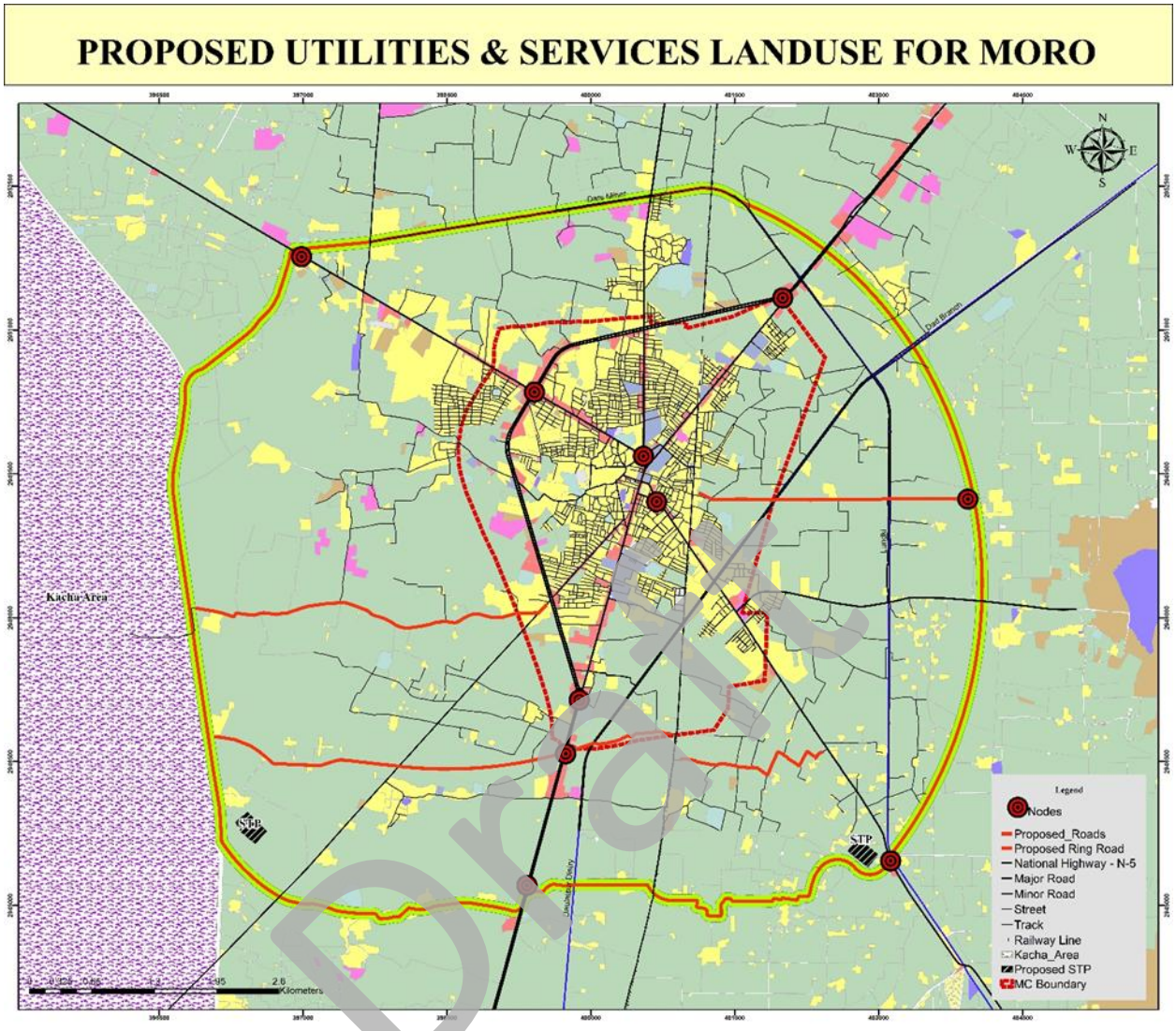
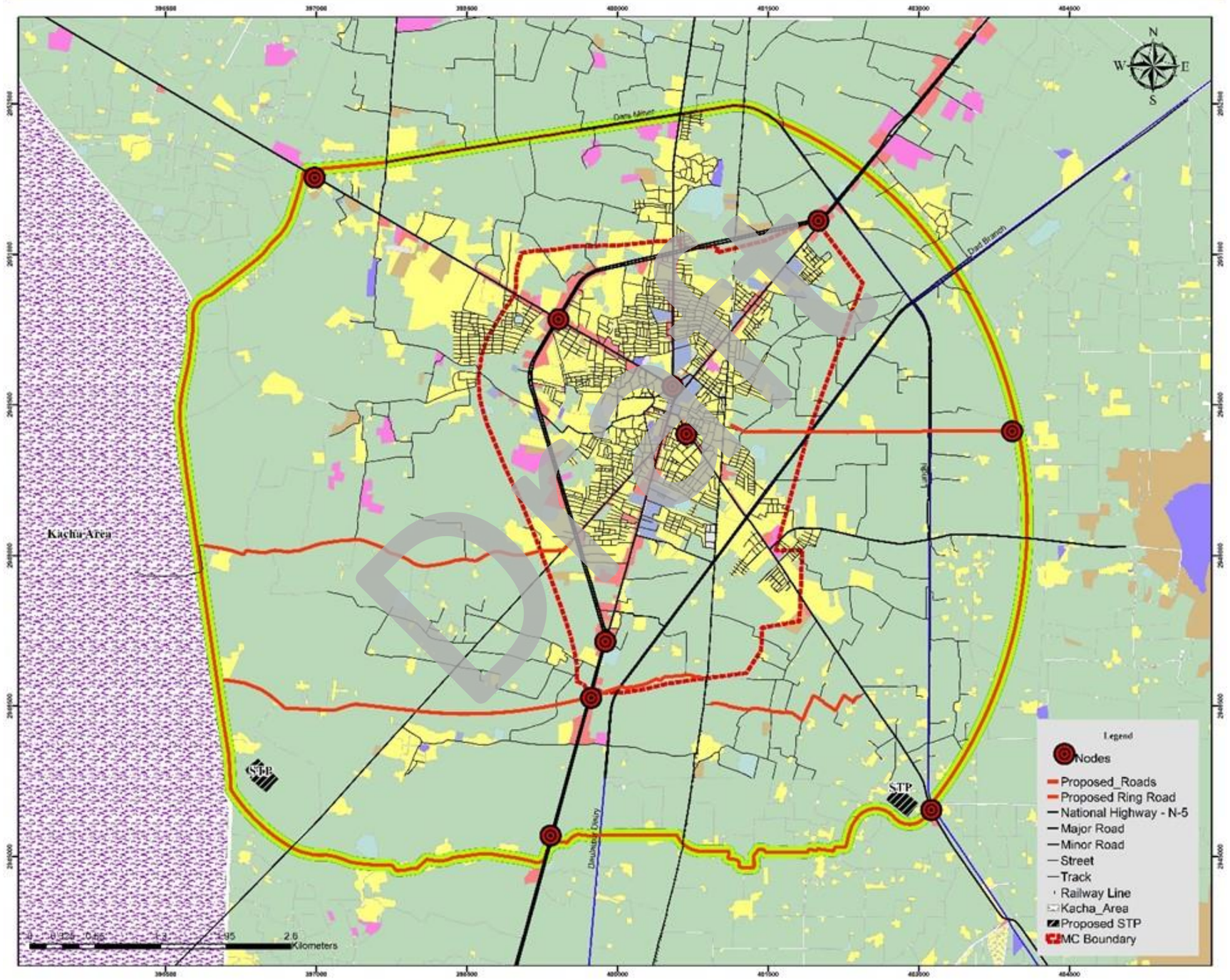


Figure 7-3: Proposed Sewerage Treatment Plants Location

PROPOSED UTILITIES & SERVICES LANDUSE FOR MORO



7.3 Solid Waste Management

7.3.1 Existing Situation

At present, the local authorities of Moro City are facing and managing various challenges, particularly in case of solid waste management system. It is well understood that the collection of solid waste management consists of primary, secondary, and tertiary methods.

Primary Data Collection: Primary data shows that Moro City uses six sanitation rickshaws, two pairs of tractors, two loader tractors, and two Master Mazdas for solid waste collection. Hazardous medical waste, mainly from the 44-bed Taluka Hospital and 5-bed A.D. Medical Centre, is generated at 0.66 kg per bed, following WHO guidelines.

Secondary Data Collection: Secondary data reveals that there is no designated or planned landfill site for waste disposal. Currently, waste is dumped near the highway at Khalifa graveyard. While the Municipal Committee does not track the total waste quantity, all generated waste is reportedly sent to the dumping site. The waste mainly includes household items, plastics, paper, glass, organic waste, and medical-related materials.

The solid waste management methods will have to be tracked by the labor force, and it is observed in Moro City that with limited human resources the local authorities are trying to manage these tasks with 501 existing employees in the schedule of the Municipal Committee, these employees have to perform their duties in three shifts-one in the morning one in the evening and the third one at night. This is to be noted that the sanctioned number of employees is 606, which shows that 105 more employees may be employed. The increase in existing staff of municipal committee will definitely facilitate the civic authorities of MC for better management and administration of routine tasks of MC, which will ultimately yield a better living, healthy and clean environment for the people. The number of sweepers and cleaning staff is 153, which is significantly lower than the required additional 105 sweepers for surface cleaning and sewerage/drainage network.

It is revealed from the sample socioeconomic survey that 70% of the respondents throw waste outside the house. It was also found that 19% respondents disposed-off their daily generated solid waste through municipal sweepers, 7% have hired the services of private sweepers and very little percentage, only 4% respondents, throw their waste in the proper in the bins provided by municipal committee.

Given the limited waste collection resources, uneven coverage, reliance on informal dumping sites, and significant workforce shortfalls, the solid waste management strategy must prioritize: I. expanding and modernizing collection services to improve coverage and efficiency; II. establishing authorized landfill sites to prevent environmental contamination and public health risks; III. strengthening operational capacity by recruiting and training adequate sanitation staff; and IV. promoting community awareness and behavioral change to reduce informal dumping and encourage proper waste disposal practices.

*7.3.2 **Issues***

- Inefficient Collection System: Waste collection and street sweeping are costly and need to be made more efficient.
- Poor Medical Waste Management: Biomedical waste is mixed with household waste, posing serious health risks.
- Need for Composting Plant: A central composting facility is required, ideally with private sector participation.
- Lack of Landfill Site: There is no proper landfill, and developing one is urgently needed.
- Limited Community & Private Sector Involvement: Stronger engagement is needed for effective solid waste management.
- Low Public Awareness: Awareness programs through schools, media, and local groups are essential to promote cleanliness.
- Lack of On-site Recycling: Encouraging reuse and recycling at the source can reduce waste and costs.
- Absence of Formal Waste Programs: Structured waste management plans from generation to disposal are needed.
- No Waste Minimization Projects: Pilot projects can raise awareness and demonstrate the benefits of waste reduction.
- Untapped Waste-to-Energy Potential: A feasibility study is needed to explore waste-to-energy options for sustainability.
- No Environmental Impact Assessment (EIA): EIAs are essential for identifying waste streams and improving waste control measures.

7.3.3 SWOT Analysis

SOLID WASTE MANAGEMENT			
Strength	**Weakness**	**Opportunity**	**Threats**
1. The Municipal Committee has sufficient sanctioned (606 staff) human resources for the collection and disposal of solid waste 2. Sufficient land for land fill sites is available 3. Recycling by scavengers	1. Poor financial and operational management system 2. There is no designated proper land fill site available in the city 3. There is no system to identify toxic wastes produced by various activities 4. Communities' particularly low-income groups are not aware of the impacts on health of the people 5. People do not know the proper disposal procedures	1. 105 sanctioned posts of sweepers and cleaning staff are lying vacant 2. More than one land fill site should be designated for existing and future waste disposal 3. Appropriate measures can be adopted for collection and re-cycling of SWM 4. SWM recycling will help in adding generation of revenue 5. Establishing of a primary collection system would add more revenue resources. 6. Opportunity for recycling and reuse of solid waste, such as RDF, bio-gas etc.	1. Improper sanitation 2. Poor public health 3. Inappropriate and Inefficient drainage system 4. Threats to plants and animal life 5. Loss of trust building with people in future

7.3.4 Policy Guidelines[43]

Implement integrated solid waste management with 100% coverage in urban areas and 60% in rural areas of Sindh by 2025.

Principle

- Develop integrated solid waste management system.
- Conduct a study on wastewater and solid waste to develop town level profiles (including Infrastructure, equipment and staffing)
- Conduct waste characterization studies.
- Smooth and efficient Solid waste collection and disposal by providing door to door collection services.
- Ensure Effective solid waste management by developing a list of staffing, hardware and equipment for solid waste management.
- Efficient Solid waste disposal and recycling by establishing transfer stations to reduce disposal time.
- Recycle solid waste by systematic separation.
- Sanitary landfill options identify for towns where it is feasible.
- Formalize contracts with companies for waste to energy options. At least each mega/intermediate city has a WTE (Waste to energy options) in place.
- Provide each town with a centralized and functional high risk hospital waste disposal facility.
- Update status of all slaughterhouses (recognized and unrecognized) in each district and prioritize those for rehabilitation, solid waste and wastewater management.
- Provide refresher training on slaughterhouse safety and hygiene practice guidelines to 100% slaughterhouse staff in recognized slaughterhouses in safe handling and disposal of carcass, entrails, hides, and wastewater.
- Efficient and effective management of Industrial solid waste by determining the current status of industrial solid waste production and disposal and development of strategies and actions for efficient and effective management of industrial solid waste.
- Develop and use technologies that are affordable, applicable and cost effective to maintain the solid waste management.
- Allocation of proper landfill sites outside of the urban area and Final disposal of waste at least 500m from housing to a contained area chosen and designed according to geological conditions, water table, wind etc.

[43] SESCO Official Data

7.3.5 Strategic Development Plan

The aim of this strategic development plan is to improve the quality of life of the people of Moro City and the physical environment and also provide guidelines for the management of solid waste in the town.

i. Long Term Plan

- Formulate a city-wide policy aligned with national and provincial waste management guidelines, covering collection, segregation, treatment, and disposal.
- Increase the number and capacity of waste collection vehicles and equipment to ensure efficient door-to-door collection and street sweeping.
- Introduce a separate collection, transportation, and incineration system for biomedical waste in coordination with health facilities.
- Identify and develop a scientifically designed landfill site at a safe and suitable location, with proper leachate and gas management systems.
- Develop a composting plant for organic waste and establish recycling units for plastics, glass, and metals to reduce landfill pressure.
- Launch community campaigns and enforce policies for households, markets, and institutions to separate biodegradable, recyclable, and hazardous waste.
- Encourage private sector involvement in waste collection, recycling, and treatment operations through investment and service contracts.
- Empower neighborhoods to form waste committees and take local responsibility for waste segregation, monitoring, and cleanliness drives.
- Conduct feasibility studies and pilot projects for converting non-recyclable waste into energy, reducing landfill load and supporting sustainability goals.
- Digitize operations and introduce GIS-based systems to monitor waste generation, collection efficiency, landfill usage, and equipment performance.
- Draft and implement detailed Standard Operating Procedures (SOPs) for collection, transport, treatment, and disposal of all types of waste.
- Provide regular training to municipal staff, sanitation workers, and waste handlers on modern waste management techniques and safety practices.
- Make EIAs mandatory for all major waste-related infrastructure projects to mitigate environmental risks and ensure compliance with regulations.

ii. Short Term Plan

- Optimize the existing fleet usage (rickshaws, tractors, Mazdas) by introducing route planning, shift rotation, and regular maintenance for uninterrupted waste collection.
- Increase the number and capacity of waste collection vehicles and equipment to ensure efficient door-to-door collection and street sweeping.

- Town Municipal Committees has already initiated some work on biomedical-waste management. It should immediately start segregation practice for biomedical waste collection system.
- Techno-economic feasibility and detail study of characterization of waste is proposed on basis of the policy guidelines.
- Develop integrated solid waste management system keeping in mind the method, procedure and design at front end, middle end and back end, based on best possible public health practices and environmental protection laws/rules.

*7.3.6 **Priority Project***

➢ **Feasibility Study For Solid Waste Management Mechanism In Moro**

Solid waste collection and disposal is the responsibility of the Municipal Committee Moro. At present, the city lacks a structured and efficient mechanism for solid waste management. Waste is collected only partially and is often dumped at unauthorized locations, leading to environmental pollution and serious health risks. To address these challenges, a detailed feasibility study is proposed to design a comprehensive solid waste management system for Moro City, covering options for collection, segregation, recycling, composting, landfill development, and proper handling of hazardous waste.

Solid Waste scattered across Moro City due to the absence of a designated landfill site, leading to unhygienic conditions and environmental pollution

➢ **Scope**

- Conducting a feasibility study to design an integrated solid waste management framework
- Development of efficient waste collection and transfer mechanisms, ensuring city-wide coverage
- Implementation of waste segregation, recycling, and composting programs to minimize landfill dependency.
- Planning and development of a sanitary landfill that meets environmental and health standards
- Introduction of hazardous waste management protocols to safely handle special waste streams
- Public awareness campaigns and stakeholder engagement to support behavioral change and system adoption

➢ **Size**

- The study will cover the entire urban area under the Moro Municipality Committee jurisdiction
- Infrastructure planning will accommodate waste generated by the current population and projected growth over the next 10-15 years.
- The system will serve all residential, commercial, and institutional waste sources in the city
- Sanitary landfill and recycling facilities sized to handle the expected daily waste volume, with capacity for future expansion.

➢ **SDG's Alignment**

I. **Goal No.3: Good Health and Well-being**
Uncollected solid waste is a breeding ground for bacteria, mosquitoes, and rodents, contributing to disease outbreaks.

II. **Goal No.7: Affordable and clean energy**
The feasibility can include waste-to-energy options such as biogas from organic waste or RDF (refuse-derived fuel) from non-recyclables, supporting SDG 7.2 and 7.3, which aim to expand clean energy sources and enhance energy efficiency.

III. **Goal No.11: Make cities and human settlements inclusive, safe, resilient and sustainable**
The project supports SDG 11.6, which focuses on reducing the environmental impact of cities, including municipal solid waste management. A structured SWM system is a core requirement for sustainable urban development and livability.

➢ **Implementing Authority**

Government of Sindh, PHE Department and Moro MC

- **Preliminary Cost Estimate**

Estimate Cost: **300 Million Approx.**

S. No.	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Solid Waste						
3.	Feasibility study for construction of Central Composting Plant.	100	-	Non ADP	**Short Term**	-
4.	Procurement for land acquisation process for Landfill Site.	200	-	Non ADP	**Short Term**	-

7.3.7 Immediate Action Plan for Core Urban Area

- **Provision for Solid Waste Management**

In Moro's core urban area, inadequate waste collection leaves streets littered with garbage. The city's limited fleet cannot serve all neighborhoods, and socio-economic survey data shows that 70% of households dispose of waste informally, while 19% depend on municipal collection and 7% privately appointed sweepers for waste collection and 4% dispose their waste in the bins provided by municipal committee.

The Immediate Action Plan for SWM focuses on segregated waste collection, community awareness, additional vehicles and bins, and better regulatory oversight. By modernizing operations and introducing user-based contributions, the plan aims to establish a sustainable model of solid waste management that ensures cleanliness, protects public health, and aligns with SDG 11 (Sustainable Cities & Communities) and SDG 12 (Responsible Consumption & Production).

Garbage accumulation in core urban area

- **Scope**

The solid waste management improvement plan will include the following key actions:

- **Deployment of Community Bins:** Strategically place community bins throughout neighborhoods, including near residential areas, public spaces, and commercial zones, to facilitate efficient waste disposal and promote cleanliness. These bins will be robust in design, clearly labeled for different types of waste (recyclables, organics, general refuse), and regularly maintained and emptied to prevent overflow.
- **Structured Waste Collection System:** Implement a structured waste collection system that includes both primary and secondary level collection. Secondary Level Collection involves the collection of waste from preliminary dumping areas at the ward level and transporting it to the main dumping site.
- **Public Awareness Campaign:** Launch an extensive public awareness campaign to educate the community on proper waste segregation practices. This will include workshops, informational leaflets, and community meetings to ensure widespread understanding and participation.
- **Street Sweeping:** Ensure that street sweeping is carried out on a daily basis by the Moro MC, with clear accountability measures in place.
- **User Fee Introduction:** PKR 250/month for shopkeepers and PKR 100/month for households to support O&M.

- **Infrastructure and Equipment:** Acquire additional waste collection vehicles and integrate advanced waste tracking technologies to enhance the efficiency of the waste management operations. Establish temporary or enhanced waste disposal facilities, such as portable transfer stations, to manage current waste volumes effectively.
- **Regulatory Compliance and Contingency Planning:** Ensure strict adherence to existing environmental regulations and develop contingency plans to address potential disruptions or emergencies in waste management.

➢ **Size:**

The projected size and scope of the solid waste management system are based on current and future waste generation estimates:

Table 7-3: Estimated and Projected Solid Waste Generation in Moro City

Area	Existing Estimated 2025	Projected 2030	Projected 2035	Projected 2040	Projected 2045
Moro MC Population	163,207	228,373	319,557	447,148	652,685
Solid Waste (Metric Tons)	64.12	89.93	126.14	176.92	248.13

The implementation will cover the entire core urban area and will require a scalable approach to accommodate the projected increase in population and waste generation.

➢ **Preliminary cost estimate**

S.No	Name	Containers No.s	Cost (PKR)
Total Core Urban Area: 445.53 acres			
1	Placing of Garbage Container at different sites/locations in core Urban area	122	200
		Total Cost (PKR). Million	**200**

Note:
1. Each site located for garbage container must be strictly followed by MC to collect and manage solid waste from this site for proper management of the core area.
2. Containers must be fully get maintained by MC office.
3. Sindh solid waste management department/authority will keep control on each project for the uplifting of City as per master plans.


Modern Community Bins

- **Implementation Framework**
- **Funding Sources:**
  - Municipal budgets dedicated to SWM.
  - Provincial government ADP grants for environment and sanitation.
  - Community contributions via user fees.
  - International development support for sustainable SWM programs.

- **Execution:** MC Moro in collaboration with SSWMA.
- **Monitoring:** Smart monitoring tools (GPS tracking, digital reporting) to improve accountability.

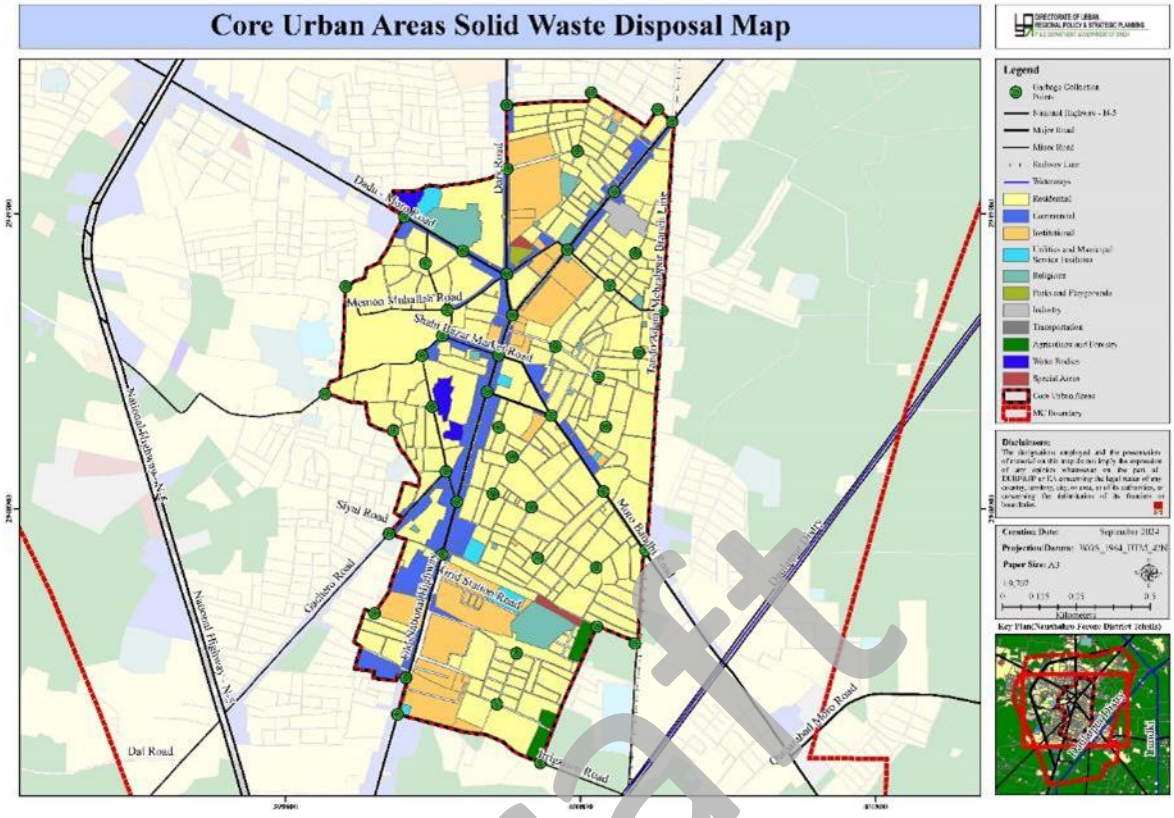


Figure 7-4: Core urban Area s Solid Waste Disposal Map

7.4 Firefighting

7.4.1 Existing Situation

Currently, the MC is not providing firefighting services to the Moro City due to non-availability of in-operation firefighting vehicle. It has only a very old model of Fire-brigade vehicle, which is unable to move. However, to meet the city's fire fighting immediately, at least one fire-fighting vehicles is an immediately urgent need of the Municipal Committee Moro.

The sanctioned number of fire-fighting staff in the Municipal Committee of Moro is 27 persons. This team of actual fire-fighting staff is responsible for managing emergency fire incidences within the city. However, to ensure comprehensive fire-fighting coverage, readiness and improving the city's fire-fighting competencies one + one fire-fighting vehicles and the training and refresher firefighting courses should compulsorily be designed and implemented. The trained personnel is essential to enhance emergency response, save lives and properties of the residents of Moro City.

7.4.2 Need assessment

As the current total population of Moro is 163,207 which will be 625,685 in 2045. As per National reference manual the one fire station is recommended for 0.1 million population and one fire engine is required for 50,000 population. Currently there is no vehicles available with municipal committee. So, twelve vehicles to meet the projected population in 2045.

7.4.3 Strategies

- City committee people would need to be trained about local early warning systems, evacuation, first aid search and rescue, firefighting etc.
- Provision of Sprinkler protection should be ensured in each multi story building for firefighting.
- Assure that all areas of the Town have the highest level of fire protection, at the lowest possible cost, to meet existing and future demand.
- Establishment of fire-stations to accommodate required number of fire vehicles.
- Establish sub-stations at different locations to ensure short response time for the whole city.
- Increase service efficiency through number of vehicles, dedicated staff and financial mechanism.
- To ensure readiness of all vehicles with ample stocks of POL and spares.

7.4.4 *Priority Project*

- **Provision for the Fire Station**

Currently, the MC is not providing firefighting services to the Moro City due to non-availability of in-operation firefighting vehicle. It has only a very old model of fire-brigade vehicle, which is unable to move. However, to meet the city's fire fighting immediately, at least one fire-fighting vehicles is an immediately urgent need of the Municipal Committee Moro.

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- **Scope**
  - Enhanced emergency Response: A fully operational fire station will significantly reduce response times during fire and emergency incidents, minimizing loss of life and property.
  - Improved Public Safety: Availability of trained personnel and firefighting equipment will ensure greater safety and protection for residents, commercial establishments, and critical infrastructure.
  - Strengthened Disaster Preparedness: The project will improve the city's resilience to fire hazards by establishing a coordinated emergency response system.
  - Protection of Economic Assets: enhanced fire protection will safeguard industrial, commercial, and residential areas, reduce economic losses and support sustainable urban development.
  - Compliance with standards: Development of the fire station will align municipal services with national safety standards and urban planning requirements.
  - Support for Future Urban Growth: As the city expands, a robust fire response system will be vital to accommodating growth and enabling safe development.

- **Size**
  - Facility to be equipped with standard firefighting apparatus, including fire engines, rescue tools, and protective gear.
  - Staffing will cover 24/7 emergency response shifts, with capacity to handle multiple incidents across the city simultaneously.
  - The project aims to improve emergency response for Moro's projected population of 625,685.

- **SDG'S Alignment**
  i. **SDG 3: Good Health and Well-Being:** Enhances community safety and reduces fatalities and injuries from fire incidents and emergencies.
  ii. **SDG 11: Sustainable Cities and Communites:** Improves urban resilience, emergency preparedeness, and risk reduction measures in line with sustainable urban development principles.

- **Implementing Authority**
  Government of Sindh, Municipal Committee Moro.

- **Preliminary Cost Estimate**
  Estimate Cost: **550 Million Approx.**

Table 7-4: Estimated Cost of Fire and Emergency Services Projects – Moro

S. No.	Project Name	Estimated Cost in Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Fire and Emergency Services						
1.	Establishment of Fire Station in Moro City	550	-	Non-ADP	Short Term	-

8. INFRASTRUCTURE

8.1 Transportation

8.1.1 Existing Situation

- **Airport**

The closest airport to Moro Town lies in Sukkur, approximately 100 kilometers away. For air travel, residents rely on connecting buses or private vehicles, adding another leg to their journeys. The dream of a local airport remains far-fetched, although it's potential to boost connectivity and economic activity cannot be ignored.

While Moro does not have its own airport, it is possible to travel from Moro to Sukkur by bus, and then catch a flight from Sukkur to Karachi. This route offers the quickest travel time, albeit at a higher cost.

In conclusion, Moro's transportation system is diverse and well-connected, offering residents and visitors a variety of options for travel both within the region and to other parts of Pakistan. Whether by road, rail, or air, Moro is a city that is easily accessible and navigable.

For the residents of Moro City, the more practical option for air travel is Sehwan Sharif Airport. The journey from Moro to Sehwan Sharif Airport is 35 k.ms. After then the Shaheed Benazir Abad Airport is also near to Moro and the distance from Moro to the airport is 63 k.ms. The details of other airports in different cities are also given in the below table, however, regarding the airport at Hyderabad it's important to note that airport is not currently in operation.

Table 8-1: List of Airports and Distance from Moro City

Sr. No.	Airport Name	City	Distance*
1	Sehwan Sharif Airport	Sehwan Sharif	35 kms
2	Shaheed Benazir Abad Airport	Nawabshah	63 kms
3	Mohenjo-Daro Airport Near Larkana	Mohenjo-Daro	76 kms
4	Sukkur Airport	Sukkur	142 kms
5	Hyderabad Airport	Hyderabad	154 kms
6	Jinnah International Airport	Karachi	213 kms

***Note:** Connectivity ratings are based on the airport's flight routes to other airports

- **Railway Station**

The Moro Railway Station, a relic of Sindh's colonial past, stands as a silent testament to a bygone era. Once a bustling hub connecting Moro Town to major cities, the station now operates a limited service, its

tracks echoing with whispers of its vibrant past. While the revival of the railway line holds the promise of a more efficient and sustainable transportation option, it remains a chapter yet to be fully written in Moro Town's story.

The main Railway line between Lahore and Karachi passes through some towns of Naushahro Feroze District such as Padidan, Bhirya Road and Mehrabpur. All the taluka headquarters are also connected by loop lines such as Mehrabpur via Tharu Shah to Moro, Padidan via Tharo Shah to Moro and Nawabshah via Sakrand to Moro. At present, the network of this railway line is not in use and now the railway line passing through Moro is abundant.

Moro also has a railway station that connects it to major cities such as Karachi, Lahore, and Islamabad[1]44. This provides an alternative mode of transport for residents and visitors alike, offering a different travel experience and often more affordable fares.

- **Bus and Truck Stand**

Daewoo Express Moro Buses and Waraich & Faisal Movers Buses, privately owned, provide their services to the people of Moro City, from the Bus Terminal located near the Junction of Dadu – Moro Road and National Highway N5 in the south-east of Dadu – Moro Road. This Bus Stop/Bus Terminal, which is not properly planned and constructed, is however serving the taxis and wagons to move people from one area to another area. During the field visits it was observed that buses/taxis standing and were picking & dropping the passengers, in the center of the city at intersection of Dadu-Moro Road, Old National Highway and Memon Muhallah Road at the junction of three roads.

It is to be noted that, no truck stand or truck terminal is available, and there is need that it should be made available in the city. The loading and unloading of goods and commodities is in regular practice on either side of the roads in the city, without considering the inconvenience caused by parking of heavy vehicles (trucks, tractor trolleys and camel carts etc.) to the people traveling around the city for different purposes like; shopping, business, office, etc. In the absence of a proper truck terminal in Moro the freight vehicle owners and the local commercial establishment owners or shop owners have to rely on alternatives for loading & unloading of goods.

*8.1.2 **Local Road and Traffic Network***

- **Condition of Road**

The road network in Moro presents a diverse range of conditions, reflecting variations in development of infrastructure and at the level of operation & maintenance. Memon Muhallah Road, National Highway Road N5, Dars Road, Old National Highway, Dadu Moro Road, Siyal Road, Gachero Road, Irrigation Road, Daulatpur Road, Qamarabad Moro Road, Grid Station Road, Moro New Jatoi Road, Moro Bandhi Road.

[44] ADP 20017-18 Industries Punjab

National Highway Road N5, Dadu Moro Road and Moro New Jatoi Road are in good condition whereas all the other roads mentioned above cannot be said as roads fit for serving a major secondary city like Moro, which is as earlier said in this report, is the second largest city of Naushahro Feroze.

Furthermore, drainage issues along the roadside and back lane of houses contribute to the deterioration of roads and Katcha path or back lanes, which is providing access along with the utility services to the city dwellers. The absence of paved roads and street poses another challenge, leading to damage and financial burden to the owner of vehicles including heavy vehicles, which is also the root cause of traffic accidents. Encroachments and disorganized/illegal Cinque and Rickshaw stands are evident on the roadside, causing both on-street and off-street parking problems. Occasional institutional and religious gatherings further contribute in increasing the problems faced by the people of the city.

- **Traffic Volume Count (TVC)**

The traffic & transportation survey was conducted in three stages, covering a 12-hour period from (7:00 am) in the morning to (7:00 pm) in the evening, commissioning the Traffic Volume/Capacity (TVC) analysis. Enumerators executed the survey with a focus on eight major traffic congestion points at each selected location. The study utilized a TVC + Break + TVC pattern for a comprehensive understanding of the traffic dynamics.

The Traffic Volume Count (TVC) in Moro provides a comprehensive overview of the composition and distribution of various types of vehicles within the surveyed area. Motorcycles constitute the majority, representing 42.82% of the total, followed by 28% of Qing qi Rickshaws, and 9.35% of Cars/Taxi/Jeeps. Light Vans/Passenger Pickups, Mini Buses/Coasters, Buses, and Trucks/Tankers contribute to the traffic with smaller percentages, while Loading Pickups/Mini Trucks, Non-Motorized vehicles, and other categories make up the remaining share.

Further analysis of the percentage distribution of PCUs shows that motorcycles account for 42.82%, reaffirming their dominant presence in the traffic flow. Other categories contribute to varying degrees, with Bicycles and Animal Carts representing the smallest percentages.

In conclusion, the TVC summary provides valuable insights into the traffic composition in Moro, emphasizing the prevalence of motorcycles and Rickshaws. These findings underline the need for traffic management measures, improved regulation of para-transit operations, and planning interventions aimed at enhancing safety, efficiency, and overall mobility within the urban road network.

- **OD Survey**

An Origin-Destination (OD) survey was conducted to understand the travel patterns of residents within the city. The travel time distribution to school and work/office is similar, with the majority of respondents taking 5 minutes or less to reach their destination. The travel time distribution to shopping is slightly different, with a large proportion of respondents (25%) taking 11-15 minutes to reach their destination. The travel time distribution to hospital is same as shopping, with a large proportion of respondents (22%) taking 11-15 minutes to reach hospital.

The overall travel time distribution in the city is relatively flat, with a small number of respondents taking significantly longer than the average travel time. This suggests that there is a high degree of variability in travel times within the city. The travel time distribution to school and work/office is similar, while the travel time distribution to shopping and hospital is slightly different.

Given the quantified deficits in connectivity, inconsistent road conditions, inadequate public transport infrastructure, and rising population pressure, the transportation strategy must prioritize (i) rehabilitation and upgrading of existing road networks and drainage systems to ensure safety and durability (ii) expansion and formalization of public transport facilities, including bus and truck stands, to improve accessibility and reduce congestion (iii) integration of traffic management solutions to address parking, encroachments, and congestion issues, and (iv) development of multi-model connectivity linking regional air, rail, and road services to support sustainable urban mobility and economic growth.

8.1.3 Issues and Problems

- Unplanned street network
- No formal Bus Terminal
- Absence of public transport
- Poor traffic management.
- Lack of opportunities for integrated transport provisions
- Lack of coordination between different transport operating agencies.
- Haphazard on street parking reduces road capacity
- Poor administration and management control

*8.1.4 **SWOT Analysis***

STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
LAND USE PATTERN AND TRANSPORTATION			
1. Mixed land uses (residential, commercial, industrial, administration) 2. Moro is a city that is easily accessible and navigable by road, rail and air 3. Inter and intra city strong network 4. Strategic Location 5. Diverse Transportation Options	1. Unplanned street network 2. Absence of public transport 3. Ribbon type commercial development in residential neighborhoods 4. Absence of parking spaces/lots in the city 5. Dust storms, especially during the dry season 6. Absence of truck stand and truck terminal 7. The presence of illegal bus and Qing-qi (auto-rickshaw) stands 8. The road network faces lack of proper maintenance, riddled with potholes and cracks 9. The absence of paved roads and streets 10. Poor traffic management 11. Non-aesthetic streetscape 12. Haphazard on street parking reduces road capacity	1. Promotes compact development. 2. Activity centers (support local business) 3. Opportunities in the form of wide roads available for mass transit system development 4. Wider road space can be used to facilitate multiple transport activities by implementing road space design standards 5. Proper management can promote public transport services 6. If properly administrated and space utilized, could promote smooth flow of traffic on nearby corridors 7. A truck terminal for goods transport will facilitate timely supply of industrial and other goods	1. Encroachments on roads and foot paths 2. Congestion and inconvenience caused by parking of small & heavy vehicles 3. Dust turn arteries into hazy corridors, reducing visibility and posing safety hazards 4. Reduced flow of traffic (low speed) 5. Inconvenience due to traffic congestion 6. Budgetary Constraints

The need assessment confirms that the transportation response cannot rely solely on new infrastructure development; it must be delivered through a two-track approach: (i) rehabilitation and functional upgrading of existing road networks, drainage, and safety features; and (ii) targeted expansion and

formalization of transit facilities, traffic management, and connectivity improvements. This phased strategy supports both immediate service continuity and long-term mobility and accessibility goals aligned with population growth projections.

*8.1.5 **Policy Guidelines***

- Promote compact development.
- Provision of Activity centers (support local business)
- Promote Opportunities in the form of wide roads available for mass transit system development
- Provision of Wider Road space can be used to facilitate multiple transport activities by implementing road space design standards
- Adequate space should be available for street furniture installation
- Proper management can promote public transport services.
- After removal of encroachments adequate space available for traffic signs, lane markings and foot paths
- If properly administrated and space utilized, could promote smooth flow of traffic on nearby corridors.
- A new transport terminal for goods transport will facilitate timely supply of industrial goods.

*8.1.6 **Sindh Empowerment of 'Persons with Disabilities' Act, 2018***[45]

Keeping in view 'Persons with Disabilities' act, 2018 while planning, designing & executing any kind of infrastructure projects i.e. public places, markets, parks, educational institutions, health facilities, Roads Street and pathways centers and etc, it is now mandatory to apply Universal Design and Accessibility criteria for ease of access of differentially abled persons. Also, during the planning & designing phase universal guidelines for differently abled friendly construction should adhered for e.g provision of ramps, specialized tiles (Tactile Paving) used for visually impaired personals, signage, street furniture, foot path steps, parking, mechanical access, railings, opening of doors & windows, toilet design, lighting and illumination and etc.

Specifically planning & designing for the transport sector, universal access is the goal of enabling all citizens to reach every destination served by their public streets and pathway system. Universal access is not limited to access by persons using automobiles. Travel by bicycle, walking, or wheelchair to every destination is accommodated in order to achieve transportation equity, maximize independence, and improve community livability. Wherever possible, facilities are designed to allow safe travel by young, old, and disabled persons who may have diminished perceptual or ambulatory abilities. The universal design has following principles;

[45] ADP 2017-2018 Agriculture Punjab

i. **Universal access to destination:**
All destinations served by the public road system shall be accessible by pedestrians and by drivers of all vehicles (including bicycles), except that vehicle operation may be restricted for reasons of excessive weight, noise or size, or extraordinary potential for damage to property or person.

ii. **Equal Right of use:**
People's right to use that portion of a street designed for travel is not diminished by less weight, less size, or less average speed associated with their travel mode. Demand actuated tra-c signals must detect and serve a diversity of users including bicycle operators in the roadway and pedestrians using crosswalks.

iii. **Accessible surfaces:**
To the extent practicable, travel surfaces should accommodate travel on foot with minimal trip hazards and via common assistive devices such as wheelchairs. Roadway surfaces should be as clear as possible of hazards for narrow tires such as bicycle wheels.

iv. **Crossable Roadways:**
Crossing distances at non-signalized access locations must not exceed the distance that can be covered at walking speed before tra-c may arrive from beyond sight distance, or during reasonable gaps in roadway tra-c. Refuges provided to reduce crossing distances should be large enough to store assistive devices such as wheelchairs and strollers. Tra-c signal timing should provide adequate clearance intervals for safe crossing by pedestrians and slow vehicles.

It is suggested that necessary provision of the above recommendation may be mandated in the laws and regulations of SBEA and other agencies which drafting the buildings and highway regulations.

8.1.7 Strategic Development plan

The aim of strategic development plan is envisions providing equal and equitable sustainable transport system to all groups of society on affordable basis with minimal impacts on environment, also Provision of Citizen-centric, Sustainable and Growth Oriented Modern Transport system and rehabilitation of existing roads.

i. **Long Term Plan**
- Build a local / district / regional transportation system.
- Rehabilitation of existing roads should be scratched from its compaction level and reconstruct as per specification of design perimeters.
- Construct and formalize bus and truck terminals on the outskirts of the city.
- Ensure this transport hubs are equipped with basic amenities (shelters, seating, sanitation, parking, lighting)

ii. **Short Term Plan**
- Improve road design to make safer roads.
- Prevent encroachments on footpaths through litigation.

- Environmental Impact Assessment (EIA) should be mandatory for all transportation projects.
- Declaring private vehicle free zones, especially in peak hours, in CBD areas to reduce noise and air pollutions.
- Reduce traffic growth and congestion by achieving a mode shift.
- Enhance institutional efficiency to improve service delivery.
- Dualization of main arteries.
- Construction of Bus Terminal
- Construction of Truck Terminal along the bypass near proposed commerce and trade Centre.
- Construction of overhead bridge on Mithiani -NasharoFeroze bypass intersection to avoid accidents and facilitate smooth Traffic flow.
- Discourage the direct link roads the bypass.

To reduce congestion in commercial corridors and protect the core city from unnecessary through-traffic, the short-term strategy will implement a traffic re-routing plan that:

  - Direct regional through-traffic and heavy vehicles to ring road/bypass corridors (where feasible) and restricts their movement in the core during peak hours.
  - Implements time-based management (peak-hour control) for freight loading/unloading and para-transit staging in commercial areas.
  - Establishes one-way/loop circulation arrangements on the most congested inner-city links (where road widths and ROW allow), supported by signage and enforcement.
  - Creates diversion routes during road rehabilitation works, with clear temporary signage and staged execution to maintain access to markets, schools, and emergency services.
- Establishes designated on-street parking bays on selected corridors through marking, lane discipline, and removal of encroachments.
- Provide off-street parking pockets near markets and high-demand nodes through municipal land identification and PPP options where viable.
- Introduces managed curb-side parking (including metered/regulated parking in selected commercial areas) and reinvests revenue into O&M and traffic management
- Allocates rest parking space for drivers near formalized terminals and staging areas to reduce random truck/bus parking along roadside corridors.

Transportation interventions will be integrated with municipal infrastructure planning particularly road connectivity, drainage systems, public transit facilities, traffic management, pedestrian access, and safety measures. This integration will fully incorporate the provisions of the Sindh Empowerment of 'Persons with Disabilities' Act, 2018, ensuring universal design and accessibility for differently-abled persons across all transport infrastructure. Additionally, adherence to policy guidelines-including traffic reduction in peak hours, formalization of transport hubs, improvement of road safety, and promotion of sustainable transport nodes will enhance mobility, reduce congestion, improve accessibility for all users, and

strengthen resilience against flooding and other disruptions, thereby ensuring an efficient, inclusive, and sustainable transport system for Moro City.

*8.1.8 **Priority Projects:***

- **Construction/ Rehabilitation of Roads**

Moro City, the second largest city in Naushahro Feroze District, suffers from a deteriorated and poorly maintained road network, with only a few major roads in good condition. Most internal roads and streets are unpaved, damaged, or encroached upon, causing frequent traffic congestion, vehicle damage, and safety hazards. Poor drainage further accelerates road deterioration, especially in residential back lanes and access roads. A comprehensive road construction and rehabilitation project is essential to ensure safe mobility, improve urban infrastructure, reduce transportation costs, and support the city's socio-economic development.

Figure 8-1: Condition of different roads in Moro City

- **Scope**
  - **Assessment and Planning**
    - Comprehensive condition assessment of existing road network, including primary, secondary, and internal streets of Moro City
    - Identification and prioritization of roads requiring construction, rehabilitation, or resurfacing based on traffic volume, damage level, and connectivity importance.
  - **Road Construction and Rehabilitation Works**
    - Construction of new paved roads in currently unpaved and underserved residential streets and access roads
    - Rehabilitation and strengthening of deteriorated roads through resurfacing, overly, or full-depth reconstruction as required
    - Improvement of road geometry, carriageway width, and junctions to enhance traffic flow
  - **Drainage and Utility Integration**
    - Development and rehabilitation of roadside and underground drainage systems to prevent waterlogging and premature road deterioration

- Coordination with water supply, sewerage, and utility services to ensure integrated infrastructure development

- **Traffic Management and Safety Measures**
  - Removal of encroachments and regulation of illegal parking, rickshaw, and bus stands in coordination with relevant authorities
  - Provision of road safety features including signage, road markings, speed calming measures, and pedestrian crossings
  - Development of footpaths and pedestrian facilities in congested and commercial areas
- **Access and Urban Connectivity**
  - Improvement of access to key public facilities such as hospitals, schools, markets, and residential neighborhoods
  - Enhancement of connectivity between major roads and internal streets to ensure efficient urban mobility
- **Sustainability and Resilience**
  - Incorporation of climate-resilient and durable construction standards suitable for local conditions
  - Provision for future traffic growth and urban expansion
- **Implementation and Management**
  - Phased implementation prioritizing critical and high-traffic roads
  - Coordination with municipal and traffic authorities for execution, operation, and maintenance of the road network

➢ **Size**

- Geographic Coverage: Citywide coverage encompassing major arterial roads, secondary roads, internal streets, and residential access roads of Moro City.
- Network Extent: Construction and rehabilitation of a substantial portion of the existing road network, including paved and unpaved roads identified as damaged or encroached.
- Road Classification: Works will cover primary, secondary, and tertiary (internal) roads, based on priority and functional importance
- Infrastructure Components: Project size includes carriageways, shoulders, footpaths, junction improvements, and associated roadside infrastructure
- Drainage Integration: Road lengths will include provision of side drains and cross-drainage structures to ensure long-term durability.
- Traffic Capacity: Roads will be designed to accommodate current traffic volumes with allowance for future urban growth.
- Implementation Scale: Execution planned in phases, allowing flexibility to add any additional roads found in poor condition during implementation.
- Design Standards: Project size aligned with urban road design standards and municipal development plans.

- Scalability: Overall size is scalable and can be adjusted based on available funding and detailed engineering assessments.

➢ **SDG's Alignment**

I. Goal No. 8: Decent Work and Economic Growth

To promote inclusive and sustainable economic growth, employment, and decent work for all, enhancing the economic productivity through diversification, technological upgrading, and innovation, while improving global resource efficiency in consumption and production.

II. Goal No. 11: Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

To enhance urban and suburban areas within cities, making them inclusive, safe, resilient, and sustainable through improved urban planning and management that incorporates the participation of the community.

➢ **Implementing Authority**

Government of Sindh, Works and Services Department and Moro MC +

➢ **Preliminary Cost Estimate**

Estimate Cost: 600 million Approx.

➢ **Construction of Bus Terminal**

There isn't any designated Bus terminal within Moro City. Inter-city buses are very limited and do not operate with regulations or proper stands. Illegal bus stands of public transport are evident in Moro. Unregistered Qingqi and Rikshaws are more than buses. Daewoo Express Moro Buses and Waraich & Faisal Movers Buses, privately owned, provide their services to the people of Moro City, from the Bus Terminal located near the Junction of Dadu – Moro Road and National Highway N5 in the south-east of Dadu – Moro Road. This Bus Stop/Bus Terminal, which is not properly planned and constructed, is however serving the taxis and wagons to move people from one area to another area. Therefore, a bus terminal is proposed on 15 acres with parking capacity of ~250-300 buses. Proposed location is in the north of city nearer National Highway (N-5). The bus terminal will have all the facilities like restaurants, mosque, toilets and banks etc.

➢ **Scope**

- Planning and Feasibility
    - Conduct transport demand assessment and feasibility studies for inter-city and intra-city public transport needs of Moro City
    - Finalize site selection on approximately 15 acres of land in the northern part of the city near National Highway (N-5), considering accessibility, traffic flow, and future expansion

- Site Development and Terminal Facilities
  - Development and preparation of the selected site including land leveling, boundary demarcation, and internal circulation
  - Construction of terminal platforms, sheds, and operational areas suitable for bus operations
  - Provision of organized parking and staging areas with capacity for approximately 250-300 buses
  - Designation of separate bays for inter-city buses, inter-city buses, taxis, wagons, and other public transport modes
  - Elimination of illegal and unregulated bus, Qingqi, and rickshaw stands form city roads
- Passenger and Operation Facilities
  - Construction of passenger waiting halls, ticketing counters and information kiosks
  - Provision of essential passenger amenities including restaurants/food courts, mosque/prayer area, toilets, and banking/ATM facilities
  - Development of terminal administration offices, staff facilities, and management areas
  - Incorporation of universal accessibility features such as ramps, walkways, and accessible washrooms
- Traffic Management and Safety
  - Design and implementation of organized entry and exit points connected to city roads and N-5
  - Provision of traffic signage, road markings, pedestrian crossings, and safety barriers
  - Installation of security arrangements including lighting, controlled access, and surveillance systems
- Infrastructure and Environmental Measures
  - Development of internal roads, drainage, water supply, sewerage, and solid waste management systems
  - Provision of energy-efficient lighting, with preference for solar-powered systems
  - Landscaping and environmental improvements to enhance user comfort and reduce pollution
- Institutional and Operational Framework
  - Coordination with municipal, transport, and traffic authorities for regulation and operation
  - Preparation of an operation and maintenance plan to ensure sustainable and efficient functioning of the bus terminal

➢ **Size**

- Land Area: Development of approximately 15 acres of land for the bus terminal complex.
- Service Coverage: Citywide service for inter-city and intra-city public transport operations of Moro City.
- Parking Capacity: Provision of organized parking, holding, and staging areas for approximately 250–300 buses, including inter-city buses, local buses, wagons, and other public transport vehicles.
- Infrastructure Scale: Construction of terminal buildings, platforms, bus bays, internal roads, and circulation areas.

- Passenger Facilities: Development of passenger amenities including waiting halls, ticketing areas, restaurants/food courts, mosque/prayer area, toilets, and banking/ATM facilities.
- Support Infrastructure: Installation of water supply, sewerage, drainage, solid waste management, lighting, and security systems across the terminal area.
- Traffic Interface: Design scale sufficient to integrate the terminal with National Highway (N-5) and the city road network.
- Implementation Scale: Project size allows for phased development and future expansion based on increasing transport demand.
- Design Capacity: Facilities sized to accommodate current transport demand with provision for future growth and regional connectivity.

➢ **SDG's Alignment**

I. **Goal No.8: Decent Work and Economic Growth**

To promote inclusive and sustainable economic growth, employment, and decent work for all, enhancing the economic productivity through diversification, technological upgrading, and innovation, while improving global resource efficiency in consumption and production.

II. **Goal No.11: Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable**

To enhance urban and suburban areas within cities, making them inclusive, safe, resilient, and sustainable through improved urban planning and management that incorporates the participation of the community.

➢ **Implementing Authority**

Government of Sindh, Works and Services Department and Moro MC

- **Preliminary Cost Estimate**

Estimate Cost: **200 Million Approx.**

S. No.	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Roads and Communication Network						
# 1	Beautification & Rehabilitation of Major Urban Roads.	300	-	Non ADP	**Short Term**	-
# 2	Rehabilitation & improvement of Secondary/Tertiary roads	300		Non ADP	**Short Term**	-
# 3	Feasibility study for Moro Bus Terminal	50	-	Non ADP	**Short Term**	-
# 4	Procurement for land for Moro Bus Terminal	200	-	Non ADP		**Long Term**

- **Construction of Truck Terminal**

Currently, Moro City lacks a dedicated truck terminal, despite the evident need for such a facility. Loading and unloading of goods are routinely carried out on both sides of city roads, with heavy vehicles such as trucks, tractor trolleys, and camel carts frequently parked along thoroughfares. This practice causes significant inconvenience and traffic disruption for residents and visitors engaged in shopping, business, office work, or recreational activities. In the absence of a proper truck terminal, freight vehicle operators and local businesses are forced to rely on informal and often inefficient alternatives for loading and unloading goods.

To address this issue, a 15-acre truck terminal is proposed, with a parking capacity of approximately 280 to 300 trucks. The proposed site is strategically located between the Old National Highway and the - Mehrabpur Branch, in the northeastern part of the city. The terminal will be fully equipped with essential facilities, including restaurants, a mosque, public toilets, banks and other amenities to support both drivers and commercial operations.

➢ **Scope**

- **Planning and Site Selection**
  - Conduct feasibility and freight demand assessment to determine current and future truck traffic needs of Moro City
  - Finalize site selection on approximately 15 acres of land located between the Old National Highway and Tando Adam–Mehrabpur Branch in the northeastern part of the city, considering accessibility and future expansion
- **Site Development and Terminal Facilities**
  - Development and preparation of the selected site including land leveling, boundary demarcation, and internal circulation
  - Construction of a dedicated truck terminal with organized parking and holding areas for approximately 280–300 trucks
  - Provision of designated loading and unloading bays to eliminate roadside freight operations
- **Operational and Support Facilities**
  - Development of terminal administration and management offices
  - Provision of essential facilities for drivers and operators including restaurants/food outlets, mosque/prayer area, public toilets, and banking/ATM services
  - Allocation of space for freight-related services such as waiting areas and rest zones for drivers
- **Traffic Management and Safety**
  - Design of controlled entry and exit points to ensure smooth movement of heavy vehicles
  - Integration of the terminal with surrounding road networks to reduce congestion within the city
  - Installation of traffic signage, road markings, lighting, and safety measures
- **Infrastructure and Environmental Measures**
  - Development of internal roads suitable for heavy vehicle loads
  - Provision of drainage, water supply, sewerage, and solid waste management systems
  - Landscaping and environmental improvements to reduce dust and improve working conditions
- **Institutional and Operational Framework**
  - Coordination with municipal, transport, and traffic authorities for regulation and management
  - Preparation of an operation and maintenance plan to ensure sustainable functioning of the truck terminal

- **Size**

  - Land Area: Development of approximately 15 acres of land for the truck terminal facility.
  - Service Coverage: Citywide and regional freight transport service catering to trucks, tractor trolleys, and other heavy vehicles serving Moro City.
  - Parking Capacity: Provision of organized parking, holding, and staging areas for approximately 280–300 trucks.
  - Infrastructure Scale: Construction of heavy-duty internal roads, loading and unloading bays, parking yards, and circulation areas designed for freight vehicles.
  - Support Facilities: Development of driver and operator amenities including restaurants/food outlets, mosque/prayer area, public toilets, and banking/ATM facilities.
  - Operational Facilities: Provision of terminal administration offices, control areas, and service spaces for freight operations.
  - Utility Infrastructure: Installation of water supply, sewerage, drainage, solid waste management, lighting, and safety systems across the terminal site.
  - Traffic Interface: Design scale sufficient to integrate the terminal with the Old National Highway and Tando Adam–Mehrabpur Branch Road, reducing heavy vehicle movement within the city.
  - Implementation Scale: Project size allows for phased development and future expansion to meet growing freight demand.
  - Design Capacity: Facilities sized to accommodate current freight volumes with provision for future urban and commercial growth.

- **SDG's Alignment**

  I. **Goal No.8: Decent Work and Economic Growth**

  Construction and operation of the truck terminal will create jobs in transportation, facility management, hospitality, and maintenance, contributing to SDG 8.3 and 8.5, which aim to support productive employment and inclusive economic growth.

  II. Goal No.11: Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

  By reducing congestion and improving the efficiency of freight movement, the project supports SDG 11.2, which focuses on providing access to safe, affordable, and sustainable transport system for all.

- **Implementing Authority**

Government of Sindh, Works and Services Department and Moro MC.

- **Preliminary Cost Estimate**

Estimate Cost: **250 Million Approx.**

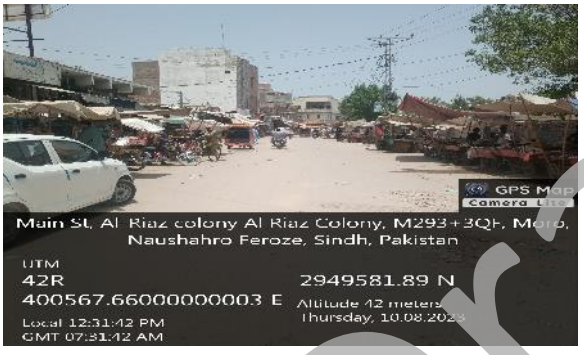
S. No.	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Roads and Communication Network						
# 1	Feasibility study for Truck Terminal in Moro city	50	-	Non ADP	**Short Term**	-
# 2	Procurement of land for Moro Truck Terminal	200	-	Non ADP	**Short Term**	-

8.1.9 Immediate Action Plan

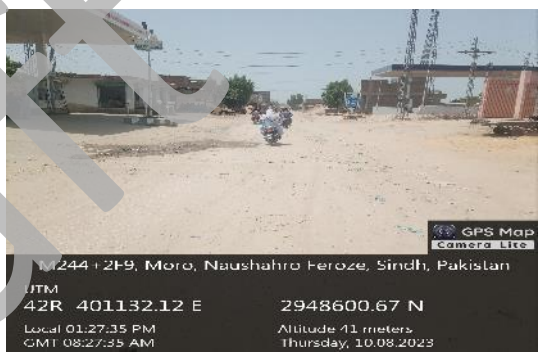
- **Rehabilitation of Core Area Roads and Traffic Management in Moro**

An Immediate Action Plan for the Core urban area in Moro Municipal Committee (MC) necessitates the restoration of the right of way on roads by removing all encroachments along the main roads like Old national Highway, Moro-Dadu Road. This will improve traffic flow, enhance safety, and create a more organized urban environment.

The Immediate Action Plan focuses on restoring and upgrading core roads, reorganizing roadside activities, introducing structured parking, and ensuring safe pedestrian mobility. These interventions will ease traffic flow, improve safety, and enhance the efficiency of transport system, in line with SDG 11.2 (access to safe, affordable, and sustainable transport).



Road Side encroachment



Broken Road

Unplanned Street network

- **Scope**

The transportation improvement plan will include the following key actions:

- Repair & Rehabilitation of Existing Roads: resurfacing, strengthening, and widening where necessary.
- Road Safety Improvements: Clear marking, signage, pedestrian crossings, and traffic signals.

- Green Medians & Streetscape: Development of medians and plantation to improve aesthetics and reduce heat at Old National Highway, Moro-Dadu Road and Dars Road.
- Street Furniture Installation:
  - Street Lighting: Wall-mounted Street lights at regular intervals for safety.
  - Zebra Crossings: Clearly marked crossings in pedestrian-heavy areas.
  - Roundabout Rehabilitation: Redesign and upgrade of roundabouts for smoother traffic and pedestrian safety.
  - Benches & Seating Areas: Comfortable seating at regular intervals to encourage walkability.
- Parking Management: introduction of curb-side parking meters and designated parking areas.
- Community Engagement: Awareness campaigns to build ownership and reduce resistance to road realignment.

➢ **Size:**

The road repair and rehabilitation program within the core urban area of Moro MC will cover a total 9 major and minor roads, comprising key urban and intercity linkages. The combined length of these roads is approximately 5.67 kilometers, covering an estimated area of 62,464 square meters.

Moro - Core Town Area Repair & Rehabilitation of Roads								
S.No	**Area / Locality / Address Major Roads**	**Length (km)**	**Length (m)**	**Width (feet)**	**Width (m)**	**Area (sq.m)**	**Per sq.m cost (PKR)**	**Total Cost (PKR)**
1	Old National Highway	0.85	850.00	40.00	12.192	10363	10,764	112
2	Old National Highway 1	1.25	1256.86	40.00	12.192	15324	10,764	165
3	Dars Road	0.71	920.00	40.00	12.192	11217	10,764	121
4	Moro Bandhi Road	0.85	856.00	40.00	12.192	10436	10,764	112
5	Dadu - Moro Road	0.45	454.21	40.00	12.192	5538	10,764	60
							Total PKR Rs. Million (A).	569
Minor Roads								
1	Irrigation Road	0.51	516.65	20	6.096	3149	10,764	34
2	Gachero Road	0.27	272.06	20	6.096	1658	10,764	18
3	Memon Muhallah Road	0.58	582.61	20	6.096	3552	10,764	38
4	Shahi Bazar Market Road	0.20	201.21	20	6.096	1227	10,764	13
							Total PKR Rs. Million (B).	**103**
							Total PKR Rs. Million (A+B).	**672**

Proposed wall mounted street lights and Pedestrian Movement			
S. No.	**Name**	**Length (m^2)**	**Cost (PKR)**
1	Proposed Total Length of Street (km) for wall mounted streets lights.	1,136	128
		Total Cost (PKR). Million	**128**

Note:

- Wall-mounted Street lights should be placed at a distance of 20 feet apart.
- The total number of wall-mounted street lights required will be determined based on the total length of streets in the core town area.

I. Preliminary cost estimate

A preliminary cost estimate will be provided, itemizing the costs associated with each of the activities listed above. The cost breakdown includes:

- **Major Roads Rehabilitation (A)**
- **Minor Roads Rehabilitation (B**

Total Estimated Cost: 800 million

II. Implementation Framework

- **Funding Sources:**
  - Municipal budgets for maintenance.
  - Provincial ADP grants for rehabilitation and transport development.
  - Parking revenue from meters reinvested into O&M.
  - Public-Private Partnerships (PPP) for parking management and possibly key corridors.
- **Execution:** Works executed by the works & Services Department in coordination with the Municipal Committee.
- **Phasing:** Priority to congested corridors (Dars road, Old National Highway).

Solar Street Lights

Major Road after Immediate Action Plan

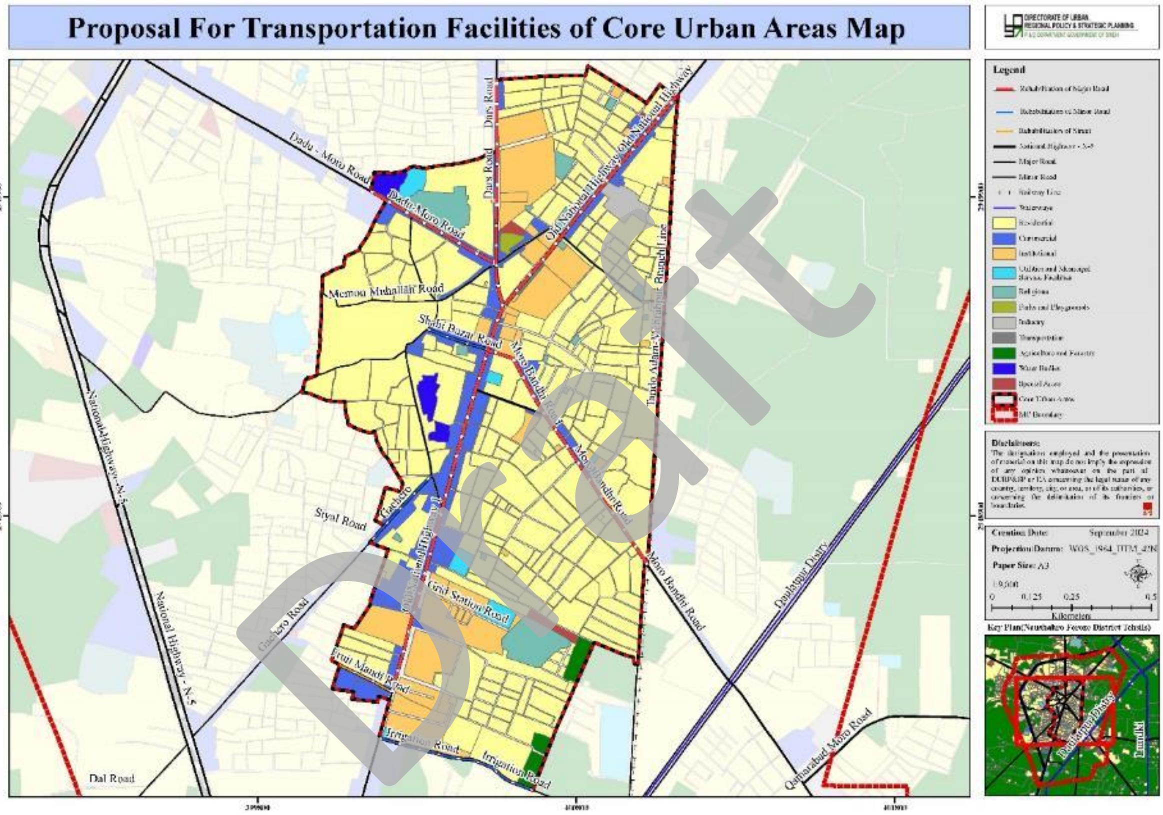


Figure 8-2: Proposal for Transportation of Core Urban Areas Map

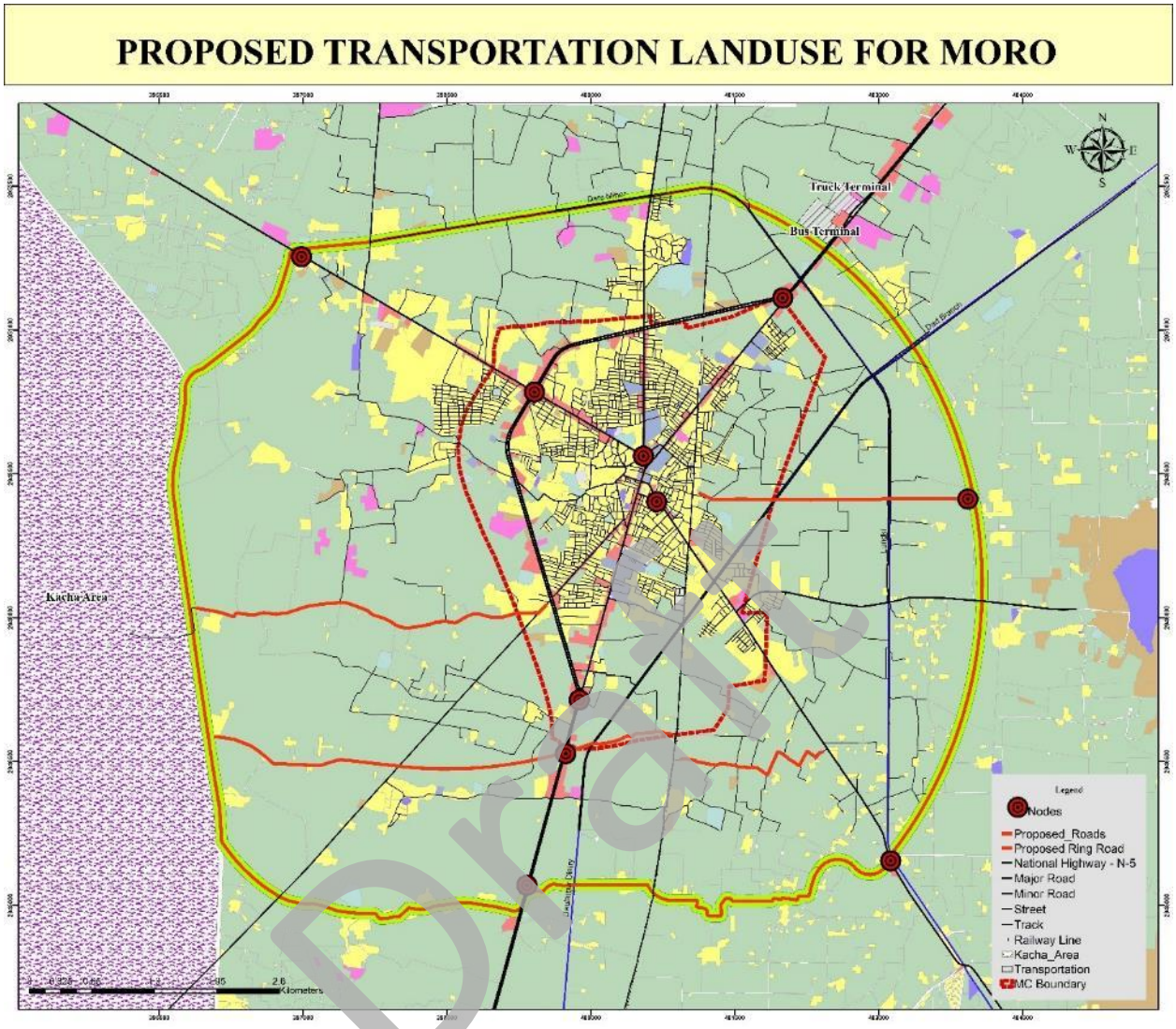
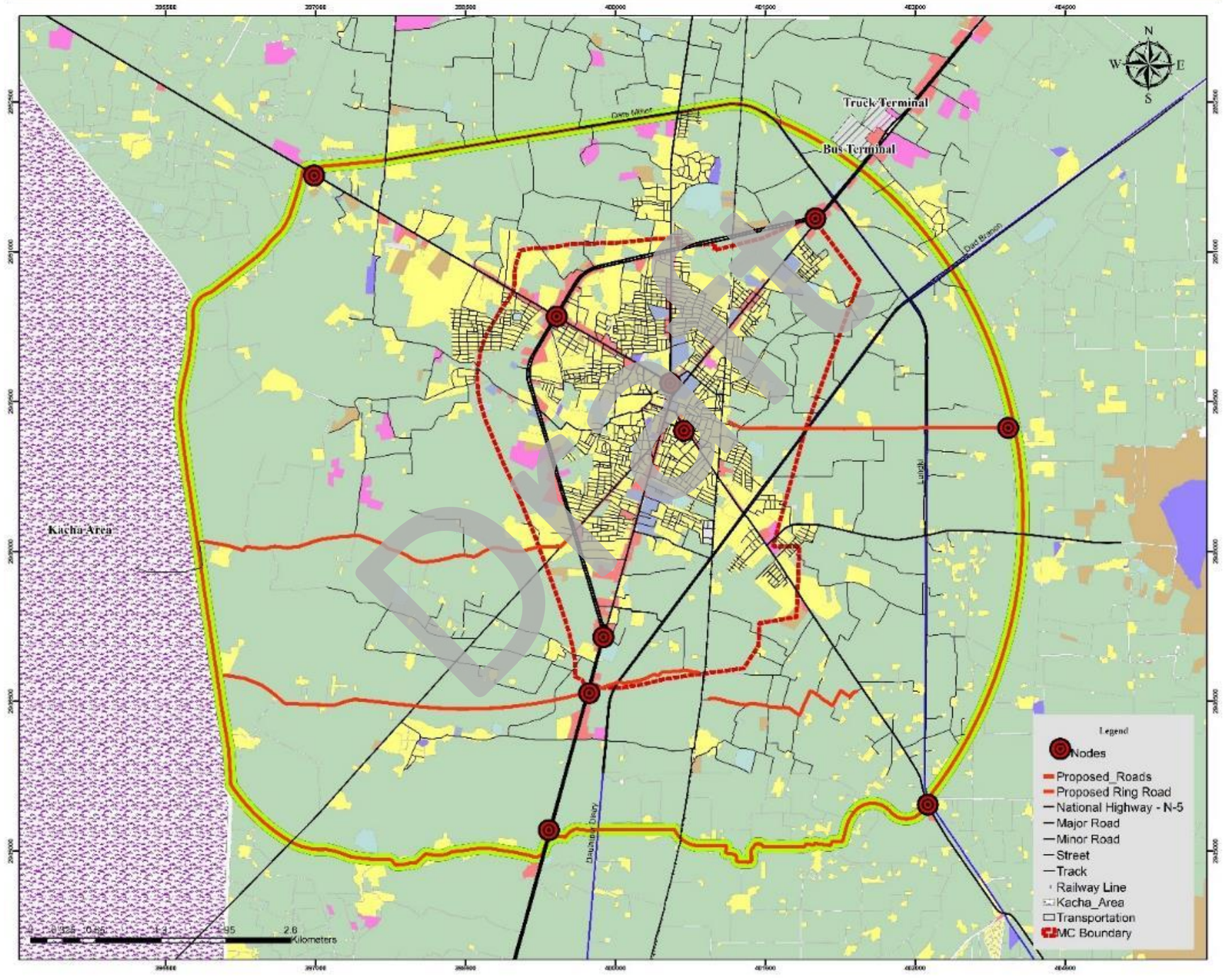


Figure 8-3: Proposed Bus and Truck Terminal Location

PROPOSED TRANSPORTATION LANDUSE FOR MORO



8.2 Energy

*8.2.1 **Existing Situation***

Moro City stands at a crucial juncture in its electrical infrastructure development, necessitating a comprehensive situation analysis to gauge the current state and plan for future growth. The city primarily relies on SESCO (Sukkur Electric Supply Company) for its power supply, with a focus on key parameters such as source, availability, and consumption.

Moro City's electricity supply is predominantly reliant on SESCO (Sukkur Electric Supply Company), which provides power through urban feeders connected to one main grid station. The city benefits from relatively robust infrastructure, ensuring that 83% of residents have access to electricity, indicating a widespread distribution network. However, the city's electricity consumption is moderate, with 50% of residents using between 50-100 KWH per month, while 25% fall within the 101-200 KWH range. This moderate usage reflects the daily routines and economic conditions of the city's residents. Despite this access, the city grapples with significant power challenges, primarily related to load shedding, as 54% of the population experiences extended power outages for 7-10 hours daily, severely impacting daily life and economic activities.

In response to these power disruptions, a substantial number of residents have adopted alternate power solutions, particularly solar energy. Approximately 49% of households report using alternative power sources, with solar energy emerging as the most popular, with 88% respondents relying on it to meet their energy needs. The use of generators is also prevalent, though less common, with minimal adoption. These trends reflect a growing shift towards sustainable and self-reliant energy solutions in Moro city, spurred by the inconsistency of the main power supply. This situation highlights the need for improved infrastructure and sustainable energy.

*8.2.2 **Current Power Supply/Demand***[46]

According to the World Bank, for Pakistan Average Minimum Power Requirement per Capita in the year 2017 was 595 KWH, keeping the same standard the power requirement for Moro City is depicted in the following table

It is clear from the Table below, that the estimated existing (2025) requirement of power requirement is 10.37 MW, in the year 2030 it is 14.54 MW, in 2035 is 20.40 MW, in 2040 is 28.61 MW and whereas after 20 years span of time the total requirement of power is estimated 40.13 MW i.e. more than 3.86 or about four times of the existing requirement of power to serve the projected population of 590,796 persons for planned period up to the year 2045.

[46] https://pdma.gos.pk/Documents/Flood/Flood_2022/Flood%20Inundation%20GIS%20Maps/Deaths-Province%20Status%2024-10-2022.pdf

Table 8-2: Estimated and Projected Power for Existing and Future Population					
Area	**Existing Estimated 2025**	**Projected 2030**	**Projected 2035**	**Projected 2040**	**Projected 2045**
Moro MC Population	163,207	228,373	319,557	447,148	625,685
Electricity	10.37 MW	14.54 MW	20.40 MW	28.61 MW	40.13 MW

Source: Consultants Estimates

Thus, between 2025 and 2045, Moro City's electricity demand is projected to increase from 10.37 MW to 40.13 MW, resulting in an additional requirement of approximately 29.37 MW to meet future needs, based on population growth. This growing demand cannot be addressed through incremental load adjustments alone and necessitated a comprehensive strengthening of the city's power supply and distribution systems. Meeting this future energy requirement will require not only capacity enhancement but also:

- Upgradation and expansion of feeders to reduce overloading and technical losses;
- Rehabilitation and augmentation of the existing distribution network, including transformers and low-voltage lines; and
- Improvement of service reliability and energy efficiency measures, including loss reduction, metering improvements, and integration of renewable energy options where feasible, to ensure a resilient and sustainable power supply for Moro City's long-term urban growth.

8.2.3 Issues and Problems:

- Shortage of electricity & power supply.
- Poor maintenance of electricity supply infrastructure.
- Power shortage due to non-payments of bills.
- Line losses and power theft.
- Outdated network in old town areas.
- Existing capacity of electricity supply is short to meet the growing demand of utility.
- No alternate source of electricity is available in the district.

8.2.4 SWOT Analysis

POWER SUPPLY & DISTRIBUTION			
STRENGTH	**WEAKNESS**	**OPPORTUNITY**	**THREATS**
1. Potential of renewable energy generation (solar, biomass, wind, hydro) 2. Fossil fuel (domestic coal reserve and opportunity of building gas infrastructure) 3. Electricity supply network for urban area 4. About 83% of urban area gets coverage of electricity 5. Only 2% consumers consume more than 300 KWH of electricity 6. The industrial sector demands supply of electricity 7. There is good local potential for electricity generation	1. Inefficient utilization of domestic resources 2. Performance of state-owned institutions 3. Transmission network and transmission and distribution losses. 4. Significant population (54%) of Moro suffers from load shedding of power supply from 7 to 10 hours 5. Poor maintenance of electricity supply infrastructure 6. Power shortage due to non-payments of bills 7. Line losses and power theft 8. Outdated network in old town areas 9. Existing capacity of electricity supply is short to meet the growing demand of utility 10. No alternate source of electricity is available in the district	1. Option of alternate power sources, including UPS, generators, solar, and wind energy 2. Distributed generation (using solar and biomass) 3. By increasing the capacity of grid station will minimize electricity shortage & maximize production 4. Opportunities available for alternative energy production through solar energy and wind power 5. Renewal of outdated network to meet existing and future demand	1. Excessive reliance on thermal generation 2. High per-unit generation cost 3. Load shedding 4. Threat to agriculture, industrial production and overall economy 5. Crime rate 6. Political will and policies at work 7. Licensing and legal issues. 8. Investment protection, law & order 9. Electricity theft

8.2.5 Strategic Development Plan

i. Long Term Plan

- The effective development of low-cost energy production systems can be used
- Success in achieving fuel efficiency, adopting new technologies and altering existing fuel-use
- Addition of sub stations as per requirement
- Encourage energy efficient building construction

ii. Short Term Plan

- SEPCO has to improve its capacity of electricity generation, transmission and distribution system.
- Demand for gas and water supply will increase for which SSGC and concerned agencies will have to expand the capacity and facilities.
- By increasing the capacity of grid station will minimize electricity shortage & maximize production
- Opportunities available for alternative energy production through solar energy and wind power.
- Renewal of outdated network to meet existing and future demand.

8.3 Gas Supply

As reported by the Sui Southern Gas Company, 100% Moro City along with 79 surrounding villages are also served with natural gas. However, due to the shortfall at the country level. Furthermore, the city faces significant gas load shedding, with residents experiencing up to 8 hours of interruptions in gas supply daily. This inconsistent supply poses challenges for households and businesses that rely on natural gas for cooking, heating, and other essential activities, complicating daily life in many parts of the city.

According to a socio-economic survey, around 73% of Moro residents have access to natural gas, while the remaining 27% of the population does not have access to this precious resource. This indicates that while natural gas is relatively widespread, there is still a considerable segment of population has to rely on alternative sources for their livelihood energy needs.
However, even among those with access, nearly 62% report insufficient gas pressure and 38% are facing shortage of gas pressure, further complicating its use? Residents have turned to other energy sources, with coal being the most common alternative (76.7%), followed by wood (14%), gas cylinders (5%), and kerosene oil (4.1%). This heavy reliance on coal, in particular, raises concerns about the environmental and health impacts of indoor air pollution, highlighting the need for improved access to clean and efficient energy sources in the city.

*8.3.1 **Strategic Development Plan***

- Feasibility study for alternate resources available
- Measures to cater Load Shedding of both electricity and gas.
- Measure to appropriately priced the energy resources

8.4 Communication

*8.4.1 **Telephone, Mobile, Internet***

As Reported by PTCL officials, Moro City is served by PTCL (Pakistan Telecommunication Company Ltd) Office. A significant portion of the population does not rely on landline services, with approximately 80% of residents reporting the absence of PTCL or landline telephone connections. Instead, the overwhelming majority rely on cellular or mobile phones as their primary mode of communication. This heavy reliance on mobile phones mirrors broader trends across Pakistan, where mobile connectivity has largely overtaken traditional landline communication.

*8.4.2 **Issues:***

- Lack of information sharing regarding agricultural activities, public health, veterinary, disaster forecasting etc.
- Most of the areas lack the coverage of PTCL.
- The internet usage is limited to educated families.

- Negative cultural and ethical exposure to young minds (youth), if not regulated properly.
- No check and balance of non-authorized/ non-biometric SIM's usage.

8.4.3 SWOT Analysis

INFORMATION & COMMUNICATION TECHNOLOGY			
1. Strong networks available for advanced technologies, e.g. internet, cellular networks, broadcasting, satellite communication 2. All cellular service provider offers facilities and service station 3. Town is covered by PTCL services, station and network	1. Lack of information sharing regarding agricultural activities, public health, veterinary, disaster forecasting etc. 2. The internet usage is limited to educated families	1. Media can play important role in economic development and prosperity 2. Immediate disaster forecasting through disaster emergency response centre 3. Marketing campaign support of development initiative	1. Negative cultural and ethical exposure to young minds (youth), if not regulated properly 2. No check and balance of non-authorized/ non-biometric SIM's usage

Importance of Communication Infrastructure in Agriculture Sector:

Swift transportation facilities, farmer friendly marketing arrangements and, above all, a well-maintained Communication network are the basic requirements for an efficient and profitable agricultural sector. The District government needs to improve market and support service infrastructure including farm-to market Roads. This sector will need increased and sustained investments in communication infrastructure in rural areas.

9. ECONOMIC DEVELOPMENT PLAN

The economy of Moro is the primary driver of its growth and sustainability. Traditionally, the city has functioned as an agro-based hub, with cotton, wheat, sugarcane, and vegetables forming the backbone of its agricultural economy. Agro-processing units, rice and flour mills, cotton ginning factories, and trading markets contribute to employment generation and supply regional value chains. In addition, small industries, retail trade, transport, and services provide livelihood opportunities and support the city's role as a commercial center connecting Naushahro Feroze District with Nawabshah, Dadu, and other urban markets.

Despite its economic potential, Moro faces several challenges. These include high youth unemployment, limited industrial diversification, weak infrastructure and logistics, low women's participation in the workforce, and climate-related risks that threaten agricultural productivity. At the same time, there is underutilization of local skills and limited access to finance for micro and small enterprises.
The Economic Development Plan (EDP) within this Strategic Development Plan (SDP) seeks to address these challenges while leveraging opportunities for inclusive and sustainable growth. It emphasizes:

- Modernizing agriculture and strengthening agro-based industries.
- Expanding trade, services, and ICT-based enterprises.
- Promoting industrial estates and small business clusters.
- Building human capital through vocational training and entrepreneurship programs.
- Encouraging women and youth participation in economic activities.
- Strengthening infrastructure, logistics, and market linkages.

I. Policy Direction

The EDP aims to create a more resilient, competitive, and inclusive economy by:

- Encouraging private sector investment under a transparent regulatory environment.
- Supporting farmers and producers to increase incomes through value addition and market access.
- Expanding employment opportunities with a focus on youth and women.
- Ensuring reliable infrastructure, energy, and ICT services to support business growth.
- Aligning economic strategies with SDGs, particularly Goals 2, 8, 9, and 11.

II. Link to Sectoral Strategies

This narration provides the overarching framework for economic development in Moro. The subsequent sub-sections of this section present **sector-wise strategies** for agriculture, industry, trade and commerce, services, ICT, and human resource development. These strategies are supported by targeted interventions, policy guidelines, and priority projects to operationalize the city's economic potential in line with the Master Plan's vision for 2045.

9.1 Agriculture

*9.1.1 **Existing Situation***

The comparison of major crop production in Naushahro Feroze over the last five years (2018–19 to 2022–23) shows that sugarcane has consistently remained the dominant crop in the district. In 2020–21, sugarcane recorded the highest production at 1.46 million metric tons, while production declined to 1.21 million metric tons by 2022–23. Wheat production fluctuated during the period, decreasing from 433,194 metric tons in 2018–19 to 339,497 metric tons in 2022–23. Cotton production showed high variability, with output declining sharply from 243,347 bales in 2018–19 to 132,776 bales in 2020–21, recovering in 2021–22, and then falling again to 65,745 bales in 2022–23. Rapeseed and mustard remained a minor but stable crop throughout the period. Notably, no rice production was reported in the district during the entire five-year period.

Table 9-1: Comparison of Crop Production of last five years (Area in Hectares)-Naushahro Feroze

Comparison of Crop production last five years (Metric Tons/Bales)											
Sr. No.	**Major Crops**	**2018-19**		**2019-20**		**2020-21**		**2021-22**		**2022-23**	
		Area	**Production**	**Area**	**Production**	**Area**	**Production**	**Area**	**Production**	**Area**	**Production**
1.	**Wheat**	104,600	433,194	98,832	360,303	107,910	398,806	109,409	380,089	95,118	339,497
2.	**Sugar Cane**	21,697	1,441,183	22,179	1,424,970	22,259	1,463,112	22,280	1,343,369	21,672	1,212,455
3.	**Cotton**	35,223	243,347	37,068	166,779	23,624	132,776	38,499	227,570	38,608	65,745
4.	**Rapeseed & Mustard**	1,730	1,744	1,304	1,315	1,335	1,346	1,235	1,216	1,685	1,709
Source: Development Statistics of Sindh 2024											

*9.1.2 **Issues***

- About 251,875 acres (42%) of crops were damaged or lost during 2022 flood in Naushahro Feroze District[47]
- High price of Inputs (Fertilizers Material, Pesticides and Quality seed)
- Sugar Industries crisis
- Low price of crop production
- Farm to market road

[47] Flood 2022 in Sindh, PDMA

- Lack of property certified and improved seed
- Lack of agriculture credit facilities
- Agriculture research centres
- Water logging and salinity
- Tube well installation facilities
- High rate of diesel
- Shortage of irrigation water
- No rice production during last five years

9.1.3 SWOT Analysis

Strength	Weakness	Opportunity	Threats
ECONOMY			
AGRICULTURE			
1. Agriculture sector[48] is the dominant employer 2. Suitable climate for production of various food items including the Kharif crops of maize, rice, sugarcane, cotton and the Rabi crop of wheat 3. The district Naushahro Feroze has a well-established canal irrigation system 4. Strong network of distribution of agro based products 5. In addition to these, fruit orchards are abundant in the district	1. During previous six years starting from 2015-16 to 2020-21 no rice production is reported[1] 2. 49Shortage of technical and home-based industry 3. Low demand of home-grown food products 4. Less revenue generation by local government 5. High price of Inputs (Fertilizers Material, Pesticides and Quality seed) 6. Agricultural research centre is not available 7. Low price of crop production.	1. During the year 2014-15 the production of rice reported was 28,646 M. Tons on 9,185 Hectares of land (i.e. 3.12 M. Tones/Hectare) 2. Job opportunity for rural population 3. Labor force is available to work. 4. Strong transport system 5. Outside investors show interest in agriculture sector 6. The area is famous for rice production	1. People will forget to grow rice 2. Less efficient local markets 3. Shortage of agro based products 4. High land prices 5. Shortage of educated and skilled professionals 6. Economic Instability. 7. Pests and Diseases

[48] Sindh Statistics 2022

[49] Naushahro Feroze - Wikipedia

Strength	Weakness	Opportunity	Threats
	8. Lack of agriculture credit facilities		
IRRIGATION			
1. Availability of irrigation system and Rohri canal is passing through the center of district 2. 90% land area is served by canal water and more than 9% by tube well water 3. Positive impact on the city climate 4. An important system of ecosystem service 6. Strengthening landscape values	1. The habitats found in this area are highly dependent on proper water management 2. Relatively high investment maintenance cost 3. High cost of reclamation and revitalisation 4. Water logging and salinity 5. Tube well installation facilities 6. High price of Inputs (Fertilizers Material, Pesticides and Quality seed) 7. Lack of agriculture credit facilities 8. High rate of diesel 9. No rice production during last five years	1. Possibility of including recreational areas in urban fabric 2. Increasing public awareness of the need to create and maintain irrigation fields in good condition to strengthen the ecological and technical potential of the area 3. Support agricultural activities 4. Opportunities for enhancement of agriculture through tube well irrigation 5. Job opportunity for rural population 6. Labor force is available to work. 7. Strong transport system 8. Outside investors interested to invest in agriculture sector 9. The area is famous for rice production 7.	1. Large financial outlays for securing & maintaining these areas in good ecological condition 2. Non ecological pressure including economic ones, on using these areas for housing development 3. Contamination of ground water due to inappropriate use of the area 8. Flooding / over flow of water contamination

9.1.4 Strategic Development Plan

i. Long Term Plan

- Job opportunity should be made available for rural population by promotion and facilitation of agriculture.
- Strong transport system should be provided
- Incentives should be taken so that Outside investors show interest in agriculture sector.
- Enhancing crop productivity through adoption of new technologies
- Increase the supply and quality of agricultural crops
- Provision of warehouses for storage of agricultural products.

ii. Short Term Plan

- Modernize and revitalize agriculture.
- Increase the supply and quality of Agricultural Crops
- Sufficient market infrastructure to ensure optimal value addition
- Agricultural technology development, dissemination and adoption.
- Use of modern techniques for cultivation by choosing healthy seeds and fertilizers for increasing yield per acre.
- Agricultural practices can be changed in accordance with weather condition for maximum production.
- Measures should be taken to ensure maximum yield of both Rabi and Kharif crops.
- Enhancement of the storage capacity.
- Provision of warehouses, food gowdowns for storage of agricultural products.

iii. Recommendation for improvement of Crops

- District Naushahro Feroze is rich agricultural regions of Sindh province producing Cash Crops like Wheat, Cotton, and Sugarcane. Besides Cash Crops, Naushahro Feroze also produces Rapeseed & Mustard and Sesame etc.

- The above analysis translates that about 52% of arable land used for cultivation of wheat Crop only, might be the reason that soil and climate of the region suits to Wheat crop, therefore grower and government may focus to reclaim more waste land to convert the same into arable land and priority may be given to Wheat crop.

9.2 Livestock

*9.2.1 **Existing Situation***

District Naushahro Feroze is richly populated area having animal's population 2,701,415 of large and small animals including fish. This district is well known with different type of breeds of cattle, Goats and sheep. Animal population of district is highest number of Goats having 820,422 heads followed by buffalos 530,530 heads and Cattle 334,758, whereas the fish population is 923,006.

The comparison of livestock quantity of Sindh Province with the district Naushahro Feroze indicate that highest share of Buffalos is 7.2%, then 6.5% Goats and then 6.1% is of Mules. The overall total share of livestock population of Naushahro Feroze with the Province of Sindh is more than 6.5%, other details may be seen in the following Table 8-9.

Table 9-2: Number of Livestock

S. No.	Livestock by Category	Sindh	Naushahro Feroze District	% Share
1.	Cattle	6,925,022	334,758	4.8
2.	Buffalos	7,340,162	530,530	7.2
3.	Sheep	3,958508	51,564	1.3
4.	Goats	12,572,221	820,422	6.5
5.	Camels	278,424	3,711	1.3
6.	Horses	44,999	627	1.3
7.	Mules	19,512	1,204	6.1
8.	Asses	1,004,925	35,593	3.5
9.	Poultry	14,135,540	923,006	6.5
Source: Sindh District Profile 2021				

- Impact of Flood 2022 on Livestock

The floods of 2022 had a significant effect on livestock in Naushahro Feroze District, livestock being one of the primary assets of rural communities, suffer greatly during floods due to loss of shelter, food, and clean water. The inundation caused by the floods precipitated substantial loss of livestock, manifesting in fatalities and injuries. Animals succumbed to drowning or became trapped in the swamp of mud and debris, resulting in irretrievable losses for the livestock owners. Floodwater, contaminated with pollutants

and pathogens, caused health issues among livestock. The inundation caused by the flood destroyed arable lands and grazing pastures, leading to an acute scarcity of feed for livestock. Large number of livestock were displaced due to flood, according to the report of PDMA Rehabilitation Department of GoS "Flood 2022 in Sindh" 436,435 livestock were died in District Naushahro Feroze.[50]

*9.2.2 **Issues:***

- 2022 floods also have taken the lives of 436,435 livestock[51] in Sindh
- Landlessness and small holding prevent the farmer to raise livestock on commercial basis mainly subsistence farming
- Limited knowledge and facilities
- Almost for every farmer, livestock farming is a secondary activity so treated as secondary source
- Reduced areas for natural grazing and feed production in the face of increasing urbanization and food security requirements Climate change and environment degradation

[50] Flood 2022 In Sindh (pdma.gos.pk)

[51] National Forest Policy 2010

*9.2.3 **SWOT Analysis***

LIVESTOCK & FISHERIES			
STRENGTH	**WEAKNESSES**	**OPPORTUNITY**	**THREATS**
1. This district is well known with different type of breeds of cattle, Goats and sheep 2. Good breed of buffalos and cows are found in the district 3. Local skills and vet services available 4. Mechanism for milk collection available 5. Favorable environment is available for livestock growth (Pasture) and poultry farming in outskirts of the city 6. Availability of fish farms	1. The services for veterinary in district Naushahro Feroze are deficient[1] 2. 52Landlessness and small holding prevent the farmer to raise livestock on commercial basis mainly subsistence farming 3. Almost for every farmer, livestock farming is a secondary activity 4. Reduced areas for natural grazing and feed production 5. Large scale breading has not developed 6. Lack of facilities to industrialize livestock-based products 7. Livestock in the district suffers in particular from shortage of high-quality feed	1. The number of vaccinated animals has increased then the number of treated animals. 2. Cooperative dairy farming and in-land fisheries has sufficient scope 3. Large pasture land and labor force available for livestock growth 4. Handsome amount of revenue can be generated through aquaculture development activities through modern technique 5. Livestock based products can enhance economic activities if produced through appropriate industries	1. Theft and security issues 2. Losses due to Disasters (floods and epidemics)

52 Sindh Provincial Monsoon/Floods Contingency Plan 2012

*9.2.4 **Need Assessment***

- The services for veterinary in district Naushahro Feroze are deficient because District Naushahro Feroze is richly populated area having animal's population 2,701,415 of large and small animals. This district is well known with different type of breeds of cattle, Goats and sheep. For this population of Animals, the services are not sufficient and not serving the all population of animals
- There are 2 veterinary Hospitals and 53 veterinary centers.

*9.2.5 **Strategic Development Plan***

- Improving the production performance of livestock in District through manipulation of different minerals and feed supplements.
- Enhancement of Livestock Production and Productivity through strategic deworming and vaccination.
- Establishment of model livestock farms linked with improved supply chain and value addition.
- Establishing new cattle & dairy farms that lead to increase in number of cattle's and quantity of milk.
- Provision of Veterinary Services.
- Large pasture land and labor force available for livestock growth
- Livestock based products can enhance economic activities if produced through appropriate industries.

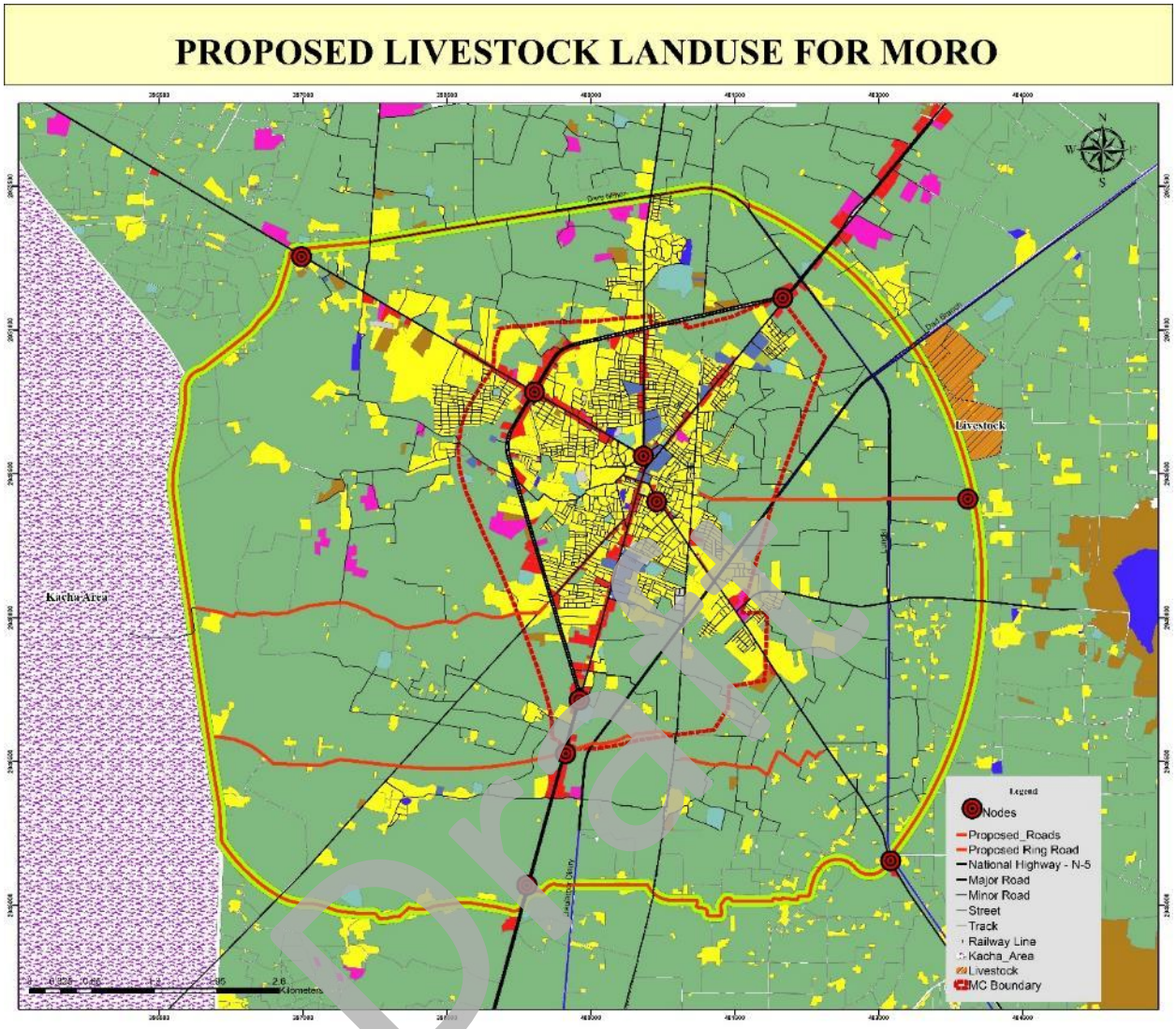
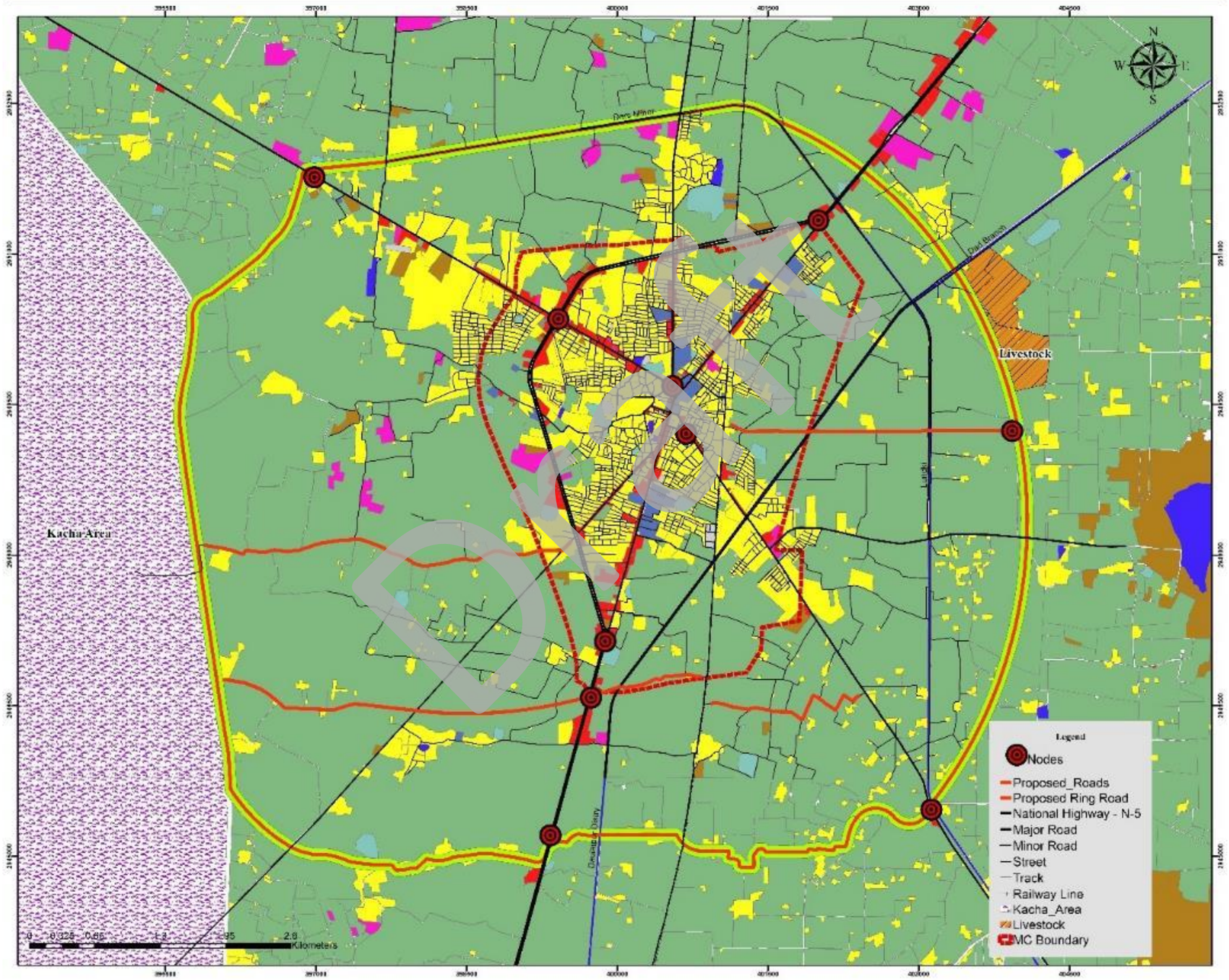


Figure 9-1: Proposed Livestock Land use for Moro

PROPOSED LIVESTOCK LANDUSE FOR MORO



9.3 Fisheries

*9.3.1 **Existing Situation***

According to Sindh Statistics 2024, fish production in District Naushahro Feroze is extremely limited compared to the provincial level. Total fish production in Sindh stands at 56,503 metric tons, while Naushahro Feroze contributes only 57 metric tons, accounting for a negligible 0.1% share of provincial production. The number of fishermen in the district is 160, representing 0.9% of Sindh's total fishermen. Among them, 120 are full-time fishermen and 40 are part-time, indicating a relatively higher proportion of full-time engagement compared to part-time involvement.

The district has a total of 46 boats, which is 0.56% of the total boats in Sindh. Of these, 34 are sailing boats (about 1.0% of Sindh's sailing boats), while 12 are row boats, accounting for 0.25% of the provincial total. Overall, the data reflects that fisheries play a very minor role in the local economy of Naushahro Feroze, with limited production capacity and infrastructure when compared to Sindh as a whole.

Table 9-3: Fish Production (Metric Tons)

S. No.	Livestock by Category	Sindh	Naushahro Feroze District	% Share
1.	**Fish Production**	56,503	57	0.1
2.	**Fishermen**	17,693	160	0.9
	Part Time	18,954	40	0.2
	Full Time	36,647	120	0.32
3.	**Boats**	8,212	46	0.56
	Sail	3,419	34	1.0
	Row	4,793	12	0.25

Source: Sindh District Profile 2024

*9.3.2 **Need Assessment***

There is need to develop and implement a broad-based fisheries policy which is required for accelerated development of the fisheries sector. Government of Sindh has to take measures to modernize the fisheries sector including establishment of farms on district level to promote fish farming.

- To provide the extension services in private sector
- Lease of fishing rights, conservation, management and promotion of fisheries
- Training through open training schools
- Issuance of district angling licenses
- Local publicity and awareness

- Enforcement of fisheries enactment in their respective domain
- Fish seed stock replenishment in natural water bodies in their respective domain
- Aquaculture development activities through modern techniques
- Collection of statistical data of fish and fish resources in their respective domain

*9.3.3 **Strategic Development Plan***

- Lease of fishing rights, conservation, management and promotion of fisheries
- Training through open training schools
- Enhance Local publicity and awareness
- Facilitate Enforcement of fisheries enactment in their respective domain
- Fish seed stock replenishment in natural water bodies in their respective domain
- Aquaculture development activities through modern techniques
- To acquire land for fish production in District
- Cooperative dairy farming and in-land fisheries has sufficient scope

*9.3.4 **Economic Development***

i. Establishment of new Cattle and Fish farms

It is expected that sustainable growth of livestock will be maintained as per objectives of Livestock & Fisheries Department with the participation of private sector. Hence there is possibility for increasing number of livestock and dairy farms to meet the requirement of meat and milk. Similarly new fish farms and poultry farms in the districts need to be established to generate production and income of the people engaged in this business. For this there is proposed the Cattle Farm along the Dad Branch in the east of Moro city, while Fish farms need to be identified by concerned authority to attract the private investment, where water is available.

There is need to develop and implement a broad-based fisheries policy which is required for accelerated development of the fisheries sector. Government of Sindh has to take measures to modernize the fisheries sector including establishment of farms on district level to promote fish farming.

9.4 Industries

*9.4.1 **Existing Situation***

District Naushahro Feroze has agriculture related industries ranging from sugar mill, cotton-ginning factories. These are the source of employments for residents of district Naushahro Feroze. These different industries provide employment to peoples. The sugarcane prices are unstable in Naushahro Feroze and the industrialists never miss an opportunity to deny farmers their due share. During the crop season, the net take home decreases drastically when the crop is bumper and the industry is not scared of the supply.

Industries in Naushahro Feroze are mainly associated with agriculture. The famous among these are the sugar mills since sugarcane is cultivated on large scale in this district. As per "Sindh District Profile 2021", document by Research & Training Wing of Planning & Development Board there are 1,825 manufacturing units in Sindh Province and 18 units are operating in District Naushahro Feroze, the percentage share of district industries is 0.9% of total industries in Sindh.

Presently in Moro MC, there is no heavy or medium industry in its' municipal limits, however following seven (7) industrial establishments of small scale are existing, which comprises of two (2) oil mills, one (1) rice mill and one (1) ice factor and the remaining three (3) are warehouses. Out of these three warehouses, one warehouse or Godown is owned by Government Food Department.

*9.4.2 **SWOT Analysis***

INDUSTRIAL			
Strength	**Weakness**	**Opportunity**	**Threats**
1. District Naushahro Feroze have cotton ginning, sugar cane and rice husking mills 2. At the district level employment by sector is more in agricultural sector (43.2%) 3. Moro City have the following Agro based mills in its' municipal limits; • Oil mills • Rice mill • Warehouses/godowns	1. Less job opportunities in industrial sector 2. Limited industrial profile 3. Sugar Industry crisis 4. High prices of Inputs	1. More international trade 2. Based on the success story of present industries, more industries can be installed in future 3. The improvement in quality of goods produced by these will enhance the industrial profile of the district at regional and as well as at national level	1. Isolated economy 2. Uneducated social group 3. More emphasis of crop producers on sugar cane production 4. Water contamination to river Indus resources 5. Air pollution

9.4.3 Strategic Development Plan

i. Long Term Plan

- Provision of infrastructure for establishment of new industries.
- Enhancing Crop Productivity through adoption of new technologies.
- Support industrial development.
- Modernize and revitalize the service sector.
- Development of Industrial Estates / Special Economic Zone in District

ii. Short Term Plan

- Sufficient market infrastructure to ensure optimal value addition
- Provision of vocational training and employable skills to the unemployed youth of the district
- Paradigm shift from industrial agriculture to diversified agro ecological Systems
- Establishment of new industrial estates/Zone
- Measures for promoting more international trade.
- Increase employment opportunities.
- Based on the success story of present industries, more industries can be installed in future.
- If products produced by these industries are in good quality, then this will enhance the industrial profile of the district at regional level as well as at national level.

9.5 Trade and Commerce

*9.5.1 **Existing Situation***

Moro boasts a robust local retail market, primarily embodied by Shahi Bazaar along both sides of Old National Highway and Dadu Moro Road. The entire commercial areas in the city including shops, hotels, restaurants, workshops etc. are providing a wide variety of goods and services which are located the city in particular on Old National Highway in the starting of road coming from Hyderabad and up to end of highway leading to Sukkur. Similar situation prevails on the Dadu Moro Road from one end of road to the other corner of road. Besides it Shahi Bazar also encompasses significant commercial operations, functioning as a wholesale market with numerous food shops, supermarket, commercial banks, government offices, and establishments providing education and healthcare services. Shahi Bazaar area is in need of improvement and situated in the old commercial district of Moro, it remains a vital hub for various commercial activities.

Moro is equipped with financial institutions and a Chamber of Commerce, indicating a conducive environment for trade and commerce. The city is home to a substantial number of skilled artisans, contributing to a robust local retail sector. Various types of commercial establishments in Moro City including Super Madinah Restaurant &BBQ, The Blue Hotel and Al Amin Restaurants & Guest House along with other hotels, restaurants and food shops have employed significant population of the city.

*9.5.2 **Issues:***

- Demise of local agriculture market.
- Un-planned local business activities.
- The failure of PPP trouble for locals and government.
- Lack of infrastructure
- Dependent on regional market products due to lack of local production
- Unplanned growth of business sector along inner city streets
- Giving birth to encroachments

*9.5.3 **SWOT Analysis***

TRADE AND COMMERCE			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Availability of financial institutions. 2. Moro City is a home to substantial number of skilled artisans 3.Strong local retail	1. Demise of local agriculture market 2. Un-planned local business activities 3. Difficulty in accessing broader markets 4. Lack of infrastructural development in commercial areas like; Shahi Bazar 5. Informal trade sector needs better management 6. Limited access to finance and credit facilities 7. Online market opportunities and larger businesses impacting the profitability of local traders 8. Lack of training and development programs for local entrepreneurs and traders	1. More opportunities for public private partnership 2. Existence of sufficient number of NGOs/Social Welfare Agencies in the district 3. Support to local economy 4. Homemade handicrafts can be promoted through proper exposure to export market	1. Security issues (which lead a large number of agriculturists and business persons to migrate from the city) 2. Low subsidies provided by local and provincial government 3. Inflation

9.5.4 Priority Projects

➢ **Shifting/Establishmetn of Moro Fruit and Vegetable Market**

The existing fruit and vegetable market in Moro City is limited to 1 acre and is located within the congested urban area, causing traffic issues and lacking space for expansion. To address these challenges, a new 5 acres site is proposed at the intersection of Dars Minor and Old National Highway, in the city's north-eastern periphery.

Relocating the market will reduce inner-city congestion, improve accessibility for transport vehicles, and allow for better facilities and future growth. A feasibility study will ensure the project's viability and effectiveness in supporting trade, urban planning, and local economic development.

➢ **Scope**

- **Planning and Feasibility**
  - Conduct a feasibility and market demand assessment to evaluate the operational, economic, and environmental viability of the proposed market
  - Finalize site development plans for the 5-acre proposed location at the intersection of Dars Minor and Old National Highway in the north-eastern periphery of Moro City
- **Site Development and Market Infrastructure**
  - Development and preparation of the selected site including land leveling, boundary demarcation, and internal circulation
  - Construction of a planned and organized fruit and vegetable market with designated vending and trading areas
  - Provision of separate zones for wholesale and retail activities to ensure efficient market operations
- **Transport and Accessibility Improvements**
  - Development of access roads and internal traffic circulation suitable for transport vehicles, loading, and unloading operations
  - Provision of designated parking areas for trucks, loaders, and light vehicles to avoid roadside congestion
- **Storage and Handling Facilities**
  - Construction of godowns and covered storage facilities for bulk storage of produce
  - Provision of cold storage facilities (where feasible) to reduce post-harvest losses and improve product quality
- **Public Amenities and Services**
  - Provision of essential facilities including drinking water, public toilets, sanitation services, and waste collection points
  - Development of administrative and management offices for market regulation and operation
- **Environmental and Hygiene Measures**
  - Implementation of solid waste management systems for organic and market waste

- Provision of drainage systems to prevent waterlogging and maintain hygienic conditions
- Landscaping and environmental improvements to enhance the overall market environment

- **Urban Management and Sustainability**
  - Relocation of existing market activities from the congested city center to the new site
  - Establishment of regulatory and management mechanisms for organized market operations
  - Alignment with urban planning objectives and sustainable development goals

➢ Size

- Total Land Area: Approximately 5 acres
- Market Type: Planned wholesale and retail fruit and vegetable market
- Covered Market Sheds: Multiple covered sheds for vendors and traders
- Number of Vendor Stalls: Approximately 250–300 stalls (wholesale and retail combined)
- Storage Facilities:
  - Bulk storage godowns
  - Cold storage facilities for perishable produce (as per feasibility outcomes)
- Transport Facilities:
  - Designated loading and unloading bays
  - Parking space for trucks, pickups, loaders, and light vehicles
- Internal Infrastructure:
  - Internal roads and circulation pathways
  - Drainage system for stormwater and wastewater
  - Solid waste collection and disposal points
- Public Amenities:
  - Drinking water supply
  - Public toilets and sanitation blocks
  - Administrative and management offices
- Future Expansion:
  - Provision for phased expansion within the site

➢ **SDG's Alignment**

I. **Goal No.2: Zero Hunger**
The project also contributes to SDG 2.3 under zero hunger by enhancing market access for farmers, reducing post-harvest losses, and improving the availability of fresh produce in the city.

II. **Goal No.8: Decent Work and Economic Growth**
Relocation and operation of the fruit and vegetable market will create jobs in agriculture, retail, logistics and market management, contributing to SDG 8.3 and 8.5, which aim to support productive employment and inclusive economic growth.

III. Goal No.11: Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

By reducing congestion in the city center and promoting organized urban development, the project supports SDG 11.2 and 11.3, which focus on improving urban mobility and ensuring inclusive, sustainable city planning.

- **Implementing Authority**

  Moro Municipal Committee and Private Investors

- **Preliminary Cost Estimate**

  Estimated Cost: 600 million Approx.

S. No.	Project Name	Estimated Cost in Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Fruit and Vegetable Markets						
1	Feasibility study for shifting and establishment of Moro Fruit and Vegetable Market	100	-	Non ADP	**Short Term**	-
2	Shifting and establishment Of Moro Fruit and Vegetable Market	500	-	Non ADP	**Short Term**	-

9.5.5 Immediate Action Plan for Core Urban Area

➢ **Modernization of Commercial Activity in the Core Urban Area**

Commercial activity is central to the vitality of Moro's core urban area. However, the main commercial zones including Shahi Bazar and Old National Highway, face congestion, poor, infrastructure, inadequate pedestrian facilities, and security challenges. Street vendors occupy road space, while unorganized traffic and the absence of modern systems discourage investment and limit customer convenience.

The Immediate Action Plan prioritizes the rehabilitation of commercial areas, pedestrian-friendly infrastructure, organized hawker management, and the integration of smart technologies. These interventions aim to strengthen business operations, attract investment, and improve the shopping environment, in line with SDG 8 (Decent Work & Economic Growth) and SDG 11 (Sustainable Cities & Communities).

➢ **Scope**

The modernization plan for commercial activity in the core urban area includes the following key actions:

- **Rehabilitation of Shahi Bazar Area:** Revitalize the Shahi Bazar area by upgrading infrastructure, improving aesthetics, and enhancing the overall shopping experience for visitors.
- **Provision of Pedestrian Facilities:** Develop pedestrian-friendly infrastructure in the main bazaar area, including wide footpaths, safe crossings, and seating areas, to encourage foot traffic and support local businesses.
- **Street Hawking Management:** Relocation of Hawkers to designated vending zones to reduce congestion and maintain market vibrancy.
- **Implementation of Smart Technologies:** Install energy-efficient lighting, advanced security systems, and digital payment solutions to modernize commercial infrastructure and improve operational efficiency.
- **Incident Response and Security:** Develop an incident response plan and install high-resolution CCTV cameras to enhance security in commercial areas. Coordination with local law enforcement and emergency services will be emphasized to ensure a swift response to any incidents.
- **Community-Led Design:** Involve traders' unions and residents in street redesign, seating, signage, and accessibility features.

- **Size**

The rehabilitation and beautification of the main commercial area in Moro will focus on two corridors Shahi Bazar and Old National Highway

Rehabilitation of Main Commercial Area – Activity wise cost in Millions				
S. No	**Area / Locality / Address**	**Area (rft)**	**Cost in PKR million.**	
			Infrastructure	**Security**
	Rehabilitation of Main Commercial (CBD) Area ➢ Rehabilitation & Beautification of main areas; - Shahi Bazar - Old National Highway	**13,173**	150	50
Total PKR Rs. Million			**200**	

- **Preliminary cost estimate**

A preliminary cost estimate will be provided, itemizing the costs associated with each of the activities listed above. The cost breakdown includes:

- **Rehabilitation & Beautification of Shahi Bazar & Old National Highway Area:**
- **Pedestrian Facilities Development**
- **Main Road Upgradation in Bazaar Area**
- **Smart Technology Implementation**
- **Incident Response and Security Measures**

Total Estimated Cost: 200 million

- **Implementation Framework**
  - **Funding Source:**
    - Municipal budgets for CBD rehabilitation.
    - Provincial ADP grants for market modernization.
    - **PPP partnerships** for smart technologies (CCTV, lighting, POS systems).
    - **Commercial trade union contributions** for security and facility upgrades.
  - **Execution:** Works executed by the Municipal Committee with active participation from bazaar committees and trade unions.
  - **Phasing:** First phase to prioritize **Dars Road** (congestion hotspot), followed by Old National Highway.

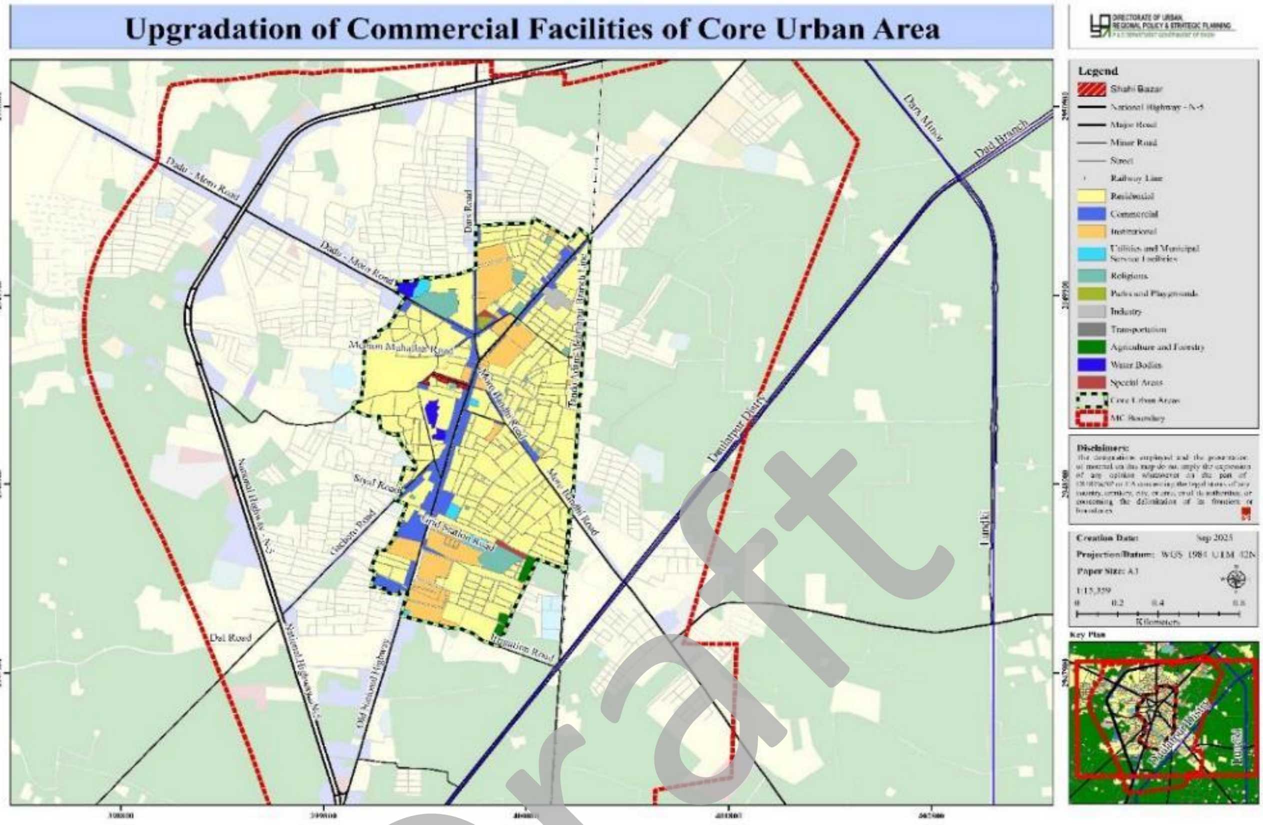
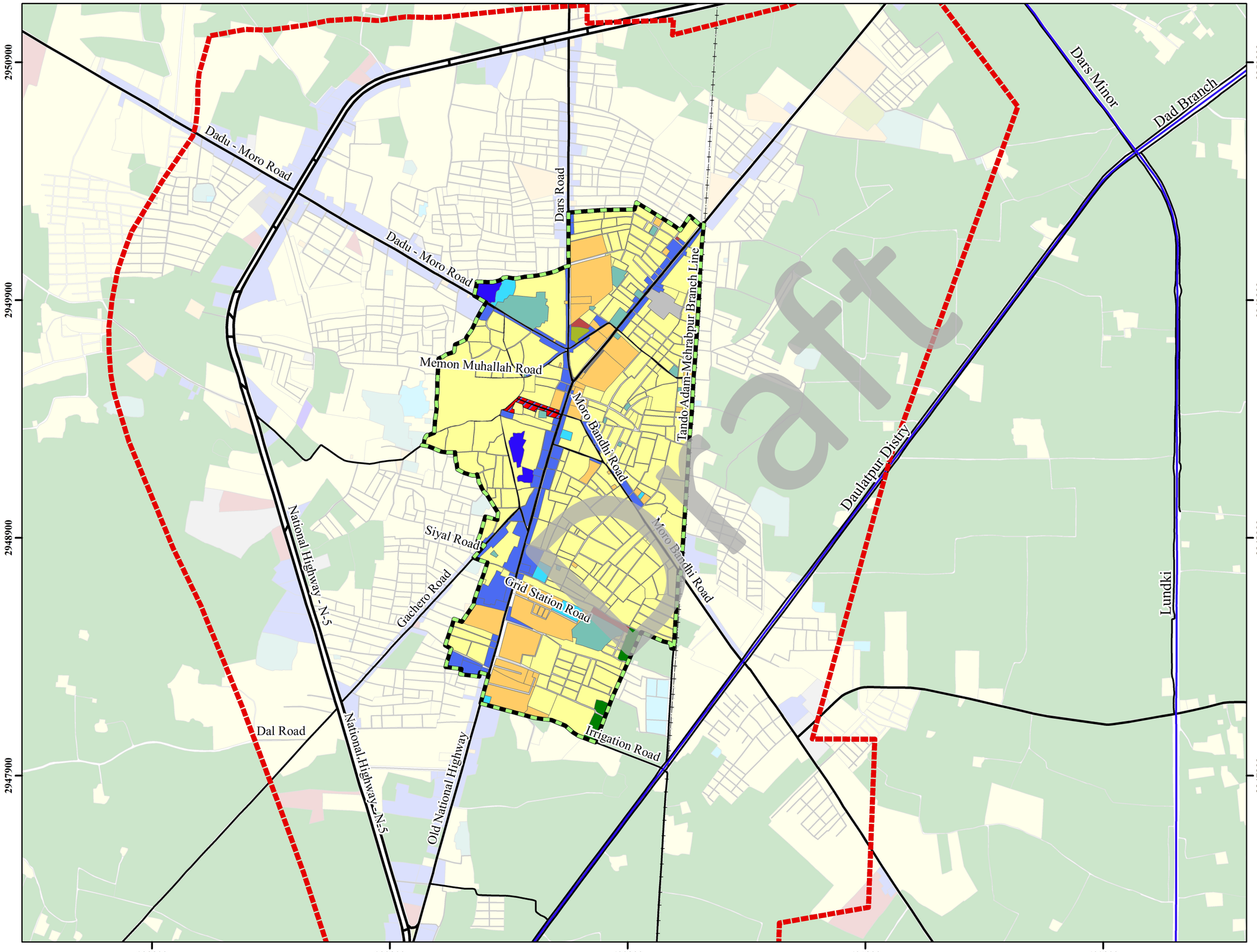


Figure 9-3: Upgradation of Commercial Facilities of Core Urban Area

Upgradation of Commercial Facilities of Core Urban Area

DIRECTORATE OF URBAN, REGIONAL POLICY & STRATEGIC PLANNING
P & D DEPARTMENT GOVERNMENT OF SINDH



Legend

- Shahi Bazar
- National Highway - N-5
- Major Road
- Minor Road
- Street
- Railway Line
- Residential
- Commercial
- Institutional
- Utilities and Municipal Service Facilities
- Religious
- Parks and Playgrounds
- Industry
- Transportation
- Agriculture and Forestry
- Water Bodies
- Special Areas
- Core Urban Areas
- MC Boundary

Disclaimers:
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of DURP&SP or EA concerning the legal status of any country, territory, city, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Creation Date: Sep 2025

Projection/Datum: WGS_1984_UTM_42N

Paper Size: A3

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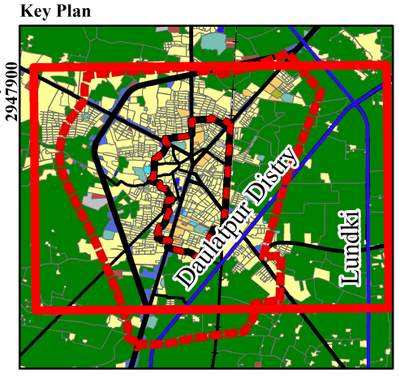
Kilometers

Key Plan



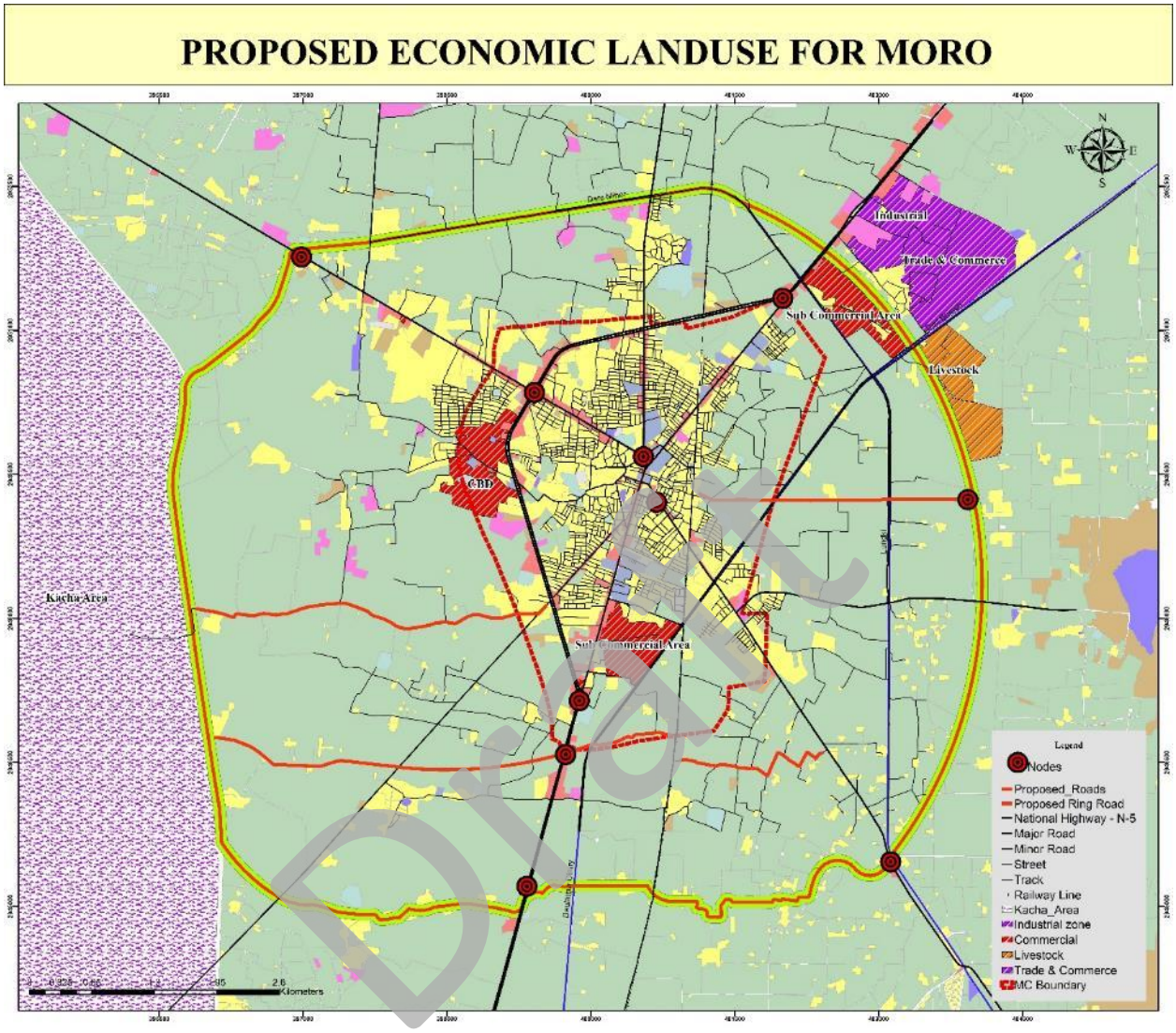
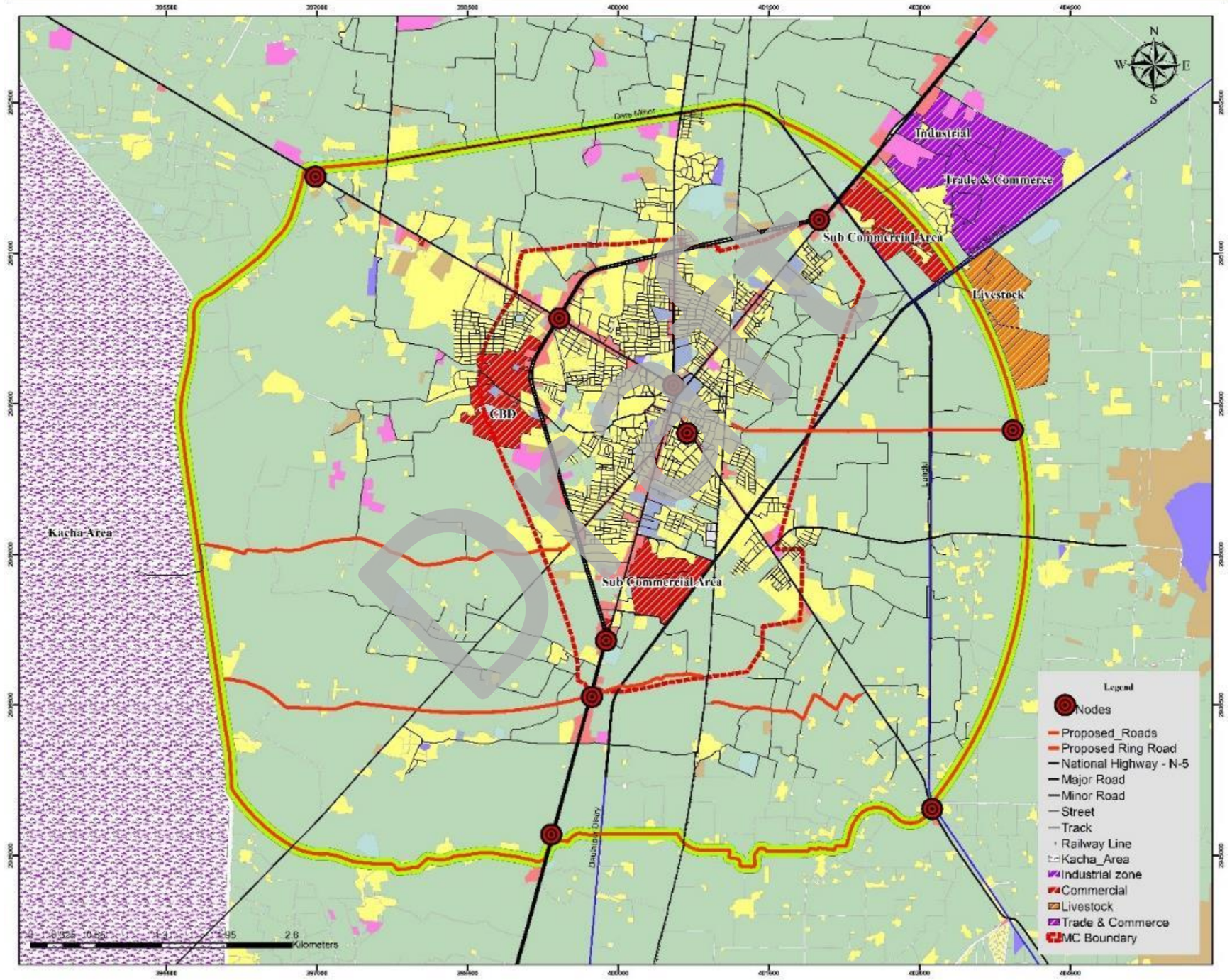


Figure 9-2: Proposed Economic Land use for Moro City

PROPOSED ECONOMIC LANDUSE FOR MORO



10. ENVIRONMENT

10.1 Existing Situation

The physical environment of Moro has been described specifically and the broader District Naushahro Feroze is examined in this study with respect to the air shed, watershed, geology, soil characteristics, hydrology and seismicity. Baseline data on the air shed describe the climatic conditions and quality of air. Similarly, baseline data on watershed describe the hydrology and quality of surface and groundwater as well as water availability. Data on Geology, geomorphology, soil characteristics and seismicity are needed to evaluate the terrestrial resources with respect to agriculture potential and soil characteristics, and stability.

10.2 Topography & Geography

District Naushahro Feroze lies in 67° 48" 2' to 68° 26" 51' east longitudes and 26° 32" 45' to 27° 13" 36' north latitudes[1]53. This district is bounded by district Khairpur on the east, district Larkana on the north, district Dadu on the west, and district Jamshoro and Shaheed Benazir Abad on the south. Indus Rivers flows alongside the western boundary of the district. Indus Rivers flows alongside the western boundary of the district. Naushahro Feroze district is located in the middle part of Sindh on the National Highway about 120 km from its Divisional Headquarter Sukkur and is connected with Sukkur and Karachi by the main National Highway (Motor way) N-5.

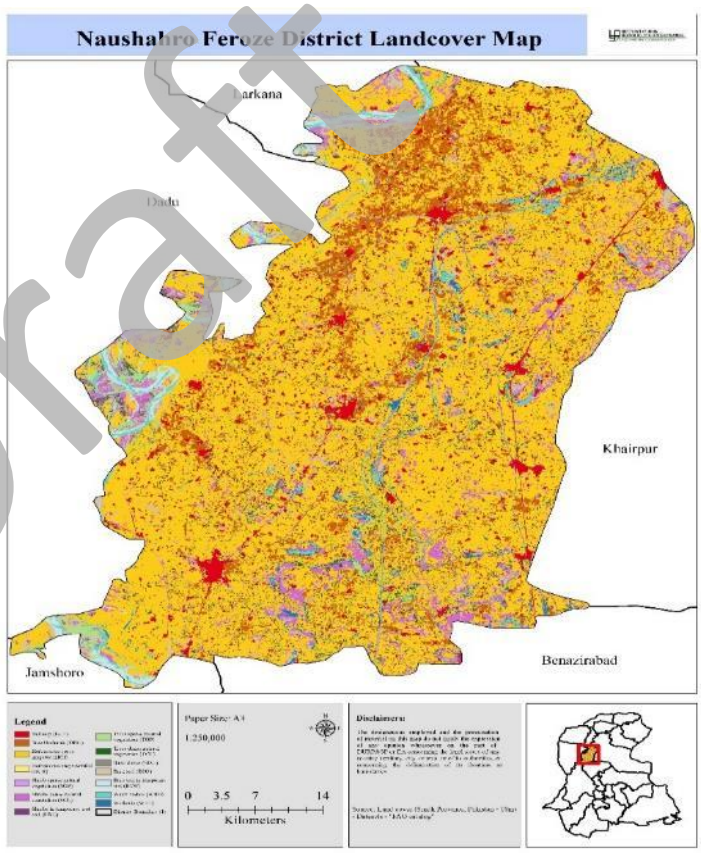


Figure 10-1: Land Cover of District Naushahro Feroze

Geographically, District Naushahro Feroze lies in 67° 48"2' to 68° 26"51' east longitudes and 26° 32"45' to 27° 13" 36' north latitudes. This district is bounded by district Khairpur on the east, district Larkana on the north, district Naushahro on the west, and district Jamshoro and Shaheed Benazir Abad on the south. Indus Rivers flows alongside the western boundary of the district. District Naushahro Feroze comprise of

[53] National Disaster Risk Reduction Policy 2013

5 talukas namely Bhiria, Kandiaro, Moro, Naushahro Feroze City and Mehrabpur Moro City is one of the major secondary cities of Sindh.

The soil of the district is alluvial with patches of water logged and saline areas. The entire district is a fertile plain formed by the Indus River plains with sandy and hard clay loams. The average elevation of the area is about 50 meters above sea level. The Indus River flows from north to south along the west of the city. Due to a well-organized canal system and proximity of Indus River, the land category falls in the grassland and irrigated cropland.

The area lying in the vicinity of River Indus is part of Indus's active flood plain. Next to this is the area irrigated by a network of canals. The area is alluvial flood plains of Indus and lies in central part of lower Indus basin which forms part of western passive continental margin of Indian plate.

The soils of Naushahro Feroze can be divided into four broader types:

1. *Loamy and some stratified soils of young flood plains*
2. *Loamy and clayey soils of older river plains*
3. *Very patchy cover of sandy soils and sand dunes*
4. *Salt affected soil*

The Seismic zoning map of Pakistan (2015) places Naushahro Feroze in Zone 2A which corresponds to peak ground acceleration (PGA(g)) of 0.08 to 0.16 and a possibility of minor to moderate seismic hazards i.e. probability of earthquakes of intensity (MM Scale) 6 to 7.5.
Accordingly, a seismic risk factor of 0.1 needs to be incorporated in the design for constructions and installations, for operational basis earthquakes (OBE) pertaining to damage due to moderate level earthquakes.

10.3 Ecological Baseline

Moro is taluka headquarter and lies in District Naushahro Feroze, which is a part of the Indus Valley which has benefited more than any other part of Sindh from the development of irrigation under Rohri canal.

- **Wildlife**
  Similar to the situation in the entire Naushahro Feroze District, in Naushahro Feroze city specifically, wild animals may now be almost non-existent. Hyenas (Hyaena hyaena), Jackals (Canis aureus), Fox (Vulpes bengalensis) and wolf (Canis lupus pallipes) are now hardly ever seen.

- **Birds**

  Agricultural land, lakes and ponds and forests around Naushahro Feroze city are site for birds. Among birds, titur, grey partridges (Francolinus Pondicerianus) and black partridges (Francolinus francolinus asiae) are very common in the forest. Most of the common kinds of Wild duck and water fowl can be seen during the cold season. Geese, penetrating in the fields of green wheat and kunj, are also regular winter visitor.

- **Livestock**

  Locals maintain stocks of cattles and domestic animals as a second source of livelihood after agriculture. Livestock and ruminants include: goats (Capra hircus), and sheep (Ovisaries), camels, Buffalo, Donkey (Equusasinus) etc.

10.4 Ecologically Sensitive Areas

There are no ecologically sensitive areas in district Naushahro Feroze.

*10.4.1 **Forest resource***

Forests help in protection of soil, improve environment by controlling pollution and cause rainfall. Total forest area of the Sindh Province is 83,117,395 hectares (2008-09) out of which district Naushahro Feroze shares an area of 1,027,384 hectare. The increased protection of forests could lead to a decrease in the severity of floods.

10.5 Riverine Forests

Sindh Forest Department controls over an area of 241,198 hectares in the riverine tract of the province which are designated as riverine forests and locally known as Kacho forests. These forests are dependent on flood water of river Indus and located along both the banks of the River Indus in Thatta, Hyderabad, Naushahro, Larkana, Naushahro Feroze, Nawabshah, Khairpur, Sukkur, Shikarpur, Ghotki and Kandhkot Districts.

10.6 Ambient Air Quality and Noise

Two ambient air quality monitoring sites were selected in Moro to represent varied environmental exposure:

1. **Near Police Station Moro** – close to a commercial zone with moderate vehicular activity.
2. **Dadu Road Bypass** – high traffic volume from intercity buses (e.g., Daewoo terminal), along with emissions from restaurants and hotels; key entry point from Dadu City.

Findings

All parameters were assessed against **Sindh Environmental Quality Standards (SEQS) – November 2023**.

- **Air Quality**
    - **Most parameters (NO_2, NO, O_3, PM_{10}, $PM_{2.5}$, SPM, Pb, SO_2)** remained **within SEQS limits** at both sites.
    - **Exceedances identified:**
        - **CO:**
            - 11.25 mg/m³ at Police Station Moro (SEQS limit: 10 mg/m³).
            - 12.74 mg/m³ at Dadu Road Bypass (SEQS limit: 10 mg/m³).
- **Noise Levels**
    - **Both locations within SEQS limit (75 dB(A)):**
        - Police Station Moro: 61.5 dB(A).
        - Dadu Road Bypass: 68.3 dB(A).

Implications

- **Air Pollution Risks:** Slight exceedance in **carbon monoxide (CO)** at both sites indicates localized emissions from traffic and commercial activities, warranting targeted interventions for CO reduction.
- **Positive Indicators:** Low concentrations of **lead (Pb)** and **sulfur dioxide (SO_2)** at both locations indicate minimal industrial emissions and support a relatively healthier atmospheric profile.
- **Noise Pollution:** Noise levels remain within acceptable limits, reflecting relatively controlled acoustic environments, even in busy areas.
- **Planning Insight:** While overall air quality is satisfactory, focused mitigation of CO emissions, particularly from traffic congestion and commercial sources, can further improve urban air health in Moro.

10.7 Issues and Problems

The following are the key environmental issues and challenges identified in Moro and broader District Naushahro Feroze:

- **Water Logging and Salinity**

A significant portion of the district's agricultural land is affected by surface salinity and water logging**,** particularly due to excessive seepage from the canal irrigation system. According to SCARP Monitoring Organization (SMO) data, 14.8% of the command area is strongly saline**,** and 7.8% moderately saline. These conditions severely restrict crop productivity and degrade soil quality.

Human-induced factors such as poor drainage infrastructure, cultivation of high delta crops, and obstruction of natural waterways further aggravate the issue.

- **Soil Degradation**

Alluvial soils in the region are fertile but are increasingly threatened by salinization, over-irrigation, and poor land management. Salt-affected soils and waterlogged areas reduce arable land, posing long-term risks to food security and rural livelihoods. Additionally, the soil nutrient status is vulnerable to depletion due to intensive agriculture without adequate replenishment of micronutrients.

- **Loss of Biodiversity**

District Naushahro Feroze has witnessed a decline in native wildlife populations such as jackals, hyenas, and wolves due to habitat fragmentation, illegal hunting, and expansion of agriculture and settlements. Bird and reptile species are also under pressure from habitat loss and reduced wetland ecosystems. Forest degradation and land conversion threaten riverine ecosystems and associated biodiversity.

- **Air Pollution**

Although current air quality measurements are mostly within SEQS limits, both sites monitored in Moro (Police Station and Dadu Road Bypass) recorded exceedances in Carbon Monoxide (CO) levels (11.25 mg/m³ and 12.74 mg/m³ respectively vs. 10 mg/m³ SEQS limit). These are likely due to vehicular emissions, commercial activity, and poor traffic management. Prolonged exposure poses health risks, particularly to vulnerable populations.

- **Seismic Risk**

The district falls under Seismic Zone 2A with moderate risk (PGA 0.08–0.16 g), which requires seismic risk considerations in infrastructure design**.** However, much of the local infrastructure may not be designed to these standards, increasing vulnerability to future earthquakes.

- **Water Resource Vulnerability**

Despite a well-developed canal system, water availability remains climatically vulnerable due to erratic rainfall and high dependency on surface irrigation. Only 24% of mouzas have access to river water, while 75% use canals. Groundwater exploitation is increasing but largely unregulated, risking aquifer depletion and contamination**.**

- **Climatic Extremes (Drought and Floods)**

The district is exposed to extreme heat, low rainfall, and occasional flooding from the Indus River. The active floodplain areas near the river are vulnerable to seasonal inundation, damaging crops and

infrastructure. Conversely, drought conditions can lead to severe water stress, impacting agriculture and livestock-based livelihoods.

- **Forest and Vegetation Pressure**

Though the district contributes to riverine forest cover, much of the forest is under pressure from illegal woodcutting, overgrazing**,** and encroachment. Loss of tree cover reduces soil stability, contributes to rising temperatures, and limits the region's climate resilience.

- **Noise Pollution**

Noise levels recorded in both surveyed areas remain below SEQS limits; however, increasing urbanization, vehicular congestion**,** and commercial activities could lead to rising noise levels, particularly near busy bypasses and chowks, affecting urban livability and public health.

These environmental challenges require integrated planning, improved governance, sustainable land and water management, and community awareness to ensure long-term ecological and human well-being in Moro and District Naushahro Feroze.

10.8 SWOT analysis

Strength	Weakness	Opportunity	Threats
ENVIRONMENT			
URBAN AREA & AREAS SUITABLE FOR URBAN DEVELOPMENT			
1. Land available for future development within town urban boundary 2. The land use analysis indicates that almost 42.16% of total urban boundary area is in use of residential purpose only where as 38.59% of the area is covered by agriculture fields	1. Loss of agricultural land through land development for housing purpose 2. Water logging 3. Haphazard growth inside the city 4. Lack of utility services	1. Mixed land uses may create activity centers. 2. High density will overcome housing shortages	1. Land grabbing 2. Slums 3. Unplanned growth 4. Threat to agricultural land 5. Private sector may increase the cost of services
LAND			
1. The land structure of this district is fertile and sandy with hard clay loams 2. Due to a well-organized canal system and proximity of Indus River, the whole district has	1. Unplanned land uses 2. Incomplete development of agricultural land parcels (scattered agricultural growth) 3. Lack of administration by	1. If treated through appropriate urban design principals & standards, can be transmitted into mixed land uses and strong activity centres	1. Land shortage for new development 2. Slum formation 3. Contamination of land in un-irrigated areas

Strength	Weakness	Opportunity	Threats
irrigation facility resulting in the grasslands and irrigated crop lands 3. Rural rich fertile agriculture land that produces quality crops	agencies monitoring urban growth of the city	2. May increase productivity if cultivated at full strength	
CLIMATE			
1. Suitable for producing crops. 2. During summers, the mean maximum temperature is 44 ^{0}C and minimum temperature is 25 ^{0}C and during winters, the mean maximum temperature is 24 0C and minimum is 5 ^{0}C 3. Average precipitation is maximum in the months of July and August, reaching at 42mm	1. Rainfall shortages affect the efficiency of canal system 2. Hot winds blow from May to August from south to north which disturb the inhabitant's life very badly	1. Agricultural practices can be changed in accordance with weather condition for maximum production	1. Droughts 2. Heavy rains affects agricultural production
AIR			
1. Most of the area is free from air pollution 2. Air quality in the rich agricultural belt is good for human health, and also keeps ecological balance in atmosphere	1. Air in city center is polluted by traffic volume	1. Development planned with respect to air circulation can provide relief to inner city's polluted environment 2. In future the town can be planned as Green City	1. Air pollution 2. Respiratory diseases

10.9 Policy Guidelines[1]

- 54Enhancing role of local governments in sustainable management of natural resources
- Conservation of biological diversity, protection and sustainable use of indigenous flora and fauna
- Sustainable Management in Reserved, Protected, Flora and Fauna
- Management of irrigated and linear plantations
- Promotion of indigenous species
- Increase the efficiency of surface drainage.

10.10 Strategic Development Plan

i. Long Term Plan

- Achieving sustainable development, while overcoming environmental challenges such as land degradation, watersheds and marine fisheries, deforestation, waste management and pollution control, and climate change
- Multi-pronged approach to fisheries management should be adopted that takes account of economic, environmental, and social performance
- Fostering public-private partnerships
- Develop and implement policies that integrate the objectives of conservation and development to reduce pressure and protect environmental values and conserve biodiversity
- Restoration and maintenance to preserve ecological cycles, functions and services of environment
- Strengthening forestry education and research institutions to cope with the emerging challenges of deforestation and climate change

ii. Short Term Plan

- Ensuring environmental sustainability
- The requirement for Environment Impact Assessments to be binding on all parties including government
- Increase the productivity of rangelands
- Provide recreational facilities for public by improving forest parks
- Rehabilitate degraded ecosystems and create environmental awareness
- Alleviate poverty through creation of forest-based income generating opportunities
- Rehabilitation of Irrigated plantation
- Enhance Rangeland production and planting fodder trees for farmer community
- Improvement and Rehabilitation of Forests Parks
- Afforestation of Blank Reaches along Important Highways

[1] The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response (Fourth Edition)

11. DISASTER RISK MANAGEMENT

The soil of Naushahro Feroze is fertile and sandy with hard clay loams with negligible exception where the soil is Kalarish. Naushahro Feroze district is the part of the Indus Valley which has benefited more than any other part of Sindh from the development of irrigation under Rohri canal. The average elevation of the area is about 50 meters above sea level. Geographically, the district is in, what is termed vaguely, Vicholo or middle Sindh. Naushahro Feroze city is indeed almost the exact center of the province of Sindh.

Given its low-lying Indus Valley setting, canal-based irrigation system, and history of recurrent floods, Naushahro Feroze District remains highly vulnerable to flooding and waterlogging. The 2010, 2011, 2012–13, and 2022 floods caused widespread damage to housing, agriculture, livestock, and public infrastructure, particularly in Moro City's central and western catchment areas. The disaster risk management strategy should prioritize improved drainage and protection of canals and transport corridors, risk-sensitive land-use planning based on hydrological mapping, and flood-resilient infrastructure design. Strengthening early warning systems, community preparedness, and institutional response mechanisms is essential to reduce future losses and ensure continuity of services.

11.1 Floods

Naushahro Feroze District has been severely affected by floods in 2010, 2011, 2012-13, and 2022. When the River Indus receives high flows from its tributaries, adjoining areas including Naushahro Feroze face serious risk of inundation. During the 2011 floods, extensive parts of the district were affected, with thousands of people impacted. The floods caused multiple deaths and injuries, and damaged large numbers of houses and public infrastructure. Vast tracts of agricultural land were submerged, leading to devastating losses in crops and livelihoods. Basic Health Units and Rural Health Centers also suffered significant damage, reducing access to healthcare in flood-affected areas.

11.2 Impacts of floods 2022

The 2022 monsoon season brought equally destructive impacts to Naushahro Feroze:

- **Population**: A large number of people were affected, with many displaced from their homes due to flooding.
- **Housing**: Thousands of houses were damaged or destroyed, worsening the living conditions of affected communities.
- **Agriculture**: Extensive farmland was inundated, with significant losses to major crops such as wheat, sugarcane, and cotton.
- **Livestock**: Thousands of animals were lost or fell ill due to lack of fodder, shelter, and clean water.

11.3 Flood Risk Areas

The central and western parts of Moro City, characterized by larger catchment areas, are more susceptible to flooding. The presence of major roads in these regions.

The hydrological map reveals significant patterns that are crucial for understanding the water flow and management needs of Moro City:

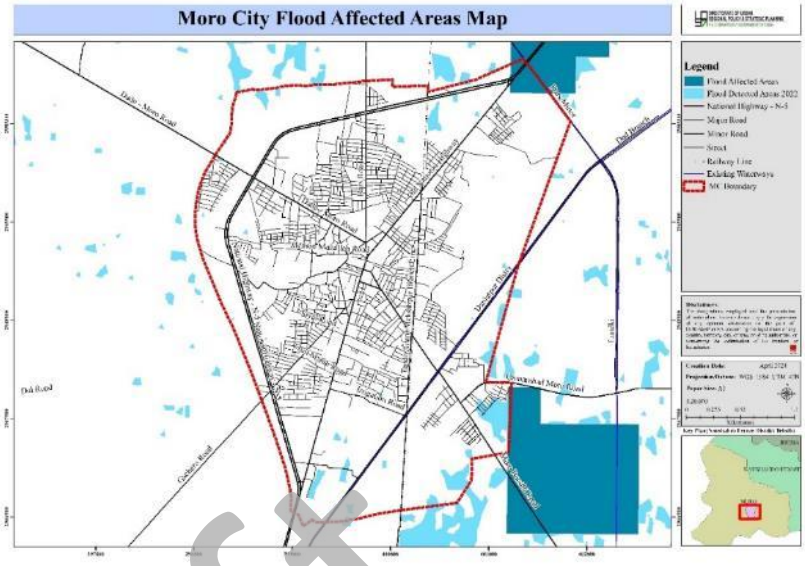


Figure 11-1: 2022 Flood Affected Areas Map of Moro City

- **Large Streams** serve as primary drainage channels, essential for directing water flow across the city.
- **Catchment Areas** indicate regions collecting surface runoff, with larger catchment areas concentrated in the central and western parts of the Moro.

- **Major Roads**

  Key roads intersecting the catchment areas and streams include:
  - Dadu- Moro Road
  - National Highway-N-5
  - Old National Highway
  - Moro Bandhi Road

These intersections are critical points that might impact water flow and present potential flood risks.

- **Railway Lines**

  The map shows both existing and abandoned railway lines, which play a significant role in the city's drainage patterns and potential waterlogging areas.

*11.3.1 **Food Security***

Despite the agricultural potential of Naushahro Feroze, the district remains in a food crisis phase (IPC Phase 3) as of early 2024. Floods severely damaged crops, livestock, and infrastructure, disrupting market access and household incomes. Inflation and rising food prices have further limited food availability and affordability. Displaced families and vulnerable groups, especially women and children, continue to face

high levels of food insecurity. Humanitarian aid is ongoing but insufficient, while damaged roads, bridges, and irrigation systems hinder recovery and agricultural productivity.

*11.3.2 **Earthquake***

The Seismic zoning map of Pakistan (2015) places Naushahro Feroze in Zone 2A which corresponds to peak ground acceleration (PGA(g)) of 0.08 to 0.16 and a possibility of minor to moderate seismic hazards i.e. probability of earthquakes of intensity (MM Scale) 6 to 7.5.

Accordingly, a seismic risk factor of 0.1 needs to be incorporated in the design for constructions and installations, for operational basis earthquakes (OBE) pertaining to damage due to moderate level earthquakes.

*11.3.3 **droughts***

Sindh geographically can be divided into four zones namely eastern desert, western hilly / mountainous area, coastal area in the south and irrigated agriculture area in the middle. Its 60% area is arid receiving rainfall on average of 5 inches during monsoon and very little in December & January. The arid area people depend upon the scanty rainfall raising livestock and millet crops. The failure of rainfall and global climatic effects reduce the water supplies in Indus River System (IRS). Sindh being at the far end of the system usually takes the brink. Besides, two-third of ground water is brackish and 80% agricultural land is affected by water logging and salinity.[1]

55In 2014 it has been observed that approximately 40 to 50 percent families were forecasted to migrate towards barrage areas. Most of these people prefer to settle and work at low wages, leaving them with little opportunity for bargaining power, and where their identity is counted as susceptible as exploited by their employers. In case of arrival of drought if the government is already informed about the situation government should take concrete measures to provide permanent solutions to save water and boost water resources through which the situation can be tackled.

*11.3.4 **Air quality***

The Ambient Air Quality Test (09-Nov-2023) conducted at two locations in Moro—near Police Station and Dadu Road Bypass—indicates emerging risks. While most pollutants remained within Sindh Environmental Quality Standards (SEQS), Carbon Monoxide (CO) exceeded safe limits at both sites, reaching 11.25 mg/m³ near the Police Station and 12.74 mg/m³ at Dadu Road Bypass, against the SEQS threshold of 10 mg/m³. These levels suggest increasing vehicular emissions and poor combustion practices.

Particulate Matter levels (PM10 and PM2.5) were within limits but remain a concern, particularly due to commercial activity and traffic congestion. Noise pollution was also notable, especially at the bypass

[2] Principles & Standards for Settlement Planning | UNHCR

location, where levels reached 68.3 dB(A)—just under the SEQS limit of 75 dB(A)—raising long-term concerns for public health and urban livability.

Without targeted interventions to curb vehicular emissions, manage traffic flow, and improve roadside infrastructure, Moro risks a gradual decline in air quality. This may lead to increased respiratory illnesses, cardiovascular stress, and overall environmental degradation in the city.

*11.3.5 **Waste Crisis***

Moro City is experiencing an escalating solid waste management crisis. According to a recent survey, 70% of residents dispose of waste informally, throwing it outside their homes, while only 19% rely on municipal sweepers and just 4% use designated municipal bins. The city lacks a formal landfill and proper segregation system, with waste often dumped at unauthorized sites like Khalifa Graveyard and near the highway within city limits, contributing to environmental degradation and public health risks.

Current waste generation stands at 73,443 kg/day (2025) and is projected to surge to 281,558 kg/day by 2045, driven by population growth. The municipality manages waste collection with limited resources, operating three shifts daily using a fleet that includes six sanitation rickshaws, four tractors, two loader tractors, and two Master Mazdas. Despite these efforts, the lack of infrastructure and workforce capacity hampers efficient waste management.

Hazardous waste, especially from healthcare facilities generating approximately 32.34 kg/day, remains unmanaged due to the absence of segregation and treatment systems, posing serious health threats. Without strategic investments in formal landfills, recycling, and community awareness, solid and hazardous waste will continue to present a mounting environmental and health crisis for Moro City.

11.4 Water Contamination

Groundwater quality in Moro City poses a serious public health concern. Recent water quality tests conducted at two key locations the Municipal Committee Office and the Assistant Commissioner's Office confirm bacterial contamination, rendering the water unfit for drinking. Although chemical analysis shows no presence of heavy metals such as Cadmium, Lead, Aluminum, or Manganese (as per SEQS), the microbial contamination is a critical issue.

The entire city depends solely on groundwater extracted through tube wells and hand pumps, as no formal surface water supply scheme or piped network currently exists. This reliance, combined with the absence of treatment infrastructure, significantly elevates the risk of waterborne diseases.

Findings from a socio-economic survey further underscore the gravity of the issue:

- 35% of residents consider the water unsafe for consumption.
- 57% report cases of diarrhea,
- 22% suffer from gastrointestinal infections, and
- 18% have experienced typhoid fever, directly linked to poor water quality.

Without urgent intervention including disinfection, improved water treatment, and infrastructure upgrades the city remains vulnerable to outbreaks of cholera, diarrhea, and other waterborne illnesses, especially in flood-prone and low-income neighborhoods.

11.5 Public Safety

Public safety is a principal responsibility at every level of governance—Federal, Provincial, Divisional, and District. In the context of increasing security challenges, especially those stemming from extremism and terrorism, **crowded public spaces** remain highly vulnerable. According to the **National Internal Security Policy (2018-2023)** and guidelines by **NACTA**, such locations are primary targets due to their accessibility, footfall, and potential for widespread disruption.

- **Crowded Places**

Terrorists often focus on high-density, high-visibility areas that offer opportunities to create mass panic, loss of life, or political/economic destabilization. Moro City contains numerous such crowded places which, without adequate protection, are at risk.

- **Identification of Land Uses for Potential Terrorist Attacks**

Based on field assessment, the following **land uses in Moro City** have been identified as potential high-risk zones due to high foot traffic and public importance:

Table 11-1: Potential Terrorists Threat

S. No	Landuse	Terrorist Threat
1	Education	Secondary Schools/College
2	Health	Hospitals/Medical Collages
3	Commercial	Shahi Bazar/Sabzi Mandi
4	Religious	Eid Gah / Shrines/Minority Religious Places/Imam Barghas
5	Government Offices	AC office/Judicial Complex/Police Station/Registrar Office/MC
6	Recreational	Parks & playground
7	Transportation	Bus Stop/Railway Station

Despite these high-risk areas, Moro City currently lacks a robust surveillance system, particularly CCTV coverage in commercial and public zones. The absence of incident response protocols, emergency preparedness, and community policing frameworks further amplifies the risk.

Authorities have yet to formulate or implement a comprehensive public safety plan addressing the full spectrum of terrorism-related threats, including:

- Prevention
- Crisis management
- Incident response
- Business/life continuity
- Post-event recovery

- **Possible Terrorist Intensity Zones in Moro**

Consultants have identified the most visited and crowd-dense areas in Moro City based on field observations. These zones match closely with the land use types identified above and are considered priority areas for public safety upgrades.

Immediate steps such as installation of surveillance systems, routine security drills, coordination with law enforcement agencies, and public awareness campaigns are strongly recommended to reduce vulnerability and build resilience.

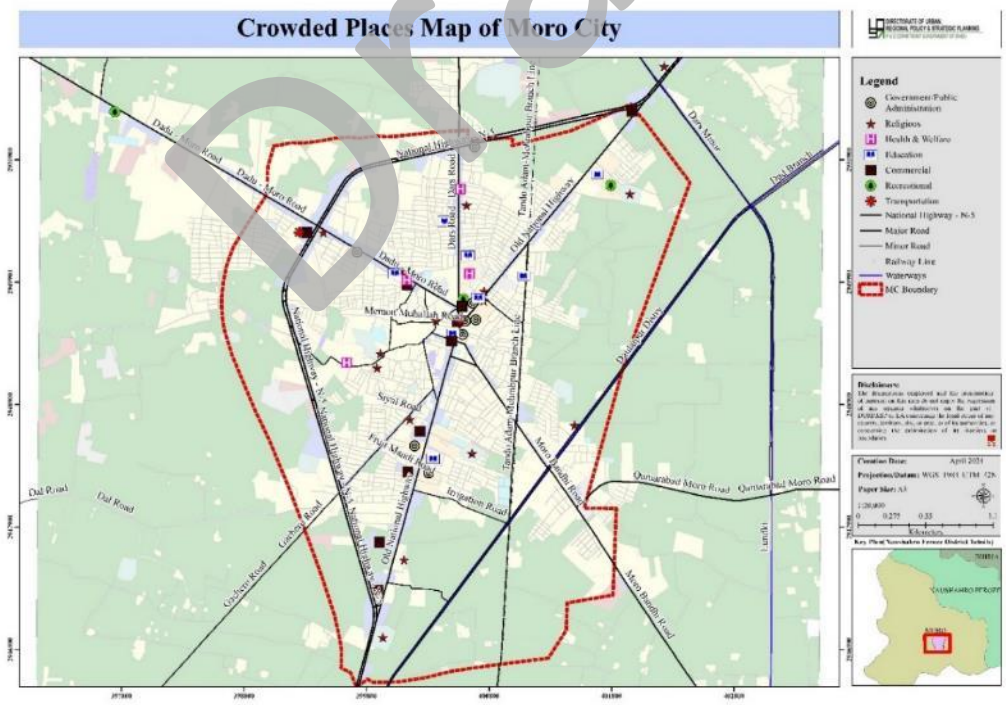


Figure 11-2: Crowded Places of Moro City

Institutional & Policy Framework

Disaster risk management in Naushahro Feroze District, including Moro, is governed by the National Disaster Management Act, 2010 and the Sindh Provincial DRM Policy. At the provincial level, the Provincial Disaster Management Authority provides overall policy direction, while at the district level the District Disaster Management Authority functions as the primary coordinating institution under the chairmanship of the Deputy Commissioner. The DDMA integrates all key line departments including irrigation, health, education, agriculture, livestock, police, social welfare, and works and services, along with representation from the business community, NGOs, civil society, municipal committees, and elected representatives.

Within this framework, municipal committees hold a central role as the immediate service delivery institutions in urban areas. They are responsible for maintaining municipal infrastructure such as drainage, sewerage, water supply, solid waste management, and fire services, all of which are critical for disaster preparedness and response. During emergencies, municipal committees provide frontline support through dewatering operations, restoration of sanitation services, clearance of debris, fire safety response, and ensuring continuity of essential urban utilities. Their close coordination with taluka and union councils allows for rapid mobilization of resources and localized interventions.

The District Emergency Operation Centre supports the DDMA by providing early warning dissemination, monitoring, inter-agency coordination, and public communication. At the local level, taluka administrations and union councils translate district-level policies into community action. Union councils, as the lowest governance tier, engage communities in preparedness, advocate for resources, and support small-scale initiatives such as rainwater harvesting, evacuation planning, and food storage. Community-based organizations complement these efforts by mobilizing volunteers for early warning, first aid, evacuation, search and rescue, and firefighting.

Despite this multi-tiered structure, key challenges persist. Stakeholder participation in the DDMA is often uneven, with limited active involvement from certain departments, municipal authorities, and civil society actors. This weakens coordination, delays rehabilitation, and reduces the effectiveness of early warning systems. Municipal committees, while central to service delivery, frequently lack the equipment, staffing, and financial capacity to sustain disaster management operations, especially in flood-prone and densely populated areas.

Strengthening this institutional and policy framework requires embedding DRM functions across all levels of governance. The DDMA must ensure regular training, simulation exercises, and coordination meetings with taluka administrations, municipal committees, and union councils. Municipal committees need targeted investments in equipment, technical staff, and contingency planning to enhance their ability to respond swiftly to urban disasters. Greater engagement of NGOs, the private sector, and civil society will ensure a more inclusive, accountable, and resilient system.

In summary, Naushahro Feroze's institutional framework for disaster risk management is multi-layered, with the Provincial Disaster Management Authority setting policy, the DDMA ensuring district-wide coordination, municipal committees leading service delivery in urban areas, taluka and union councils implementing actions at the community scale, and CBOs providing the first line of defense. If strengthened and made more participatory, this system can significantly reduce vulnerabilities, improve preparedness, and enhance resilience to floods, droughts, heatwaves, and other hazards that regularly impact Naushahro Feroze and Moro.

11.6 Issues and Problems

- Damage to housing, agriculture, and livelihoods → increased poverty.
- High risk zones not mapped/managed for urban expansion.
- High dependence on agriculture without resilience measures.
- Food insecurity despite production due to distribution and access gaps.
- Lack of cold chains and storage → post-harvest losses in disasters.
- No enforcement of seismic building codes in urban growth.
- Poor resilience of semi-pucca and katcha housing.
- Lack of green cover/urban greening increases heat vulnerability.
- Poor water management, no early warning for drought.
- Crop/livestock losses directly hitting rural economy.
- Public health risks (cholera, diarrhea, typhoid).
- Hazardous waste (healthcare) unmanaged.
- No structured municipal system → crisis of urban governance.
- Chronic respiratory and cardiovascular health risks.
- Noise-related stress and productivity loss.
- Weak monitoring and mitigation mechanisms.
- Lack of protective security measures in crowded places.
- Absence of emergency evacuation and response plans.
- Disaster risk reduction (DRR) not mainstreamed in planning.
- Coordination gaps among PDMA–DDMA–municipal–UC levels.
- Community awareness and private sector role remain low.

11.7 Policy Guidelines[56]

- Arrange and conduct need assessments of damages / losses.
- Ensure application of proper mechanism for evacuation and relocation of affected community to safer places.
- Establish Relief Camps with necessary arrangements.
- Initiate relief and rescue activities in their respective areas with the help of all stakeholders which also include provision of shelter, food, medicines etc. to the affected communities as well as to IDPs who are settled in makeshift Relief camps
- Arrange coordination meetings with health units.
- Mobilize entire health network functioning in the district for situation analysis and need assessments.
- Arrange mobile teams / Mobile Medicine Units for pre-medication of affected communities in all near and remote areas.
- Delegate responsibilities for regular inspection and maintenance of irrigation channels and drains.
- Coordinate and communicate with DDMA.
- Identify and strengthen the vulnerable points in the banks of all canals and drains running through the district.

11.8 Strategic Development Plan

The aim of the policy is to advocate an approach to disaster management that focuses on reducing risks the probability of losing one's life or health, assets and livelihoods.
Some of the objectives in this aspect includes;

I. Long Term Plan

- Establish coordination mechanism with PMD for real-time flood discharge forecasts.
- Regulate water discharge into canals, distributaries, and drains before monsoon season.
- Monitor embankments and vulnerable sections of irrigation channels (IPs/NIPs) with inspection teams.
- Ensure medical facilities and emergency supplies are available at relief camps.
- Strengthen coordination and communication channels with DDMA and allied departments.
- Empower the District Health Officer (DHO) to declare health emergencies and mobilize resources during disasters.
- Deploy medical and paramedical staff at key locations requiring health coverage.
- Develop stormwater drainage action plan in Moro to clear existing drains, install dewatering pumps in low-lying areas, and maintain catchment outlets before monsoon season.
- Improve public safety readiness through surveillance, early warning alerts, and coordination with police/local administration for crowded places.

[3] https://www.ndma.gov.pk/public/storage/publications/July2024/uJlDaTd4UluJgi5QUJgP.pdf

II. Short Term Plan

- Expand the role of DSM and PPHI to provide sustainable health cover to disaster-affected populations, particularly IDPs in BHU catchment areas.
- Conduct national and district-level risk assessments to identify highly vulnerable areas and design targeted disaster risk reduction interventions.
- Mainstream DRR into development planning by addressing root causes of vulnerability, improving infrastructure, and integrating risk-informed decision making.
- Empower and involve local-level actors (UCs, municipal committees, CBOs) in disaster planning and response to ensure sustainability.
- Clarify roles and responsibilities of institutions at all levels (federal, provincial, district, taluka, municipal, union councils) within an updated, multi-hazard national response plan aligned with current legislation.
- Invest in resilient stormwater drainage networks, including integrated urban drainage master plans, flood retention ponds, and climate-resilient road and rail infrastructure.
- Enhance public safety and security resilience by developing layered security systems (CCTV, patrols, vehicle barriers), conducting regular drills at crowded places (schools, markets, hospitals, shrines, bus/railway stations), and building partnerships between government, communities, and private operators.
- Strengthen institutional capacity for multi-hazard management by investing in equipment, training, and coordination platforms across sectors.

Disaster risk management interventions will be integrated with municipal and district infrastructure planning, particularly stormwater drainage systems, canal and embankment maintenance, road crossings, solid waste management, health facilities, and public safety arrangements at crowded and high-risk locations. This integration will reduce disruption during floods, heavy rains, heatwaves, and other emergencies, ensure timely evacuation, relief, and medical response, and strengthen service continuity, early warning, and coordinated action across municipal committees, line departments, and the DDMA, thereby supporting both immediate risk reduction and long-term resilience of communities, livelihoods, and critical assets.

11.9 Priority Projects

- **Provision for Emergency Shelter and Disaster Resilience Hub**

The devastating floods of 2010, 2011, 2022, and now 2025 have highlighted the growing frequency and severity of such disasters, with climate change further intensifying their impact. These recurring events underscore the urgent need for a designated emergency shelter site.

Moro City, though classified under moderate disaster severity, continues to suffer significant losses in crops and livestock during emergencies such as seasonal flooding or localized natural hazards. These events disrupt livelihoods and displace vulnerable populations, particularly in rural and agricultural areas.

Currently, there is no dedicated emergency shelter infrastructure to support affected communities during such times. The construction of emergency shelters on designated emergency land will provide safe, temporary refuge for displaced families, protect lives, and reduce the burden on local resources during crises.

This project is a crucial step toward strengthening Moro's disaster preparedness and response capacity. It will enhance resilience, safeguard livelihoods, and ensure faster recovery for affected populations.

The hub is planned on a 55-acre site, to be developed in phases. Guided by the Sphere Handbook (2018)[1] and UNHCR Settlement Planning Standards which recommend approximately 45 m² of land per person for planned settlements,[2] the full site will accommodate around 5,000 people. In the initial phase, 20 acres will be developed to serve approximately 1,900 people. This allocation aligns with the NDMA Pakistan Minimum Standards of Relief in Camp (2024)[3], which emphasize prioritizing essential facilities in the early stages. These will include shelters, washrooms, storage areas, boundary walls, and administration units, Energy-efficient lighting, Fire points & evacuation routes and PWD consideration, while preserving space for future expansion.

The phased approach ensures that immediate humanitarian needs are met in a safe, organized, and energy-efficient manner, while retaining the flexibility to scale up in response to future disasters. Ultimately, this initiative will strengthen the capacity of the district government and relevant authorities to provide timely food, shelter, and disaster management support to affected populations, without disrupting the city's normal operations.

- **Scope**

- Planning and Feasibility
  - Identification and demarcation of designated emergency land
  - Detailed feasibility, hazard, and flood risk assessment
  - Phased development planning in line with NDMA, Sphere Handbook, and UNHCR standard
  - Preparation of site layout, zoning, and evacuation plans
- Site Development and Shelter Infrastructure
  - Development of Phase-I on 20 acres to accommodate approximately 1,900 displaced persons
  - Construction of temporary-to-semi-permanent emergency shelters meeting humanitarian standards
  - Provision of designated family shelter plots with adequate spacing and privacy
  - Construction of boundary walls and controlled access points for safety
- Basic Services and Utilities
  - Installation of water supply systems including storage tanks and distribution points
  - Construction of gender-segregated and PWD-accessible washrooms and bathing facilities
  - Provision of temporary sanitation and waste management systems
  - Energy-efficient and solar-powered lighting for internal circulation and security

- Disaster Response and Safety Measures
  - Establishment of fire points, firefighting equipment, and clear evacuation routes
  - Designated assembly points and emergency access routes for rescue vehicles
  - Installation of safety signage and disaster information boards
- Administrative and Support Facilities
  - Construction of administration and coordination units for disaster management authorities
  - Storage facilities for relief goods, food supplies, and emergency equipment
  - Provision of spaces for medical aid, registration, and coordination with NGOs
- Social Protection and Inclusion
  - Allocation of safe spaces for women, children, elderly, and persons with disabilities
  - Inclusive design ensuring universal accessibility across the site
  - Provision of shaded communal areas for social support and coordination
- Environmental and Sustainability Measures
  - Flood-resilient site grading and drainage systems
  - Landscaping and open spaces to improve environmental comfort
  - Use of sustainable and low-maintenance construction materials
- Future Expansion and Scalability
  - Reservation of remaining 35 acres for Phase-II and Phase-III expansion
  - Flexible site design to scale up shelter capacity up to 5,000 persons during major disasters
  - Integration with district and provincial disaster management frameworks

➢ **Size**

- **Total Project Area: 55 acres** (designated emergency land)
- **Phase-wise Development**
  - **Phase–I Development Area: 20 acres**
  - **Phase–II & III (Future Expansion): 35 acres**
- **Population Capacity**
  - **Ultimate Capacity:** Approximately **5,000 persons**
  - **Phase–I Capacity:** Approximately **1,900 persons**
  - **Land Allocation Standard: ~45 m² per person** as per Sphere Handbook and UNHCR guidelines
- **Shelter Infrastructure (Phase–I)**
  - Temporary/semi-permanent shelters for **1,900 persons**
  - Designated family shelter units with adequate spacing
  - Special provision for women-headed households and vulnerable groups
- **Basic Services Coverage (Phase–I)**
  - Water supply and storage facilities to serve **1,900 persons**
  - Gender-segregated and PWD-accessible washrooms and bathing units
  - Solid waste collection and sanitation points
  - Energy-efficient / solar lighting across internal circulation areas

- **Disaster Management & Support Facilities**
  - Administrative and coordination units for disaster response
  - Relief goods and food storage facilities
  - Firefighting points, evacuation routes, and emergency access roads
  - Medical aid and registration areas
- **Future Expansion Capacity**
  - Scalable shelter plots to accommodate an additional **3,100 persons**
  - Reserved land for additional shelters, services, and logistics facilities
  - Designed to support multi-hazard emergency response (floods, displacement, climate events)
- **Service Area**
  - Moro City and surrounding rural/agricultural settlements affected by floods and natural disasters

➢ **SDG'S Alignment**

I. **GOAL 2 – Zero Hunger**
The project will support food security for affected communities by protecting livelihoods and minimizing crop and livestock losses, aligning with SDG 2.3, which aims to improve agricultural productivity and resilience.

II. **GOAL 3 – Good Health and well-Being**
Construction and operation of emergency shelters will provide safe refuge, reduce health risks, and improve well-being during disasters, contributing to SDG 3.8 and 3.d, which focus on ensuring healthy lives and strengthening disaster risk management.

III. **GOAL 6 – Clean Water and Sanitation**
By improving access to clean water and sanitation facilities within shelters, the project contributes to SDG 6.1, ensuring availability and sustainable management of water and sanitation for all.

IV. **GOAL 7 – Affordable and clean energy**
The shelters will incorporate energy-efficient solutions to provide reliable power during emergencies, supporting SDG 7.1, which aims to ensure access to affordable, reliable and sustainable energy.

V. **Goal 8 – Decent Work and Economic Growth**
By creating jobs in construction, facility management, and emergency response, the project contributes to SDG 8.3 and 8.5, promoting productive employment and inclusive economic growth.

VI. **GOAL 11 – Make cities and human settlements inclusive, safe, resilient and sustainable**
By establishing organized, safe, and resilient emergency infrastructure, the project supports SDG 11.5 and 11.b, which focus on reducing disaster impacts and building inclusive, resilient cities.

- **Implementing Authority**

District Disaster Management Authority (DDMA), Municipal Committee Moro.

- **Preliminary Cost Estimate**

Estimated Cost: 250 million Approx

S. No.	Project Name	Estimated Cost in Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Disaster Management Project						
1	Feasibility study for Emergency Shelter and Disaster Resilience Hub	50	-	Non ADP	**Short Term**	-
2	Procurement for additional land for Emergency Shelter and Disaster Resilience Hub	200	-	Non ADP	**Short Term**	-

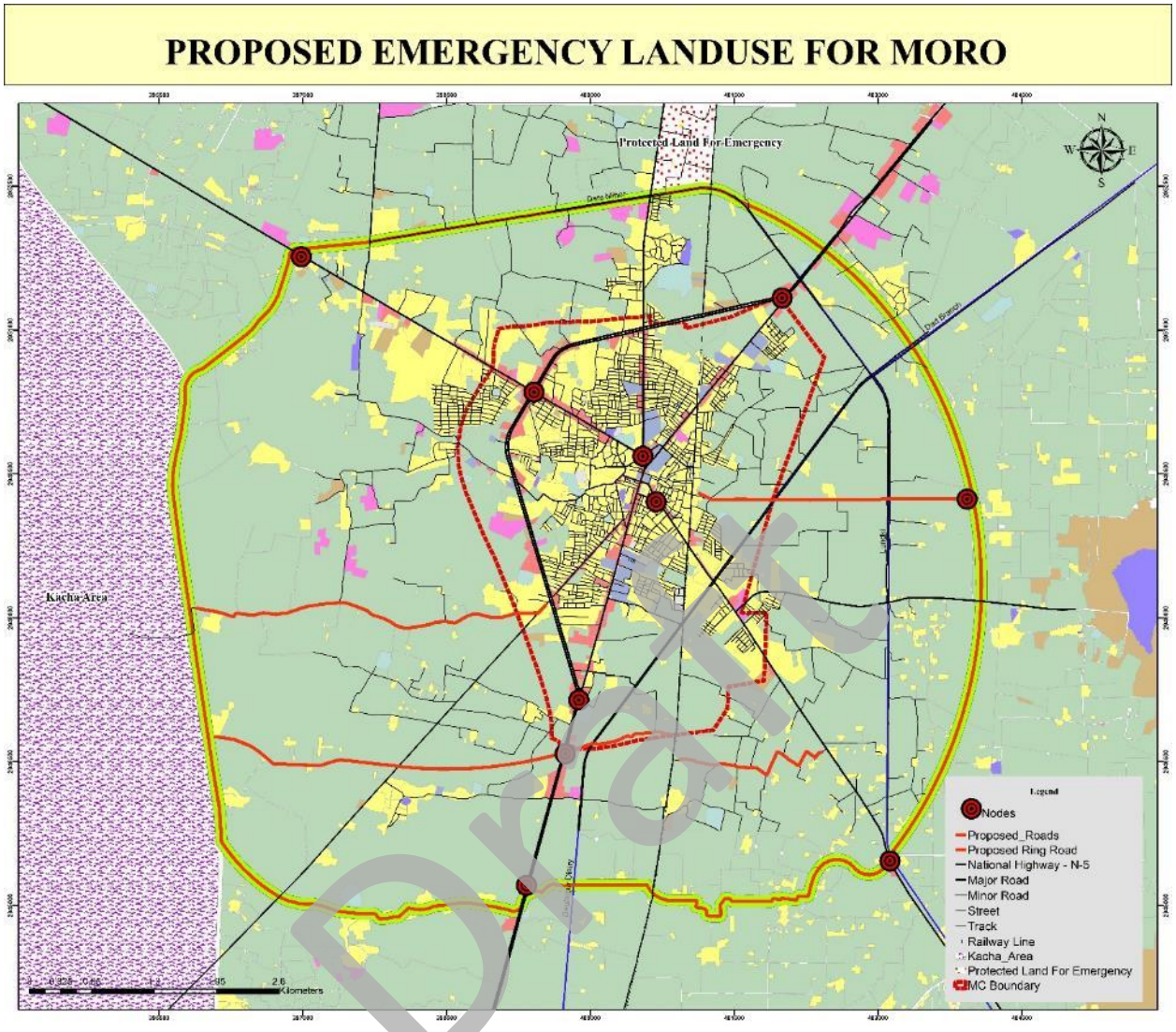
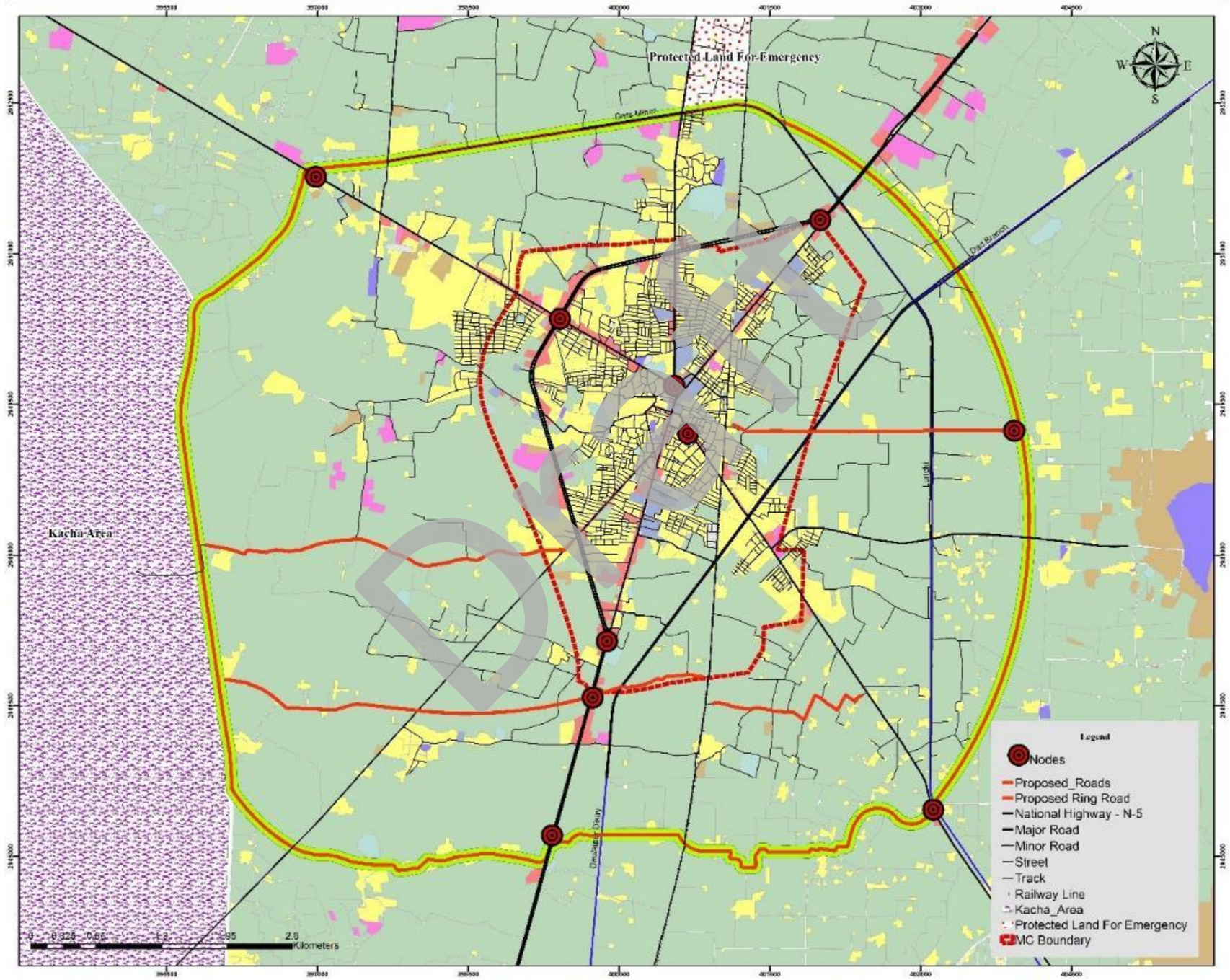


Figure 11-3: Proposed Emergency Land for Moro

PROPOSED EMERGENCY LANDUSE FOR MORO



12. CLIMATE CHANGE EMERGENCY CONTINGENCY PLAN

Climate change has become an urgent global concern, posing serious threats to both natural ecosystems and human societies Sindh being no exception. Characterized by long-term changes in temperature and precipitation patterns, climate change is already disrupting the environmental equilibrium and socio-economic structure of the province. The increasing frequency and severity of extreme weather events such as floods, droughts, heatwaves, rising sea levels, and erratic rainfall are clear indicators of this shift.

Scientific evidence points to human activities, particularly greenhouse gas emissions since the Industrial Revolution, as the primary drivers of climate change. In Sindh, rising temperatures are accelerating glacier melt in the northern regions, leading to unpredictable river flows. While this may temporarily boost water availability, it is expected to result in long-term freshwater shortages, further aggravating the existing water crisis in many communities.

Rising sea levels, projected to increase by 18 to 36 cm under low-emission scenarios and up to 59 cm under high-emission scenarios, pose a significant threat to coastal regions of Sindh, including major urban centers such as Karachi, Thatta, and Badin. These areas are increasingly vulnerable to coastal erosion, saltwater intrusion into freshwater supplies, and the displacement of local populations.

Sindh, the second-largest province of Pakistan, features a remarkably diverse geographical landscape. It includes deserts, wetlands, riverine and mangrove forests, mountainous and hilly regions, fertile agricultural lands, and an extensive coastline. This diverse terrain makes the province particularly susceptible to the wide-ranging impacts of climate change, as evidenced by the increasing frequency and intensity of natural disasters.

> *With the evolving world, the words like global warming, greenhouse effect, CO_2 emission & carbon footprint, relentless use of fossil fuel, rising sea temperature resulting in rising sea levels, heatwaves, glaciers melt down at a faster pace resulting in GLOF (Glacial Lake Outburst Floods), unprecedented and extreme weather conditions, floods and droughts, to name a few, are no newer to us. It's high time now that we should acknowledge these issues to find a way out.*
>
> Source: Sindh Climate Change Policy 2022

Shifting rainfall patterns are expected to bring more intense and frequent downpours from the mid-21st century onward. These changes threaten to worsen urban flooding in cities and disrupt agriculture, a key pillar of Sindh's economy.

As climate change affects both industrialized and developing regions worldwide, Sindh must take proactive steps to address these challenges. The government must mainstream climate adaptation and mitigation strategies into the province's medium- and long-term development plans.

To this end, the Sindh Climate Change Policy 2022, developed by the Environment, Climate Change and Coastal Development Department's Directorate of Climate Change, offers a strategic framework for sustainable socio-economic development. The policy seeks to integrate climate resilience across all sectors, enhance the quality of life for Sindh's residents, and ensure that the province fulfills its international obligations, including those under the Paris Agreement.

12.1 Historical Climate Trends

A comprehensive analysis of temperature trends from 2010 to 2022 shows that Moro experiences an average temperature range between 39°C and 13°C, with significant fluctuations in extreme values. The highest temperatures during this period ranged from 40°C to 47°C, indicating periodic heatwaves, while the minimum temperatures remained between 11°C and 15°C, showing relatively minor variation during the colder months. These patterns highlight a climate characterized by intensely hot summers and comparatively mild winters.

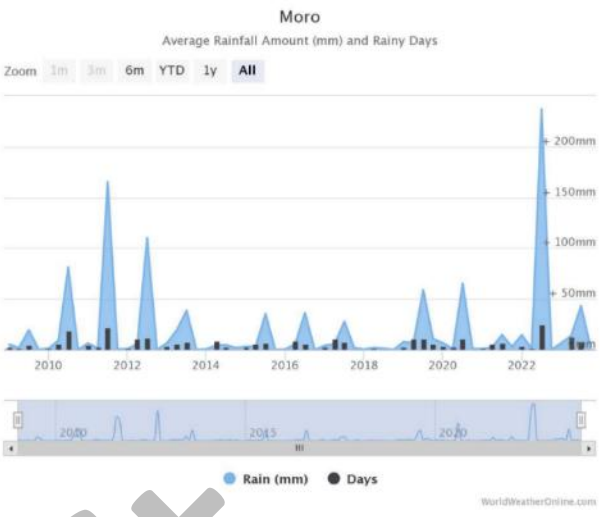


Figure 12-1: Average Rainfall Amount of Moro

Rainfall data sourced from "World Weather Online.com" indicates that Moro receives year-round precipitation, ranging from as little as 0.23 mm to peaks of 165 mm. A notable example is the year 2022, which saw an extreme disparity in rainfall: only 0.23 mm was recorded between October and December, contrasted by an unexpected 237 mm downpour from July to September. This heavy rainfall aligned with the devastating floods that affected much of Sindh, especially rural areas, leading to severe damage to infrastructure, crops, and livelihoods. The flooding also disrupted connectivity between Sindh and Punjab, hampering road and rail transport across the region.

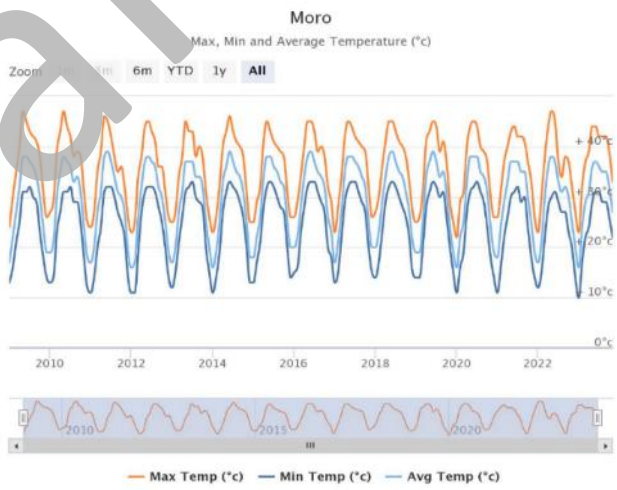


Figure 12-2: Average Temperature

12.2 Expected Precipitation in next 30 years [57]

The precipitation projections for Moro and Naushahro Feroze, located in central Sindh, indicate a significant shift in rainfall patterns for the period 2011–2050. The data shows a notable increase in rainfall during the monsoon months, particularly in August, which is expected to see the highest rise in both rainfall amount and intensity—exceeding 35 mm in some climate models. July and September are also

[57] Sindh Climate Change Policy 2022

projected to experience considerable increases, while minor rainfall gains may occur in March and April. In contrast, the dry season, spanning from November to May, is expected to see little to no increase, with some months like May even projected to become drier.

Percentage-wise, rainfall in August could increase by over 100% in certain models, indicating a heightened concentration of rainfall during the monsoon season. This shift suggests that rainfall will become more seasonal and intense, with fewer events spread throughout the year. Correspondingly, the number of rainy days is expected to rise in July, August, and September—particularly August, which could see up to six additional rainy days—while May and November are projected to experience fewer wet days. This extended monsoon period and increased rainfall frequency could heighten the risk of flooding and soil erosion.

Furthermore, rainfall intensity is projected to rise, especially in August, which could see an increase of up to 6 mm/day. Such intensified rainfall events over shorter durations point to a higher likelihood of flash floods and drainage system overloads, necessitating robust infrastructure planning. Overall, while central Sindh may benefit from increased monsoon rainfall, the region will also face greater challenges related to flood management, agricultural planning, and water resource distribution during the increasingly dry non-monsoon months.

Figure 12-3: Precipitation Change in Sindh

12.3 Extreme Weather Events

Frequency and intensity of floods, droughts, drought, earth quake or wildfires are given below in Table 2.

Table 4-1 Hazards Matrix of Naushahro Feroze[58]

Hazard	Frequency	Severity / Force	Year
Rain floods	Monsoon	High	1973, 1976, 2010, 2011,2012,2013,2022
Earthquakes	Rare	Low	---
Epidemics	Seasonal	Low	Every year

Naushahro Feroze District is exposed to a variety of natural and human-induced hazards, with rain-induced flooding standing out as the most severe. These floods typically occur during the monsoon season and have predominantly impacted the western Talukas of the district. Major flood events have been recorded in 1973, 1976, 2010, 2011, 2012, 2013, and most recently in 2022, indicating a recurring pattern of extreme weather events over the decades. The combination of shifting climate conditions and insufficient drainage infrastructure is expected to further increase the frequency and intensity of such floods, underscoring the urgent need for effective flood management and climate-resilient infrastructure development.

Table 12-1-2 Comparative Overview of 2010 and 2022 Floods in Sindh

Indicator	2010 Flood[59]	2022 Flood[60]
Total Affected Districts	17	24
People Died	411	1,093
People Injured	1,235	8,422
Houses Damaged	879,978	2,087,186
Roads Damaged (km)	8,467	8,463
Cropped Area Affected (ha)	1,043,500	3,777,272

58 Provincial Disaster Profile - PDMA_SINDH
59 Annual Flood Report 2010 of Ministry of Water & Power, GoP
60 Flood 2022 in Sindh by PDMA, GoS

A comparison of the 2010 and 2022 flood events in Sindh clearly illustrates the escalating severity of climate-induced disasters. In 2022, not only did the number of affected districts increase to 24 from 17, but human casualties also surged—with over 1,000 deaths and more than 8,000 injuries. Housing damage more than doubled, affecting over 2 million homes compared to under 900,000 in 2010.

Interestingly, while road damage remained relatively constant at around 8,460 kilometers, the scale of agricultural devastation was far greater in 2022, with nearly 3.8 million hectares of cropped area affected—almost four times that of 2010. This has serious implications for food security, rural livelihoods, and economic stability.

According to the Provincial Disaster Management Authority's (PDMA) 2022 flood report, Naushahro Feroze was ranked among the top three most severely affected districts in Sindh in terms of human and livestock casualties. In addition to the tragic loss of life, the district also suffered extensive damage to crops and residential structures, placing it again among the top three districts hardest hit in these categories. This highlights the district's high vulnerability and the pressing need for comprehensive disaster preparedness and recovery planning.

Table 4-3: Impacts of 2022 Flood on Naushero Feroze[61]

Human Deaths	96
Animal Deaths	36,588
Population Affected	234,168
Displaced Population	221,001
Full House Damaged	105,110
Crops Damaged (Acres)	251,875

12.4 Governance And Institutional Framework

To tackle the challenges posed by climate change, Pakistan has implemented various adaptation measures at both the national and provincial levels.

Climate change is a global issue and poses significant challenges for thinkers, planners, policymakers, and professionals worldwide. It is expected to affect nearly every sector of Pakistan's economy. The Ministry of Climate Change (MoCC) is the primary institution responsible for climate change in Pakistan. It was established following the 18th constitutional amendment in 2010, which resulted in the dissolution of the Ministry of Environment due to the devolution of powers to provincial governments. While environmental

[61] Flood 2022 in Sindh by PDMA, GoS

matters now fall under provincial jurisdictions, climate change remains a federal issue, as it requires a national response and representation in international climate negotiations.

In recent years, Pakistan has taken several policy and planning initiatives related to climate change, outlined as follows:

12.5 National Level Actions

Category	Details
Institutional Evolution	- 2010: Ministry of Climate Change (MoCC) formed after constitutional amendment. - Environment is a provincial matter; climate change remains federal.
Legislation	-1983: Pakistan Environmental Protection Ordinance. -1997: Pakistan Environmental Protection Act.
Research & Institutions	- 2003: Global Change Impact Studies Centre (GCISC) established. - 2005: Environmental Policy Framework based on 1997 Act.
Climate Change Policy	- 2008: Task Force on Climate Change by Planning Commission. - 2012: National Climate Change Policy (NCCP) launched. - 2013: NCCP Implementation Framework.
International Commitments	- 2007: Bali Action Plan – NAMAs introduced. -2015: INDC submitted for COP21. - 2021: Updated NDC—50% emissions reduction by 2030 (with support).
Key Developments	- 2017: National Climate Change Act passed. - Green Climate Fund: USD 249M adaptation/mitigation projects. -2023: National Clean Air Policy. -Vision 2025: Low-carbon economy. - 2014: Billion Tree Tsunami restored 350,000 ha land.

12.6 Provincial Level Actions (Sindh)

Category	Details
Directorate General of Climate Change (DoCC)	-Established: 2022 - Operational: March 2022. - Liaison between federal government, international bodies, and provincial departments.
Environment, Climate Change & Coastal Development Department	- Formed in 2016 to manage climate, environment, and coastal issues.
Sindh Environmental Protection Agency (SEPA)	- Ensures environmental and public health safety. - Conducts research on pollutants and regulates their use.
Sindh Environmental Protection Act (2014)	- Passed in 2014. - Legal framework for pollution control, environmental protection, and sustainability.
Sindh Climate Change Policy (2022)	- First official climate policy by DoCC. - Notified on July 7, 2022.
Sindh Provincial Action Plan for Climate Change (2018)	- Promotes renewable energy (solar, wind). - Integrated disaster risk management. - Health adaptation (heat, water-related diseases).

12.7 Institutional Response and Resilience Initiatives in Sindh

To tackle the growing climate and disaster risks, several key initiatives have been undertaken by the Government of Sindh. The **Sindh Resilience Reduction Unit (RRU),** operating under the Planning & Development Department (P&DD), is a pivotal body in mainstreaming Disaster Risk Reduction (DRR) and climate resilience into provincial planning. RRU coordinates with government entities, development partners, and humanitarian agencies to promote resilient infrastructure, inclusive development, and the integration of DRR and climate change adaptation (CCA) into sectoral plans. It also supports the Sindh Resilience Strategy and DRR integration into Annual Development Plans (ADPs), working closely with PDMA Sindh, UN agencies, the World Bank, ADB, and various NGOs.

In response to the 2022 floods, the **Sindh People's Housing for Flood Affectees (SPHF)** was established to lead the Sindh Flood Emergency Housing Reconstruction Project (SFEHRP). With a target of building 2.1 million disaster-resilient houses by June 2025, this $1.5 billion initiative emphasizes inclusive recovery by granting housing ownership rights to women. SPHF utilizes a public-private partnership model and digital systems for transparent beneficiary management. As of early 2025, more than 200,000 homes have been completed, with 700,000 under construction. It also partners with local NGOs to ensure that housing solutions are sustainable and culturally appropriate.

> Climate resilience is defined as the capacity for a socio-ecological system to: (1) absorb stresses and maintain function in the face of external stresses imposed upon it by climate change and (2) adapt, reorganize, and evolve into more desirable configurations that improve sustainability of the system, leaving it better prepared for future climate change impacts. "Resilience: The emergence of a perspective for social-ecological systems analyses". Global Environmental Change. 16: 253–267.)

Moreover, the **Sindh Flood Emergency Rehabilitation Project (SFERP),** financed by the World Bank and managed by the P&DD, aims to rebuild critical infrastructure, restore livelihoods, and enhance climate preparedness. The project focuses on repairing flood control systems, roads, and water supply schemes, while also expanding emergency response services such as SERS 1122. In addition to livelihood support and livestock assistance, SFERP emphasizes a “build back better” approach and incorporates gender-sensitive training on GBV, SEA, and child protection. A strong grievance redress mechanism further ensures that affected communities have access to timely support and feedback channels.

12.8 Action Plans

To address the challenges faced by Moro in terms of climate adaptability, an integrated and comprehensive **Climate Adaptability Action Plan** is necessary. This plan should focus on strengthening infrastructure, improving resource management, enhancing community resilience, and promoting sustainable agricultural practices to cope with the impacts of climate change, particularly floods, droughts, and extreme weather events. Here are the key elements of the action plan:

12.9 Institutional Strengthening & Governance

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Establish a District Climate Resilience Task Force**	Adaptation	Deputy Commissioner	**Short Term**
	A dedicated multi-sectoral body under the Deputy Commissioner to coordinate planning, implementation, and monitoring of all climate resilience activities.			
02	**Integrate Climate Adaptation into District Development Plans**	Adaptation	Deputy Commissioner	**Short Term**
	Ensure that all major urban development, agriculture, infrastructure, health, and education initiatives include climate risk assessments and mitigation strategies.			
03	**Decentralize Climate Decision-Making**	Adaptation	Deputy Commissioner	**Short Term**
	Empower Union Councils with localized adaptation planning and emergency response training.			

12.10 Climate-Smart Infrastructure Policy

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Adopt & Enforce Climate-Resilient Building Codes**	Adaptation	SBCA	**Short Term**
	• Mandate heat-resilient and flood-safe designs for new public buildings, schools, clinics, and housing schemes—especially in flood-prone zones. • Enforce zoning regulations that restrict dense construction in low-lying flood-prone areas.			
02	**Climate-Proof Roads & Utilities**	Adaptation	District Administration	**Short Term to Medium Term**
	Allocate funds and update design standards for roads, bridges, and electrical infrastructure using climate-resilient materials and drainage systems.			

12.11 limate Zoning and Risk-Based Land Use Planning

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Define climate-sensitive zones for targeted planning**	Adaptation	District Administration and PDMA	**Short Term**
	• Develop zoning maps indicating flood-prone, heat-prone, and safe zones. • Allocate land use based on risk: restrict development in high-risk zones, promote green areas in heat-prone zones, etc. • Propose zoning codes and building regulations tailored to each climate zone.			

12.12 Canal Management

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Improve Canal Management**	Adaptation	Irrigation Dept.	**Short Term to Medium Term**
	• **Upgrade the Canal System:** Invest in the renovation and maintenance of existing canal infrastructure to ensure more efficient water distribution. • **Canal Lining:** Implement canal lining techniques to reduce water seepage and ensure maximum water retention. • **Modernize Water Distribution:** Introduce modern distribution methods, such as automated gates and sensors, to improve water flow management and reduce inefficiencies. • **Technology Integration:** Deploy technology such as real-time monitoring systems to track water flow and optimize usage. • **Regular Maintenance:** Establish a routine maintenance schedule to ensure the canal system is kept in optimal working condition and is able to withstand seasonal fluctuations. • **Water Quality Monitoring:** Install water quality monitoring systems to track and address any issues related to contamination or water quality. • **Training for Local Farmers:** Provide training and resources to farmers on efficient irrigation techniques to maximize the benefit from the canal system.			

12.13 Flood Risk Management & Drainage Planning

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Prioritize High-Elevation Zones for Critical Infrastructure**	Adaptation	Local Government and PHED	**Short Term**
	• Conduct a detailed mapping of elevation zones using DEM and GIS. • Identify and earmark safe zones for hospitals, schools, and emergency services. • Develop building guidelines and policies favoring infrastructure in high-elevation areas.			
02	**Designate Low-Elevation Areas for Water-Tolerant Uses**	Adaptation	Local Government and PHED	**Short Term**
	• Map and mark all low-lying vulnerable areas. • Plan and develop green spaces, parks, and retention ponds in these flood-prone zones. • Enforce land-use policies to restrict residential/commercial construction in these areas.			
03	**Strengthen and Maintain Natural Drainage Corridors**	Adaptation	Local Government and PHED	**Short Term**
	• Survey and identify all existing natural drainage paths. • Clear and desilt drainage channels regularly to maintain capacity. • Design and construct supplementary engineered stormwater drainage systems.			
04	**Implement Targeted Flood Mitigation Measures**	Adaptation	Local Government and PHED	**Short Term**
	• Build levees, embankments, and floodwalls in vulnerable areas. • Construct retention basins and rainwater harvesting ponds to temporarily hold floodwater. • Install pump stations in low-lying urban zones for quick drainage during heavy rains.			
05	**Upgrade Critical Road and Railway Infrastructure**	Adaptation	Local Government and PHED	**Short Term**
	• Survey roads and railway tracks that fall in flood-prone areas. • Elevate critical sections of roads and railway embankments. • Improve drainage systems alongside transport routes to reduce water accumulation.			
06	**Community Engagement & Early Warning**	Adaptation	PDMA and Deputy Commissioner	**Short Term**

#	Initiative/Actions	Aspect	Responsibility	Time Frame
	• Train local communities in flood preparedness, water conservation, and emergency response. • Form neighborhood WASH and resilience committees to monitor drainage and sanitation. • Integrate DEM data with GIS-based urban planning tools for real-time water and terrain monitoring.			

12.14 Establish Sustainable Water Supply Networks

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Adopt & Enforce Climate-Resilient Building Codes**	Adaptation	PHED	**Short Term**
	Introduce a permit and monitoring system for tube wells to control over-extraction and incentivize efficient irrigation methods.			
02	**Assess Current Water Sources and Needs**	Adaptation	Local Government and PHED	**Short Term**
	• Conduct a citywide survey of existing groundwater use and contamination levels. • Map current water supply gaps and project future water demand under climate change scenarios.			
03	**Site Selection and Feasibility Studies**	Adaptation	Local Government and PHED	**Short Term**
	• Identify suitable, safe locations for new water treatment plants considering flood risk and elevation data. • Perform environmental and social impact assessments.			
04	**Strengthen and Maintain Natural Drainage Corridors**	Adaptation	Local Government and PHED	**Short Term**
	• Lay down a structured pipeline network connecting treatment plants to residential, commercial, and public areas. • Include pressure regulation and leak detection systems to ensure efficient distribution. • Ensure all water infrastructure is designed to be resilient to future climate stresses like floods, droughts, and heatwaves. • Train municipal staff in modern water treatment, maintenance, monitoring, and emergency response.			
05	**Implement Rainwater Harvesting Systems**	Adaptation	Local Government and PHED	**Short Term**

#	Initiative/Actions	Aspect	Responsibility	Time Frame
	• Install rooftop rainwater harvesting systems in government buildings, schools, and hospitals. • Encourage household-level rainwater harvesting through subsidies and incentives. • Construct community rainwater collection tanks to enhance urban water storage. • Conduct awareness campaigns about the importance of conserving treated water.			
06	**Monitor Water Quality and Supply Reliability**	Adaptation	Local Government and PHED	**Short Term**
	• Establish a real-time water quality monitoring system at treatment plants and key distribution points. • Regularly test water for biological and chemical contaminants and share results with the public.			
07	**Mobilize Financial and Technical Resources**	Adaptation	Deputy Commissioner	**Short Term**
	• Secure funding from government schemes, donor agencies, and development partners. • Explore public-private partnerships (PPP) for the operation and maintenance of the water supply infrastructure.			

12.15 Improving Healthcare and Sanitation

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Water and Sanitation Infrastructure**	Adaptation	Local Government and PHED	**Short Term**
	• Expand the sewerage system to ensure proper waste disposal and reduce the risk of waterborne diseases particularly in high-density neighborhoods • Improve the water supply system to provide access to clean and safe drinking water			
02	**Climate-Resilient Healthcare Facilities**	Adaptation	**Health Dept. & District Administration**	**Short Term**
	• Build and upgrade healthcare facilities, especially in underserved areas of Moro. Ensure these facilities are equipped to handle emergencies, including flood-related diseases. • Improve staffing levels and training for healthcare providers, particularly in managing climate-related health impacts. • Ensure that healthcare facilities are well-stocked and staffed to address the needs of affected populations during climate-related events.			
03	**Community Health Awareness**	Adaptation	**PDMA**	**Short Term**
	Launch educational campaigns on the prevention of climate-related diseases (malaria, dengue, diarrhea) and promote basic hygiene practices to mitigate health risks.			

12.16 Education

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Infrastructure Improvement**	Adaptation	**Education Dept. & District Administration**	**Short Term**
	• Renovate and upgrade school infrastructure to withstand flooding, including building raised classrooms, flood-resistant buildings, and proper drainage systems around schools. • Ensure that schools have access to reliable electricity, clean water, and functioning sanitation facilities.			
02	**Increase Access to Education for Girls**	Adaptation	**Education Dept**	**Short Term**
	• Create targeted programs to encourage the enrollment and retention of girls in schools, particularly in rural and flood-affected areas. • Provide financial support (e.g., scholarships, stipends) for families to offset the cost of education and reduce gender disparities.			
03	**Disaster-Resilient Schools**	Adaptation	**Education Dept. & PDMA**	**Short Term**
	Develop disaster management and evacuation plans for schools, ensuring that children, particularly girls, are safe during floods or other climate-related events**.**			
04	**Inclusive Education**	Adaptation	**Education Dept.**	**Short Term**
	Improve facilities to accommodate children with disabilities, ensuring that 72% of schools with inadequate facilities for such children are made inclusive.			

12.17 Resilient Agriculture & Livestock

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Promote Climate-Resilient Farming Practices**	Adaptation	Agriculture Dept.	**Short Term**
	• Introduce drought-resistant and flood-tolerant crops to reduce dependency on traditional crops vulnerable to climate extremes. • Promote efficient irrigation techniques, such as drip irrigation and rainwater harvesting for agriculture, to ensure sustainable water use.			
02	**Provide Financial Support and Training to Farmers**	Adaptation	Agriculture Dept.	**Short Term**
	• Develop micro-finance programs and subsidies for farmers to access climate-resilient seeds, fertilizers, and equipment. • Offer training on sustainable farming practices, pest management, and the use of climate-resilient crops.			
03	**Implement Agroforestry Programs**	Adaptation	Agriculture Dept.	**Short Term**
	Encourage agroforestry, where trees are planted alongside crops to improve soil fertility, conserve water, and reduce erosion			
04	**Flood Protection for Farmlands**	Adaptation	Irrigation Dept. & District Administration	**Short Term**
	Build flood protection structures, such as embankments and canals, to safeguard agricultural lands from floodwaters.			
05	**Promoting Climate-Smart Livelihoods**	Adaptation	Livestock Dept.	**Short Term**
	Diversification of Livelihoods: Promote income diversification programs, such as vocational training for skills in renewable energy, handicrafts, and small businesses, to reduce dependence on agriculture and provide alternative sources of income during climatic shocks.			
	Microfinance and Financial Support: Establish microfinance programs to help farmers and small businesses access capital for adopting climate-resilient practices or diversifying their income sources. Provide subsidies or low-interest loans for the adoption of sustainable practices.			

12.18 Energy System Resilience

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Green Corridors & Urban Foresting**	Mitigation	Municipal Committee	**Short Term**
	Develop green belts along main roads and establish mini urban forests in towns using native drought-resistant trees.			
02	**Rooftop & Vertical Gardens**	Adaptation	SBCA	**Short Term**
	Incentivize households and commercial buildings to develop rooftop or vertical gardens to reduce surface heat and improve air quality.			
03	**Solar Energy for Public Services**	Mitigation	Energy Dept.	**Short Term**
	Install solar panels on key public buildings and streetlights to reduce load on the local grid and ensure essential services remain functional during power cuts			
04	**Energy Efficiency Awareness**	Adaptation	Municipal Committee	**Short Term**
	Community campaigns on reducing power usage and energy-efficient appliances can help mitigate overload.			

12.19 Cross-cutting Actions

#	Initiative/Actions	Aspect	Responsibility	Time Frame
01	**Institutional Strengthening**	Adaptation	Municipal Committee	**Short Term**
	Train local government staff on climate adaptation planning and budgeting.			
02	**Community Engagement**	Adaptation	Municipal Committee	**Short Term**
	Use participatory planning to include vulnerable groups (e.g., women, farmers, youth).			
03	**Funding Mobilization**	Enabling	SEPA	**Short Term**
	Leverage support from national funds, international donors (e.g., GCF), and NGOs.			

13. SUSTAINABLE DEVELOPMENT GOALS

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.[62]

13.1 Sustainable Development Goals (SDGs) National Framework

The Planning Commission of Pakistan with the support of the United Nations Development Programme (UNDP) has developed a national framework for the SDGs after extensive deliberation and consultation with stakeholders at provincial and divisional levels.[63] In this framework, existence of strong interlinked, and progress on certain targets depend on achievement of others. Under the framework, baseline for 17 goals, 169 targets and 242 indicators were prepared and prioritized according to short-term, medium-term and long-term perspectives to yield better results in efficient and timely manner. In view of resource constraints and institutional capacities, the national targets for these goals have been set lower than global level following a more pragmatic approach.

13.2 Government of Sindh Vision[64]

Government of Sindh has spearheaded efforts to support the mainstreaming, localization, and implementation of the 2030 Agenda through a support project for SDGs implementation in Sindh, jointly funded by the Government of Sindh and United Nations Development Programme (UNDP), with the aim to address socio-economic challenges in the province and steer it in a progressive direction towards achievement of SDGs. Under the project, a SDGs Support Unit has been established in Planning & Development Board, with effect from May 2017. The Unit works in coordination with the National SDGs Unit, which has been established in the Ministry of Planning, Development and Reform as well as Federal and Provincial Parliamentary Task Forces, Core-Group on SDGs Thematic sub-Committees. The Unit's work is guided and reviewed by the Provincial Technical Committee, Project Board established at the Federal level and Sub-Committee on the SDGs of the National Economic Council.

SDG'S IN SINDH[65]

The SDGs Support Unit Sindh is working with line departments of Government of Sindh, as well as UN Agencies, civil society organizations, academia and the private sector to integrate the strategies and

[62] THE 17 GOALS | Sustainable Development
[63] Government of Pakistan – Sustainable Development Goals (SDGs) National Framework: Summary for the National Economic Council (NEC), Planning Commission, Ministry of Planning, Development & Reforms, March 2018.
[64] Sindh-SDGs-Framework.pdf
[65] Sindh-SDGs-Framework.pdf

policies with the 2030 Agenda, contributing towards accelerating progress in Pakistan. Specifically, the Unit undertakes activities under following four pillars to support SDGs implementation in Sindh.

Table 13-1: Four Major Outputs of the Mainstreaming, Accelerating, Policy Support for SDGs in Sindh project led by SDGs Support Unit Sindh

Policies and Plans	Data Reporting	Financing	Innovation
Mainstreaming SDGs in local development Plans and strategies clearly delineating the resource requirements.	Strengthening coordination, reporting and monitoring mechanisms for SDGs	Financing flows increasingly aligned with 2030 Agenda	Supporting integrated and innovative approaches to accelerate progress on SDGs on priority areas.

In April 2017, the P&D Board constituted a Core Group on SDGs to oversee formulation of the SDGs Framework for Sindh. The Core Group on SDGs has members representing government departments, academic institutions, private sector organizations, civil society organizations, and UN agencies. The SDGs support Unit Sindh, under the guidance of the Core Group on SDGs, has developed this framework, which will serve as a roadmap for mainstreaming and localization of SDGs in the province and enable institutions and stakeholders to accelerate achievement of Sindh's priority SDGs. The framework will also be a useful resource for provincial policymakers and development planner, development partners, civil society organizations, academia and anyone involved in the implementation and monitoring of the SDGs. The framework is presented as a living document – one that will evolve over time and will be updated/improved based on new data as well as feedback and lessons learnt from implementation of interventions to achieve the SDGs.

13.3 **Localization of SDGS**[66]

"Localization" is the process of considering subnational contexts in the achievement of the 2030 Agenda, from the setting of goals and targets, to determining the means of implementation and using indicators to measure and monitor progress. Localization of the SDGs also means using the agenda 2030 framework to translate national development priorities as per provincial and local level needs. Accordingly, the localization of the SDGs has remained one of the priority areas of the post 2015 discussions.

In Pakistan, there is a strong need for such localization efforts to go beyond the national level by incorporating location specific peculiarities. In the post 18th Amendment Constitutional Dispensation, localization has become the most critical element of an effective implementation mechanism for SDGs. In the current devolved governance structure, Pakistan needs effective coordination mechanisms through

[66] Sindh-SDGs-Framework.pdf

which national and provincial plans and actions could be synthesized by sharing experiences and best practices.[67]

As part of proactive efforts to localize the SDGs, Pakistan has established Federal SDGs Support Unit, housed in the Planning Commission, while provincial SDGs Support Units (in each provincial Planning & Development/Board) have been established in all provinces (and regions). In this context, the Government of Sindh has also established the institutional structures to support localization and implementation of the SDGs in the province including six SDGs Thematic Sub-committees constituted in line with the prioritization criteria of the SDGs set by the GoS.

Pakistan's development framework (Pakistan Vision 2025) also has similarities with the SDGs framework and focuses on the areas of social and environmental sectors, which have become the provincial subjects after the 18th Constitutional Amendment. As such, most of the SDGs' targets now fall under the preview of the provinces. This calls for localization and ownership of the SDGs at the provincial level and needs to be considered as key to the SDGs achievement. This also requires repositioning of the provincial governments as the SDGs focal tier and to develop Provincial SDGs Frameworks in which the targets are aligned with local priorities to cater to the requirements in the context of resources at the local level.

13.4 Sustainable Development Goals in Moro City

*13.4.1 **Existing Situation***

In the current state of affairs in Moro City, there are pressing challenges across various sectors related to Sustainable Development Goals (SDGs). From issues of food insecurity and limited healthcare access to concerns about education clean water, employment, and economic diversification, the city faces a complex array of obstacles. Addressing these challenges requires a multifaceted and coordinated effort, involving stakeholders from various sectors and levels of governance. The existing situation underscores the importance of comprehensive strategies and targeted interventions to foster sustainable development, improve the quality of life for resident, and align with the global objectives outlined in the SDGs. The existing situation is derived from data obtained through a random sample socioeconomic survey, providing valuable insights into the city's present socioeconomic landscape.

The imperative lies in orchestrating coherent strategies and implementing specific interventions aimed at fostering sustainable growth. Such collaborative endeavors are essential not only to enhance the living standards of Moro City's inhabitants but also to contribute meaningfully to the global aspirations embodied in the SDGs. These challenges underline the critical need for holistic and well-coordinated policy measures, reinforcing the commitment to sustainable urban development and improved well-being for all residents.

[67] SDPI, Post 2015 Development Agenda- National Dialogue on Strengthening Capacities and Institutions Pakistan Consultation Report (Draft) December 2014

The foundation of this situational analysis is the insightful data gleaned from a socio-economic survey conducted through random sampling. This data offers a valuable snapshot of the current socio-economic fabric of Moro City, providing a robust basis for shaping strategies and directing efforts towards the effective realization of the SDGs. It is through this informed understanding that Moro City can envisage and enact a transformative pathway towards sustainable and inclusive growth.

As per TOR in view of the National Commitment with SDGs following SDGs goals have been selected.

1. Goal No.2 Zero Hunger
2. Goal No.3 Good Health and well-Being
3. Goal No.4 Quality Education
4. Goal No.6 Clean Water and Sanitation
5. Goal No.7 Affordable and clean energy
6. Goal No.8 Decent work and economic growth
7. Goal No.11: Make cities and human settlements inclusive, safe, resilient and sustainable.

In case of Moro City, there are pressing challenges across various sectors related to Sustainable Development Goals (SDGs). Starting from issues of food insecurity, potable water, education, health, employment, and economic diversification, the city faces a multifaceted collection of obstacles. Addressing these challenges requires a complex and coordinated effort, involving stakeholders from various sectors and levels of governance. The existing situation underscores the importance of comprehensive strategies and targeted interventions to foster sustainable development, improve the quality of life for residents, and align with the global objectives outlined in the SDGs. The existing situation is derived from data obtained through a random sample socioeconomic survey, providing valuable insights into the city's present socioeconomic landscape.

13.4.2 Integration of Sustainable Development Goals (SDGS) Into the Strategic Development Plan for Moro City

In accordance with the Terms of Reference (TOR), the Strategic Development Plan (SDP) for Moro integrates the Sustainable Development Goals (SDGs) into the city's development framework. Seven SDGs have been prioritized at the national and provincial levels – Goal 2: Zero Hunger, Goal 3: Good Health and Well-Being, Goal 4: Quality Education, Goal 6: Clean Water and Sanitation, Goal 7: Affordable and Clean Energy, Goal 8: Decent Work and Economic Growth, and Goal 11: Sustainable Cities and Communities. For each of these goals, a dedicated Implementation Plan matrix has been developed. These matrices map the SDG targets and indicators against the baseline survey results of Moro, each matrix also references relevant policies and frameworks at the national and provincial levels, ensuring alignment between local planning, Sindh's sectoral strategies, and Pakistan's commitments under the 2030 Agenda. Collectively,

these seven implementation plans provide a comprehensive roadmap for mainstreaming SDGs into urban planning, guiding both immediate actions and long-term monitoring.

It is important to note that while this report provide the structured SDG Implementation Plan, further technical details and sector-specific interventions are elaborated in companion reports, including the **Strategic Development Plan (full volume), Economic Development Plan, Immediate Action Plan (IAP), Priority Projects Report, Disaster Management Plan,** and **Climate Change, Resilience & Adaptability Plan**. Together, these reports provide a comprehensive roadmap for mainstreaming SDGs into urban planning, guiding both immediate implementation and long-term monitoring.

Table 13-2: SDG & SDP Sector Linkage

SDG	Relevant SDP Sectors	Key Focus Areas
Goal 2 – Zero Hunger	Agriculture, Economic Development	Food security, climate-smart agriculture, value chains, farmer livelihoods
Goal 3 – Good Health & Well-Being	Health, WASH, Disaster Risk Management	Healthcare access, disease prevention, sanitation in health facilities, emergency preparedness
Goal 4 – Quality Education	Education, Social Infrastructure	School rehabilitation, inclusive education, vocational/technical training, gender equity in education
Goal 6 – Clean Water & Sanitation	WASH, Environment, Urban Infrastructure	Safe water supply, wastewater treatment, stormwater drainage, hygiene awareness
Goal 7 – Affordable & Clean Energy	Energy, Municipal Services	Renewable energy (solar, wind), energy efficiency, clean cooking fuels
Goal 8 – Decent Work & Economic Growth	Economic Development, Industry, Trade	Skills training, agro-processing, women-led enterprises
Goal 11 – Sustainable Cities & Communities	Land Use, Urban Planning, Transport, Housing, DRM	Planned urban expansion, flood risk reduction, solid waste management, resilient housing, inclusive public spaces

Monitoring note: Each sector chapter specifies outputs, outcome indicators, and timeframes. These roll up into the city's SDG indicator set and will be reported annually to the Provincial SDG Unit.

13.4.3 Reference to Separate SDG Implementation Plan

The Strategic Development Plan (SDP) for Moro provides the overall framework for integrating the Sustainable Development Goals (SDGs) into local development. However, the detailed analysis, sector-wise proposals, and implementation matrices for each SDG are presented in a **separate SDG Implementation Plan Report** (standalone volume).

This approach avoids duplication while ensuring coherence. The SDP highlights the alignment of key development priorities with the seven selected SDGs, whereas the SDG Implementation Plan provides:

- Detailed baseline analysis and survey findings.
- Sectoral gaps and challenges.
- Target-to-indicator mapping for each SDG.
- Implementation matrices with responsible institutions, timelines, and monitoring mechanisms.

In summary, the SDP ensures alignment of spatial and sectoral strategies with the 2030 Agenda, while the standalone SDG Implementation Plan provides the technical depth, implementation matrices, and monitoring framework necessary for operationalizing these commitments.

14.URBAN LAND MANAGEMENT

Urban areas across the developing world are facing a persistent shortfall in the supply of adequately serviced and affordable land to meet the housing and infrastructure needs of rapidly expanding populations. In Sindh, the issue is not a lack of virgin land but rather the absence of effective land management policies, limited fiscal resources to service land, and strong landowner control that restricts the timely release of land for planned urban development. As a result, low-income groups are often forced into informal settlements or unregulated housing, creating slum-like conditions.

Globally, land management is practiced through tools such as land pooling, reconstitution, and guided development, which balance the interests of landowners with the public good. In Pakistan, however, formal frameworks remain limited. Opposition to forcible land acquisition and weak financial capacity of Urban Local Bodies (ULBs) have further constrained the supply of serviced urban land. Land pooling and reconstitution (LPR) offers a viable solution by allowing landowners to share in the increased land values that result from infrastructure and service provision, while also contributing land and charges for public facilities.

14.1 Goals

As towns in Sindh, including Moro, strive to position themselves as centers of production, trade, and employment, effective urban land management is critical. The overarching goals are:

- To ensure efficient spatial structures, with well-connected transport systems and serviced land supply.
- To provide adequate infrastructure, affordable housing, and urban amenities that enhance livability.
- To support urban regeneration, the development of new industrial and commercial districts, and foreign direct investment.
- To safeguard the environment through planned land allocation for parks, green buffers, and hazard-prone zones.
- To strengthen social overhead capital, including housing, education, and healthcare facilities.

14.2 Objectives

As towns in Sindh, including Moro, strive to position themselves as centers of production, trade, and employment, effective urban land management is critical. The overarching goals are:

- To ensure efficient spatial structures, with well-connected transport systems and serviced land supply.
- To provide adequate infrastructure, affordable housing, and urban amenities that enhance livability.
- To support urban regeneration, the development of new industrial and commercial districts, and foreign direct investment.

- To safeguard the environment through planned land allocation for parks, green buffers, and hazard-prone zones.
- To strengthen social overhead capital, including housing, education, and healthcare facilities.

14.3 Urban Land Management in Moro

Moro reflects the broader provincial challenges of urban land management:

- Absence of a Provincial Framework: There is no comprehensive Sindh-level policy guiding urban land use and land pooling. As a result, planners and development authorities approve projects without adequate assessment of transport or utility impacts.
- Infrastructure Stress: Approved housing and commercial schemes have intensified traffic congestion, water shortages, and sewerage system failures.
- Conflict with Agriculture: Allocation of fertile agricultural land for industrial and residential use has discouraged farming and reduced agricultural output in the region.
- Land Rights and Governance Issues: Corruption, weak land records, and bureaucratic inertia have impeded land redevelopment and reallocation.
- Inadequate Land Use Planning: Land use plans have not been updated to meet the demands of post-industrial development, creating mismatches between planned and actual urban growth.

To address these issues, the public sector must take a proactive lead by:

- Establishing a provincial urban land management framework that promotes sustainable urban growth.
- Introducing land pooling and reconstitution models to increase serviced land supply while protecting landowner interests.
- Integrating transport, utilities, and land use planning to reduce congestion and ensure efficient infrastructure use.
- Safeguarding agricultural zones while earmarking specific areas for industrial and commercial development.
- Promoting transparent land governance through digitized land records, cadastral surveys, and participatory land use planning.

14.3.1 Land Pooling and Reconstitution

Simply put, in LPR, a number of small holdings are pooled together, a part of land is taken from each plot for provision of infrastructure and public facilities and the rest returned to the original land owners. It is basically a land management tool and is used all over the world under different names with slight modifications in their working.

14.3.2 Land Management Techniques

The strategies available for access to urban land could be through Guided land development for large areas; Land pooling and reconstitution; Land reconstitution / redevelopment; Acquisition for public purpose under the Land Acquisition Act, 1894; Joint Sector Model of land assembly and development; Transferable Development Rights (for built up areas); Saleable FAR and mixed-use concept (for regeneration of inner city); Land Pooling and Redistribution Scheme.

A. Land Acquisition Act, 1984

In Pakistan, the Land Acquisition Act, 1984 gives the right for Government authorities to acquire parcels of land for the implementation of development projects. The origin of the practice of land acquisition by public entities in Subcontinent goes back to 1824, when the British Government of India instituted regulations to facilitate urban land public acquisition from private owners. In fact, the obligation for owners to give up their land had to find a legitimate justification. The initial reason advanced to acquiring the land against their will was the need for constructing public buildings in Bengal provinces. These regulations enabled the British government to take possession of the land for the construction of roads and canals. From 1850 on, the scope of these laws was extended to other provinces in order to facilitate the operation of further infrastructure projects such as railways.

The Land Acquisition Act was edited in 1984. It harmonized and consolidated previous regulations into one single act, applicable within the whole British India. After Pakistan's independence in 1947, the Pakistan Government started using this act as a tool to purchase land at a lower price than that on the regular market, as it was meant to be used in the public interest. Several amendments have been made on this act, but its procedures have not changed.

B. Land readjustment / pooling

Land readjustment / pooling Land re-adjustment is a process whereby a public authority assembles numerous small parcels of raw land without paying compensation to the owners. The authority then sub-divides such assembled lands for urban use returning most of the building sites to the original owners in proportion to the value of their land contribution and permitting them the right of alienating such sites. The authority retains a portion of the assembled lands, applying them partly to provide civic amenities such as roads, parks and gardens or schools, and the remainder land for public sale to recover the cost of development. Thus, land re-adjustment acts as tool to achieve unified control over large areas of land and as an instrument of financing public service installations in the process of planned urban growth.

C. Guided Urban Development

The concept of Guided Urban Development (GUD) emerged in response to ad hoc, uncontrolled urban development with no regard to infrastructure services. It also aims to secure a limited availability of urban land for economically weaker sections. GUD has been practicing in India and developing world. The objectives of the scheme are as follows:

- Ensure provision of serviced plots for low-income families at affordable prices (approximately 75% of total plots to be reserved for EWS / LIG); and
- Provide incentives to the land owner / private developer to participate in the provision of low-income shelter by guaranteeing fair return on investments (profit of 20-30%).

The challenges faced in Sindh Province, particularly in Moro City, highlight the need for effective urban land management strategies. The introduction of tools like Land Pooling and Reconstitution, along with other techniques, aims to address issues of land supply, infrastructure development, and sustainable urban growth. The emphasis on public-private partnerships and the role of the public sector in planning and formulating strategies reflects a comprehensive approach to achieving sustainable urban development in the region.

i. **Land Revenue Laws:**
   - **Sindh Board of Revenue Act 1957:** Governs the organization and functioning of the Board of Revenue, which plays a key role in land administration.
   - **Sindh Land Revenue Act 1967:** Focuses on the assessment and collection of land revenue, determining land ownership, and related matters.
   - **Sindh Land Revenue Rules 1968:** Provides detailed rules for the implementation of the Land Revenue Act.

ii. **Land Acquisition Laws:**
   - **Land Acquisition Act 1894:** Outlines the procedures, compensation mechanisms, and dispute resolution processes for acquiring land for public purposes.

iii. **Land Disposal Laws:**
   - **Sindh Disposal of Urban Land Ordinance 2002:** Regulates the sale, lease, or transfer of urban land within the limits of cities, towns, or municipalities by the government or its agencies.

iv. **Land Planning Laws:**
   - **Sindh Town Planning Act 1915:** Focuses on the planning and regulation of urban development, including zoning, land use, and building standards.
   - **Sindh Regulation and Control (Use of Agricultural Land for Non-Agricultural Purposes) Rules 1994:** Deals with regulating the use of agricultural land for non-agricultural purposes.
   - **Sindh Environmental Protection Act 2014:** Addresses environmental concerns related to land development.
   - **Sindh Master Plan Authority Act 2020:** Likely establishes an authority for master planning to guide the spatial development of the province.

The outlined laws cover a wide spectrum of aspects related to land management in Sindh. From revenue collection to land acquisition, disposal, and planning, these legal frameworks are essential for maintaining order, ensuring fairness, and promoting sustainable development in the use of land throughout the province. They provide a foundation for responsible land governance and urban developments.

The challenges faced in Moro haphazard land conversion, weak enforcement of zoning, and inadequate infrastructure in approved schemes—highlight the urgency of adopting **modern land management tools**.

- **Land Pooling and Reconstitution** can make serviced land available without the heavy fiscal burden of compulsory acquisition.
- **Guided Urban Development** can ensure inclusive housing supply and protect low-income groups.
- **Provincial Legal Frameworks** need harmonization to integrate LPR and GUD into master planning.
- **Public–Private Partnerships (PPPs)** should be promoted for financing and implementing urban expansion schemes.

Together, these tools provide a pathway for planned, equitable, and sustainable growth in Moro, aligning with broader provincial objectives of urban transformation.

14.3.3 Strategic Development Plan

The Strategic Development Plan for urban land management in Moro aims to ensure the efficient supply of serviced land, planned urban expansion, and inclusive access for housing, commerce, and industry. The plan emphasizes legal reforms, institutional strengthening, and innovative land management tools to promote sustainable urban growth.

I. Short-Term Plan

- Conduct a City Survey & Cadastral Survey (priority action):
  - Digitize land parcels, ownership, and tenure records using GIS and satellite imagery.
  - Resolve overlaps, encroachments, and disputed lands by preparing an authentic cadastral map of Moro.
  - Link land records with Sindh Board of Revenue and Municipal Committee for transparency.
- Pilot Land Pooling & Reconstitution (LPR) in peri-urban Moro.
- Develop GIS-based Land Information System (LIS) integrating land use, transport, and utilities.
- Enforce building regulations and zoning bylaws in city core to control haphazard development.
- Reserve serviced plots for low-income housing in all new schemes.
- Establish Ward Development Committees for monitoring encroachments.
- Conduct land and building audits to identify underutilized or illegally occupied plots.

II. Long-Term Plan

- Introduce Transferable Development Rights (TDRs) for densification and regeneration of inner-city areas.
- Develop peri-urban agriculture protection zones to secure food systems while planning controlled expansion.
- Launch PPP-based industrial and commercial zones, ensuring proper infrastructure and access roads.
- Establish a city land bank to acquire and manage land for future public amenities, roads, and social infrastructure.
- Institutionalize Land Pooling & Redistribution Schemes as a standard model for urban expansion.
- Redevelop inner-city katchi abadis through mixed-use redevelopment models (with saleable FAR and cross-subsidization).
- Promote regional-level land management under the Sindh Master Plan Authority, linking Moro with Dadu, Nawabshah, and Khairpur Mirs.
- Achieve sustainable urban expansion with adequate green spaces, resilient housing, and climate-smart infrastructure.

15.IMPLEMENTATION STRATEGY

The successful implementation of the Strategic Development Plan (SDP) for Moro is contingent upon a robust and realistic implementation strategy. This section outlines the institutional, legal, and financial mechanisms required to translate the plan's vision into tangible outcomes. The strategy is designed to be a practical and phased guide for all stakeholders, ensuring the plan's objectives are met through a coordinated and accountable approach.

15.1 Process of Implementation

Implementation of the SDP requires careful prioritization, phasing, coordination, budgeting, and monitoring. The key steps include:

- Determining priorities within and among sub-plans and proposed projects.
- Sequencing activities through short-, medium-, and long-term phasing.
- Linking projects to budget availability and financing sources.
- Preparing a master implementation schedule with progressive cost tables.
- Assigning activities to responsible institutions and qualified managers.
- Establishing a monitoring and reporting system to track progress and maintain public transparency.

15.2 Institutional Framework and Setup

A clear and empowered institutional framework is essential for effective implementation. The proposed setup is designed to align with existing governance structures while addressing key gaps in coordination, technical capacity, and a unified mandate.

Primary Implementation Authority (City Level):

Proposed Body: The **Moro Urban Development Authority (M-UDA)**, operating under the legal cover of the Sindh Master Plan Authority Act 2020.

Role and Mandate: To serve as the central coordinating and executive body for the SDP. Its comprehensive mandate includes:

- Spearheading land use planning and development control.
- Conducting project appraisal and preparing statutory documents (e.g., PC-1s).
- Directly implementing key projects identified in the Short-Term Action Plan.
- Acting as the primary liaison between local, district, and provincial government agencies to ensure seamless coordination.

Realistic Setup & Phased Establishment:

- **Phase 1 (Immediate):** The M-UDA will be established as a specialized, empowered unit within the existing Municipal Committee. It will be headed by a dedicated Director, with a core team comprising an Urban Planner, a Civil Engineer, a GIS Specialist, and a Financial Analyst. This structure allows for the immediate commencement of priority tasks while the institutional capacity is built.
- **Phase 2 (Long-Term):** The unit will progressively evolve into an autonomous authority with its own funding mechanisms and legal powers, provided its initial performance meets established benchmarks.

15.3 Coordination and Collaboration

District Coordination Committee (DCC): Headed by the **Deputy Commissioner**, the DCC will be the central forum for all SDP-related activities at the district level. Its members will include the Director of M-UDA and all relevant district-level officers from departments such as Irrigation, Health, Education, and Agriculture. The DCC's mandate is to ensure horizontal coordination, resolve inter-departmental conflicts, and provide administrative oversight.

Provincial Liaison: The M-UDA will report to the Sindh Master Plan Authority, which will serve as the primary provincial-level oversight body. This ensures that the SDP's implementation remains aligned with provincial goals and facilitates the allocation of funds from the Planning & Development Department, Sindh.

15.4 Provincial-Level Alignment:

- **Sindh Master Plan Authority (SMPA):** Approves the Master Plan and ensures alignment with provincial strategies.
- **Planning & Development Department (P&D), Sindh:** Facilitates project appraisal, funding allocations (ADP/PSDP), and liaison with donors.
- **Sindh Local Government Department (LGD):** Oversees municipal committees, providing policy guidance on urban services.

Roles and Responsibilities:

- **Deputy Commissioner:** Administrative oversight and chairing of DCC.
- **Municipal Committee:** Operation and maintenance of core municipal services (solid waste, drainage, sanitation, minor roads).
- **Public Health Engineering Department (PHED):** Planning and execution of water supply and sewerage projects.
- **Line Departments:** Health, Education, Irrigation, and Agriculture to implement sectoral proposals.
- **Community-Based Organizations (CBOs):** Mobilization, monitoring, and grassroots participation.

15.4.1 Legal and Policy Basis

Implementation of the SDP will be grounded in existing laws and frameworks:

- **Constitution of Pakistan (1973):** Provides the supreme legal basis for planning, development, and land acquisition.
- **Sindh Master Plan Authority Act, 2020:** Legal basis for preparation, approval, and enforcement of Master Plans.
- **Sindh Local Government Act, 2013 (amended 2016):** Governs municipal committees and urban service delivery.
- **Regional Interim Building & Town Planning Regulations – 2018:** The specific, currently active regulations for building control and town planning that will be enforced by the M-UDA.
- **Sindh Land Revenue Act, 1967 & Rules, 1968:** Governs land records, ownership, and revenue administration.
- **Land Acquisition Act, 1894:** Provides mechanisms for land acquisition for public purposes.
- **Other Relevant Frameworks:** Sindh Environmental Protection Act (2014), Sindh Sanitation Policy (2017), Sindh Drinking Water Policy (2017), and National Reference Manuals for planning standards.
- **Regional Interim Building & Town Planning Regulations – 2018**

15.5 Approval and Enforcement:

- **Plan Approval:** Sindh Master Plan Authority.
- **Development Control:** M-UDA and Municipal Committee (zoning, NOCs, building regulations).
- **Monitoring:** District Coordination Committee, with oversight by P&D Department Sindh.

15.6 Implementation Mechanism and Phasing

Implementation will follow a phased and pragmatic approach:

Phase 1 – Short-Term (1–3 years):

- Establish M-UDA within Municipal Committee.
- Conduct cadastral and city survey to digitize land records.
- Launch pilot Land Pooling & Reconstitution (LPR) project in peri-urban fringe.
- Begin Immediate Action Plan (IAP) projects (solid waste, drainage, core infrastructure).

Phase 2 – Medium-Term (4–10 years):

- Institutionalize LPR as standard urban expansion model.
- Operationalize GIS-based Land Information System (LIS) for planning decisions.
- Implement Priority projects in commercial, industrial, and housing sectors.
- Begin large-scale infrastructure upgrades (water, sewerage, roads).

Phase 3 – Long-Term (10–20 years):

- Redevelop katchi abadis through mixed-use regeneration.
- Integrate Moro into regional growth corridors (Dadu–Nawabshah axis).

- Advance climate-resilient housing, green mobility, and flood protection measures.

15.6.1 Funding Sources and Mobilization

Public Sector:

- **Annual Development Programme (ADP):** Provincial funding for infrastructure and utilities.
- **Public Sector Development Programme (PSDP):** Federal funding for large-scale or strategic projects.
- **Municipal Budgets:** Maintenance, ward-level works, and minor capital projects.

Donor Agencies & Development Partners:

- World Bank, ADB, UN-Habitat, and bilateral donors for WASH, climate resilience, and institutional strengthening.
- Project-specific technical assistance and concessional financing.

Private Sector & PPP Models:

- **Sindh PPP Node:** Institutional mechanism to structure PPPs in infrastructure, housing, and utilities.
- **Land-Based Financing:** Revenue from LPR schemes and sale of developed plots.
- **Private Investment:** Incentives for builders/developers via streamlined approvals and zoning certainty.

15.7 Stakeholder Guidance and Capacity Building

Government Institutions:

- Clear mandates defined for M-UDA, MC, DCC, and SMPA.
- Training on urban planning tools, GIS/LIS systems, and project management.

Private Sector & Developers:

- Predictable regulatory environment to attract investment.
- Capacity building on PPP processes and compliance with zoning/building codes.

Community & Civil Society:

- Public hearings and participatory planning processes.
- Community-based monitoring of services and projects.
- Awareness programs on housing, WASH, and disaster preparedness.

The Implementation Strategy provides a structured pathway from planning to execution. By embedding SDPs into provincial frameworks, strengthening local institutions, diversifying funding, and engaging stakeholders, Moro can achieve sustainable, inclusive, and resilient growth. The proposed strategy ensures that the Master Plan moves beyond a vision document into a practical instrument for long-term transformation.