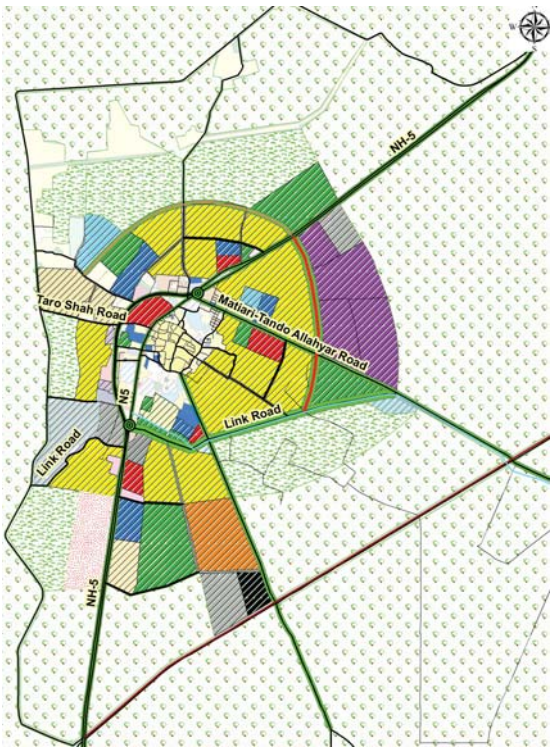
Directorate of Urban Policy Strategic Planning,
P & D Department, Government of Sindh

URBAN POLICY & STRATEGIC PLANNING
P & D DEPARTMENT GOVT OF SINDH

PREPARATION OF DEVELOPMENT MASTER PLANS OF FOURTEEN (14) DISTRICT HEADQUARTER TOWNS OF HYDERABAD, MIRPURKHAS AND SHAHEED BENAZIRABAD DIVISIONS"

STRATEGIC DEVELOPMENT PLAN REPORT

(2017- 37)







Matiari

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TRANSMITTAL LETTER

Urbanization in Pakistan is taking place at a substantially high pace most of which is gravitating to the large cities. The secondary cities have not been able to play their role as the "Engine of Economic Growth" due to lack of public funding in the development infrastructure resulting in lop-sided spatial spread. The hinterland has remained poor facing abject poverty due to less economic opportunities, social facilities and institutional support.

Sindh Government took initiative by establishing Directorate of Urban Policy and Strategic Planning (UPSP) within the Planning and Development Department in 2012, to initiate and ensure planned growth of secondary cities of Sindh province through the preparation of Master Development Plans of District Headquarters Towns. In this phase 14 DHQ Towns of Hyderabad, Mirpurkhas and Shaheed Benazirabad Divisions Viz Nawabshah, Sanghar, Naushahro Feroze, Mirpurkhas, Mithi, Umerkot, Tando Muhammad Khan, Tando Allahyar, Mitiari, Badin, Thatta, Sujawal, Dadu, Jamshoro and one SDG compline taluka Islamkot Town.

Directorate of Urban Policy and Strategic Planning initiated Consultant selection process under SPPRA rules. The consortium of three reputable local Consultants led by EA Consulting (Pvt.) Ltd. including MMP (Pvt.) Ltd. and EMC (Pvt.) Ltd was selected due to their high standing in prequalification and lowest financial bid. The Consultants brought together a highly qualified and experienced team to provide the specialized inputs. The data collection was carried out in the field through a sample socio – economic surveys, questionnaires to various government offices and discussions with the stakeholders. The findings and recommendations were submitted to client for review in seven stages and shared with the stakeholders in workshop for each town. This report is the final Deliverable (Strategic Development Plan Report) of the project.

The volume and spatial spread of the project area did present lot of logistics and data availability problems which were resolved with the support of Client who had pursued actively with the various lines departments to assure all available data to Consultants. The Consultant's team is indebted to the Director General UPSP and his team without their support it would not have been possible to complete this project. The consultant would also like to thank all the district officials for making field exercise productive.

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PREPARATION OF DEVELOPMENT MASTER PLANS OF FOURTEEN (14) DISTRICT HEADQUARTER TOWNS OF HYDERABAD, MIRPURKHAS & SHAHEED BENAZIRABAD DIVISIONS

Strategic Development Plan Report – Matiari

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LIST OF ACRONYMS AND ABBREVIATIONS

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
DUP&SP	Directorate Of Urban Policy & Strategic Planning, Government of Sindh
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
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

STRATEGIC DEVELOPMENT PLAN REPORT-MATIARI
EXECUTIVE SUMMARY

A. PROJECT AREA BRIEF

District Matiari was previously a taluka of District Hyderabad. On 4th May 2005, this taluka was separated from Hyderabad and was awarded the status of a district. District Matiari lies in 68°14”8’ to 68°14”40’ east longitudes to 25°26”20’ to 26°5”43’ north latitudes. The district is bounded by District Sanghar on the east, District Jamshoro on the west, District Shaheed Benazirabad on the north and District Hyderabad and Tando Allahyar on the south. Indus River flows alongside the western border of the district. This district has three talukas, named: Matiari, Hala and Saeedabad. According to Population and Housing census of 2017, population of District Matiari is recorded as 769,349 souls with an average growth rate of 2.35% during 1998-2017.

District Matiari has its district headquarters at Matiari city. Total built up area of the city in 2004 was approximately 4.2 square kilometers and reached up to 4.76 square kilometers in 2016 (source Google Earth). District headquarter town can be divided into two tracts with the help of “Google Earth and Satellite Imagery “one is eastern part and other one is western. The built-up area of Matiari Town comprises of around approximately 558 acres of land but the spread of urban area as estimated by the Consultants is about 2,695 acres. The land use analysis indicates that almost 11.2% of total urban boundary area is in use of residential purpose only, while 56.7% of the area is covered by agriculture fields.

Matiari City’s spatial growth in last 12 years shows that town spread 31% in its built-up area, mainly in north and south directions. The development in project area shows that the present town center originated along east side of National Highway. Later, city started growing on both sides of National Highway N-5 and as well as on Bypass road of city area. Mostly public projects were established along National Highway N-5 longitudinally. The commercial area of Matiari city is located on the both side of National Highway N-5.

B. VISION 2037

A vision formulating workshop was carried out with the main stakeholders on November 08, 2018. The stakeholders were mainly local citizens, government officials, businessmen and member of civil society. The visioning process stems from the Stakeholders’ Vision of the town which have been translated into tangible and concrete targets .The discussions in the Workshop that most people want to see:

"The city full filling all the basic needs, such as housing, water supply and sanitation, in clean and sustainable pollution free 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."

C. DEMOGRAPHY

Matiari City is the Town Committee and the district headquarter town of Matiari District. According to 1998 census, town had a population of 16,336 souls with a growth rate of 1.41% during 1981-1998. The 2017 census reveals that the population of Matiari Town has reached to about 21,195 souls with a growth rate of 1.38% during 1998-2017. Projected population of Matiari City works out to be 27,879 souls by 2037.

D. SECTOR WISE ANALYSIS AND PROPOSAL

The Consultants had carried out data collections in three layers:

- Primary source including sample Socio-economic Survey.
- Secondary Source including data from government sources published and unpublished documents
- Discussions with the officials, Consultations with Stakeholders.

The present need analysis and constraints were compiled and submitted in the form of Situation Analysis Report. Consultative Workshops were held in respective DHQ Towns with an objective to validate the accuracy of data and verify the data analysis with the Stakeholders.

Keeping in view the stakeholder's comments and suggestions, the draft strategies were developed to fulfill needs in the most efficient way. The Draft Strategic Development Report submitted by the Consultants was again shared with the Stakeholders and their feedback/comments. Being solicited.

Thereafter, the Final Strategic Report will be submitted. Based on the approved strategies the final action will be the preparation of Long Term/Short Term Plans, Priority Plan and Immediate Action Plan for Core Urban Area.

Based on the evaluation of primary and secondary data, the need assessment has been carried out for a projected population on the basis of 20 years growth projections. The need assessment is based on the Baseline Indicators, Stakeholders Views, Demand vs Need Analysis, NRM with professional judgment and Consultant's own experience and standards used in other developing countries.

1. Housing

Housing in terms of affordable home with basic infrastructure and facilities is the basic human need. According to 2017 census population results, Matiari TC had household size of 5.1 persons and a total housing stock of 4,169. The major issues in the housing sector are scarcity of developed urban land, poor land administration, housing in dilapidated condition, unafforable housing cost for low income groups unchecked growtrh of squatter settlements, shortage of finance, high cost of building material, high density housing causing congestion and lack of basic utilities.

On the basis of projected population for year 2037 the numbers of households have been estimated around 5,484 on fixed household size of 5.1 persons out of which additional housing requirement will be

1,315. The strategies for short term plan are; incremental housing schemes, establishment of low-income housing funds and increase number of small size plots. The long term plan includes the development of cost effective approaches, formation of land bank, initiation of an affordable housing programme and formulation of green building bye laws. The priority projects should focus on the land acquisition for Development of Housing Site / Schemes for Low Income People to fulfill present gape.

2. Social Amenities

2.1 Education

In District Matiari, there are 829 viable schools out of which 779 are functional, 21 schools are temporary dysfunctional, 15 schools are viable dysfunctional, and 14 are permanently dysfunctional. Furthermore, out of total viable schools in the District Matiari, 67 schools are for boys, 78 schools for girls and the remaining 684 schools are co-education. The enrolment in viable schools of the district is 93,622 (male 60,062 and female 33,560), the number of teaching Staff is 3,357 out of which 2,661 are male and 696 are female. The issues in education sector involves shortage of classrooms and teachers, low enrolment level with gender disparity, lack of provision of basic and allied facilities and poor condition of schools and colleges.

The long term plan target is to achieve 100% enrolment with 1:1 male female ratio by 2037; therefore 4,794 additional classrooms will be required to cater primary to secondary level education. And 2,286 additional classrooms will be required to cater higher secondary level education at taluka level. The education authorities should plan gradually by increasing the classrooms in existing schools in high density areas and new schools in low density areas. The spatial distribution of schools and other educational institutions should be that our schools, specially girls school are within easy walking distance. The strategies for short term plan includes the rehabilitation of schools and colleges, eliminate the chances of misuse and encroachments of educational buildings, training programme for teachers, establishment of vocational and skill training centers and rehabilitation/construction of women hostels for teaching staff. The long term plan involves increasing equitable access to quality education, improving the quality of learning outcomes, enhancing the equity of resource allocation and provision of technical education.

The priority projects need to focus on the Establishment of various capacity building training programms to enhance teaching / academic capacities and rehabilitation of schools with allied infrastructure located in town i.e. Govt. Girls High School Matiari, GBPS Kachhi Mohalla, GBPS. Pir Sarhandi, GBPS Muslim Matiari, Public Library Matiari, Polytechnic Institute, Govt. Boys Primary School, Matiari Research & Training Centre and Technical Collage Matiari. The immediate action plan includes the rehabilitation and up gradation of educational facilities located in core town area i.e. Government Girls Degree College, Govt. Haji Muhammad Shah Primary School Matiari, Sahab Khan Govt. Board Primary School, Govt. Boys Primary Masjid School, Govt. Girls High School Matiari, Govt. Muhammad Dawood Memon Boys High School Matiari, Primary Boys School, Govt. Degree Collage, GBPS. Memon Masjid Matiari and Government Girls Main Primary School.

2.2 Health

In District Matiari, there are total 244 beds available in different types of health facilities. There is one DHQ Hospital having 30 beds and two Taluka Hospitals having 96 beds. The other health facilities spread over entire district are four RHC having 52 beds, seven TB Clinics, 21 BHUs having 42 beds, 71 dispensaries having 24 beds and three M.C.H.C serving the district. The major issues are insufficient health facilities, lack of diagnostic and other health equipment, difficulty in transferring patients from rural to urban area, vacant posts for doctors and lack of training of LHW and paramedical staff.

The NRM recommends 2 bed per thousand as the medium term target. On this basis approximately 1,295 additional beds will be required to be provided gradually. According to WHO standards doctor to population ratio is 1:1000 so taking that as reference point currently the short fall of doctors comes out to be 567.

On the basis of NRM recommendation approximately 2,208 additional beds will be required to be provided gradually until 2037. According to WHO standards the future requirement of additional doctors comes out to be 1,024. The strategies for short term plan are; improve access to healthcare facilities, availability of skilled workforce, improving functionality of equipment and availability of quality medicines and rehabilitation of BHUs and RHCs. The long term plan includes the provision and enhancement of Mobile Health Unit, upgradation of BHUs, RHCs and MCHCs, health awareness programmes, research programmes for doctors, provision of diagnostic facilities, ambulance, pharmacy in all hospitals, specialized hospitals and accommodation facilities for doctors and paramedics staff.

The priority projects should focus on the Provision of Missing Facilities at DHQ Hospital. The immediate action plan involves the Rehabilitation and Up gradation of DHQ Hospital. The recommendations for economic development plan area; rehabilitation and improvement in existing hospitals, establishment of new units and participation of private sector.

2.3 Recreational

Currently there are no parks and playgrounds available in the Matiari Town, hence there is a dire need of recreational facilities for the town. There is mosque 500 years old named as Jamia Medina Masjid is present in Matirari. Some issues are; disappearance of incidental open spaces, lack of preservation of recreational spots, lack of planned open spaces, in-active tourist development program, weak tourism marketing, unavailability of basic facilities, encroachments and no provision of playgrounds.

The short term plan includes the restoration and maintenance of open spaces, preservation of cultural heritage, construction/rehabilitation of parks, playgrounds and recreational facilities, construction of auditoriums and up gradation of art councils. The strategies for long term plan are to provide recreational infrastructure, feasibility study for establishment of museum and research centre, youth development programme and promote tourism. The priority projects includes the construction of multipurpose sports ground / stadium and provision of open spaces, parks and playgrounds. The immediate action plan includes the conservation of Jamia Medina Mosque.

3. Economic Development

3.1 Irrigation

The irrigation system of this district is dependent on two major sources i.e, Rohri Canal and Indus River. Rohri canal irrigates the eastern lands of this district and the Indus River irrigates the western parts of the district.

3.2 Agriculture

Matiari contributes significantly in the agriculture sector of Sindh because its climate is suitable for production of various crops, including maize, rice, sugarcane, cotton, bajra, wheat and barley. This district is famous, all over Pakistan, for its bananas and mangoes. The total geographical area of district Matiari is 142,000 hectares out of this cultivated area is up to 86,000 hectares. Out of cultivable land dividing 2016-17, actually cultivated to 76,000 hectares leaving 11,000 hectares as fallow. Waste land available and not available for utilization land was 16,000 hectares. The major issues are that the high price of inputs, absence of farm to market roads, lack of development of agricultural research centers, water logging and salinity, lack of tube well installation facilities, shortage of irrigation water, irrigation and drainage.

The short term plan includes to modernize agriculture, increase supply and quality of agricultural crops and provision of warehouses. The strategies for long term plan includes the agriculture technology development and enhancing crop productivity. The priority projects need to be focused on agriculture credit facilities, regular supply of irrigation water, availability of fertilizers, pesticides and quality seeds, installation of tube wells, measures to reduce water logging and salinity and construction of farm to market roads.

3.3 Livestock and Fisheries

According to Development Statistics Sindh 2018, District Matiari is a richly populated area with having animal population of 1,779,000 in 2006. Out of this, the highest number belongs to goats having 820,000 heads, followed by buffalos 531,000 heads and cattle 335,000.

Unfortunately, this the sector despite being the second most important sector in the local economy, has not been given due importance in the past. The scattered cattle farms will need to be consolidated away from population outside the town.

The Livestock is served by seven Veterinary Hospitals and 23 Veterinary centres. The issues include limited knowledge and facilities, secondary source of income, reduced area for natural grazing and climate change. There are 230 fishermen earning their wages by utilizing 86 boats and the annual production of fish in Matiari district is approximately 5,901 M.Tons. There is need to develop and implement a broad-based fisheries policy which is required for accelerated development of fisheries sector.

The strategies need to be focused on the improvement of production performance, establishment of model livestock, dairy and cattle farms and enhancing the veterinary services, lease of fishing rights, local awareness, aquaculture development, collection of statistical fish data and enforcement of fisheries enactment. ADP has already initiated a project on sustainable livestock development for rural Sindh. The recommendations for economic development plan are; establishment of new cattle and fish farms. There is need to develop broad-based fisheries policy to modernize the fisheries sector, including construction of landing areas business halls.

3.4 Industries

As Matiari is very near to Hyderabad, so the people of Matiari do accomplish their industrial needs from there as well. But the old industrial products of Matiari are still very much popular all over Pakistan and abroad. These industrial products are “Khadee”, “Kashee” and “Jundi” of Hala, and “AJRAK” of “Matiari” City. New addition in industries of Matiari is Matiari Sugar Mill, which is situated in the east of Matiari city at the distance of near about 6 km.

The major industry in the district is Matiari Sugar Mill, since sugarcane is cultivated on large scale in this district. Other medium sized industries include flour mills, chemical factories, cotton factories, ice factories and handy crafts. Cottage industries are also prevalent in the district as khaddar and Ajrak cloth of this district are famous. Thus most of households indulges themselves with Ajrak, Sindhi Topi and Khadee manufacturing industry. Besides, handmade potteries of Hala town are well-known.

The government has established a Small Industrial Estate over 10 acres at the Hala-Shahdadpur Road to encourage cottage industry in the district. However, in Matiari Town it is recommended to establish cottage industries and small industrial zone and to encourage vocational training for women as well.

The short term plan includes to modernize the service sector, support industrial development, provision of vocational training and employable skills and micro-financing to small industries. The strategies for long term plan are; sufficient market infrastructure, development of Industrial Estates, heritage saving, shift from industrial agriculture to diversified agro ecological systems and provision of infrastructure for establishment of new industries.

3.5 Trade and Commerce

There is the presence of strong local retail market along the main road. There are different banks such as Bank Islami, Bank Alfalah and Mezaan Bank etc., mobile facilitation centers and number of food shops. The major issues of this sector are; demise of local agriculture market and un-planned local business activities.

The long term plan includes provision of slaughter house, provision of specialized wholesale market and cold storage warehouses. The priority projects include the Establishment of Fruit and Vegetable Market at Matiari DHQ Town. The immediate action plan focuses on the Modernization of Commercial Area which includes; rehabilitation of Shahi Bazaar Area, provision of pedestrian facility for visitors, up gradation of

old bazaar road, removal of encroachments and illegal bus stands. An important step towards economic development will be encouragement for establishment of micro-financial services in Matiari.

4. Basic Utilities

4.1 Water Supply

The existing system was found totally stuck up and no operation & maintenance methods are being applied; especially in the absence of regular sampling & testing lab, the quality of water remains doubtful. The sample testing revealed that the water supplied to the residents remains polluted. The Town Committee is supplying contaminated water which is not acceptable for drinking purposes. Standard maintenance system is not being followed due to which un-safe water is supplied.

The intake works are withdrawing 1.0 mgd from Rohri Canal and its branch of Pano Shakh. The water distribution is through two pumping stations at Bhattai Mohallah and Pirzada Mohallah. Moreover, the distribution network includes AC/PVC/RCC pipes of sizes from 3" to 12" diameter 16"dia AC pipes are used for rising mains. There is no zoning system of distribution and no water meters are installed. Distribution network improvement (DNI) is essentially required for equitable distribution.

There is no indicative treatment or no treatment of raw water, although there are three RO plants out of which only one is operational and the other two are not functional. Consultants carried out water sampling of Matiari, testing parameter results are not within permissible limits WHO/SSDWQ established for drinking water. The city's groundwater source is depleting and contaminated at present but the utility is not in a position to abandon the majority of TWs or alarm the citizens of the critical situation. The issues of water supply are; collapsing of old system, contamination of water, high proportion of non-revenue water, inadequate technical capacity and water is supplied without any treatment.

The present supply of water is 1.0 mgd while the per capita daily demand is 0.64 mg, which shows that present supply is fulfilling the demand and will serve in couple of years too. It is expected that the Matiari TC will have a population of about 27,879 Persons by 2037 and the daily demand for water for the town will increase up to 0.84 for a whole-day supply. At present the supply is 1 mgd, so there is no gap in 2037 in the Town, already extra water is supplied to whole town, but there is need to improve the water quality and network distribution of the Town.

The short term plan includes the rehabilitation of existing water supply network, design of water supply pipes should ensure no contamination of water, and preference should be given to rehabilitate existing schemes and construction of water treatment plant. The strategies for long term plan are; providing access to safe water, exploration and regulation of groundwater, frame a broad policy framework and feasibility study for identification of new water sources. The priority projects should focus on the Rehabilitation of existing Water Supply Network and Provision of New Water Supply Network. The immediate action plan includes the Repair and rehabilitation of water supply network in the core town.

4.2 Sewerage and Drainage

The existing system of Matiari comprises Domestic or Sanitary Wastewater which refers to liquid discharge from residences, business buildings, and institutions. Industrial waste is discharged from manufacturing plants. Municipal wastewater is the general term applied to liquid collected in sanitary sewers/drains discharge reaching sewage disposal station/sump well from where it should go to stabilization pond but at present raw sewage without treatment is either discharged to Canal or to ditches. There are no stabilization ponds have been constructed.

There are four disposal stations of sewerage located at Gaddih, Pir Noor Shah, Kali kadh, and Bhatti Goth near to sugar mill. Sewer Pipe sizes being used are; 6", 4" diameter RCC pipe 12" dia laid underground. Sewage is mainly disposed of in roadside drains, and untreated sewage collects in ponds/swamps. Wastewater is not treated since treatment plant is not available in Matiari TC. Present waste water generation in Matiari TC is about 0.45mgd. In the next twenty years 0.59 mgd sewerage water will be generated against the estimated water supply of 0.84 mgd.

The strategies for short term plan are; priority for sanitation given to un-served areas, development of sanitation plan, need based interventions, use of gravity flow systems, acquire land and provide proper sewage treatment plants leading up to recycling of treated affluent for landscaping, etc. The long term plan includes the provision of improved services, sewage treated before discharging, construction of WWTP and land acquisition for stabilization ponds. The priority projects need to focus on the Repair & rehabilitation of primary and secondary drains (76% -285.16 Acres), Construction of new drainage network for unserved area (29% 116.47 Acres) and Construction of Sewage Treatment Plant. The immediate action plan involves the repair and rehabilitation of drainage network of core urban area.

4.3 Solid Waste Management

The collection mechanism that exists in Matiari is still primary waste management system. The garbage is collected in open containers / community bins placed in streets or empty spaces designated as throw away places. The waste is collected and transferred/ transported outside limits of town to designate / non-designated dumping sites by means of refuse vehicles and tractor trolleys by the sanitary / waste collection staff. There are no special arrangements for the handling, storage and disposal of clinical or hazardous waste except for the breaking of needles and their collection. Some of the major issues are shortage of machineries, lack of properly organized waste collection system, no proper arrangement for the disposal of infectious and hazardous waste and segregation of organic waste.

Considering the waste generation rate for design purpose as 0.45 kg per capita per day, for current population of Matiari TC, the total solid waste production is approx. 9.5 tons per day and for the future population of 2037 there will be 12.5 tons per day. Based on NRM Standards, for present solid waste of Matiari TC landfill area of 2.12 acre is needed and for the future landfill area of approx. 2.78 acre will be required.

The strategies for short term plan are; to develop an effective and efficient solid waste collection system, segregation of bio-medical waste collection system and encourage on-site reuse and recycling. The long term plan includes the community and private sector involvement, public awareness and education and implement waste minimization. The priority project should focus on the feasibility study for solid waste

management mechanism and procurement for land acquisation process for Landfill Site. The immediate action plan includes improvement in solid waste management system and installation of collection points.

5. Infrastructure

5.1 Energy

The Power Supply to Matiari TC is through HESCO/WAPDA transmission system. The survey revealed that 96% households have HESCO electricity and only 4% have no HESCO power supply. Some of the major issues are; of persisting supply short fall, frequent breakdowns and load shedding, distribution and transmission losses.

The strategies for the development plan includes the development of low cost energy production systems, achieving fuel efficiency, adopting new technologies, addition of sub-stations and encourage energy efficient building construction. The immediate action plan focus on the installation of wall mounted street lights in core town area.

5.2 Gas Supply

Out of 153 houses surveyed by the Consultants 83% had piped gas supply by SSGC, while 17% of the houses having no gas availability and are using wood and gas cylinder. The strategies need to be focused on feasibility study for alternate resources available, measures to cater load shedding and measures to appropriately price the energy sources.

5.3 Transportation

Matiari has significant connectivity with surrounding towns as well as other parts of the country through the regional and national road network. N-5 National Highway is connecting Matiari with Hyderabad and rest of the country. Most of the Private transporters run passenger buses and vans on all the regional and national routes.

Drainage issues on road side are evident due to which roads are worsening day by day. Absence of street furniture is another issue due to which traffic incidents takes place. Encroachments and unorganized/illegal Qinqui and Rickshaw stands are also evident on the road side which causes on street and off street parking issues.

The strategies for short term plan are; expansion of railway station, improve road design, prevent encroachments, rehabilitation of farm to market roads, and reduce traffic growth and congestion. The long term plan includes create Traffic Engineering Bureaus (TEBs), declaring private vehicle free zones, satisfy mobility needs, implementation of Axle Load Management, dualization of main arteries and improving geometry of roads. The priority projects should focus on the Repair & Rehabilitation and Improvement of Major, Minor and Streets and Installation of Traffic Signals and new Solar Street Lighting on Main Roads The immediate action plan includes the Repair & Rehabilitation of old National Highway N-5, Tando Allahyar Road, Madarsa Road, Imam Bargah Road, Civil Hospital Road and Ice Factory Road,

Taxi Stand road and Shahi Bazar Road. The improvement in road pavements with green medians, road markings, signals, pedestrian crossings and provision of footpaths with street furniture will be developed.

5.4 Communication

The PTCL land line areas cover Matiari and surrounding areas. A significant population uses phones to remain connected with their outstation relatives and friends. Regarding Internet and WiFi the survey showed that only 27 household out of 153 are using the facility. The smart cell phones are shifting the situation and people get easy access to net by different service providers in the area.

Importance of Communication Infrastructure is that a well-maintained Communication network are the basic requirements for an efficient and profitable agricultural sector. 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.

6. Environment and Disaster Risk Management

6.1 Environment

The district lies in 68°14”8’ to 68°14”40’ east longitudes to 25°26”20’ to 26°5”43’ north latitudes. The district is bounded by district Sanghar on the east, district Jamshoro on the west, district Shaheed Benazirabad on the north and district Hyderabad and Tando Allahyar on the south. District Matiari has three talukas Matiari city, Hala and Saeedabad. Matiari city is located at the south of the district adjacent to Hyderabad and Jamshoro.

Geographically, the District Matiari land area is part of Lower Indus Plain, more specifically flood plain of the Indus River system which is a vast alluvial plain that runs along the Indus River. As such the District area consists of flat land that slopes towards the river. Protective embankments or dykes had to be provided in view of the devastating floods of the past which used to submerge at least 20 to 40 km land on either side of the bank. The Hala Reserved Forest area has accordingly been embanked. The average elevation of the district is 50 m above mean sea level.

The topography within two miles of Matiari is essentially flat, with a maximum elevation change of 62 feet and an average elevation above sea level of 83 feet. Within 10 miles is essentially flat (157 feet), while within 50 miles contains only modest variations in elevation (2,316 feet). The area within two miles of Matiari is covered by cropland (93%), within 10 miles by cropland (59%) and bare soil (29%), and within 50 miles by cropland (51%) and bare soil (42%).

The strategies for short term plan proposed to ensure environmental sustainability, need of permit to discharge waste, preserve ecological cycles, increase rangelands production, provide recreational facilities, create environmental awareness, and conserve biodiversity and fostering PPP. The long term plan includes the improvement of drainage, sustainable development while overcoming environmental challenges and multi-pronged approach to fisheries management.

6.2 Disaster Risk Management

District Matiari land area is part of Lower Indus Plain, more specifically flood plain of the Indus River system which is a vast alluvial plain that runs along the Indus River. District Matiari is one of those districts of Sindh who was hit by 2010, 2011 and 2012 rains and floods the relative severity of floods was ranked as High in District Matiari. The major issues are low level of risk awareness, not "risk conscious" development, insufficient DRR capacity, negligible involvement of private sector, riverine flood and food security problem.

The strategies includes to develop coordination mechanism with PMD, develop mechanism for regulation of water discharge, develop monitoring mechanism, provide necessary medical facilities, coordination with DDMA and emergency declaration at all medical points. The long term plan involves the arrangements that allow the system to switch into emergency mode, clarify mutual roles and responsibilities, DSM and PPHI shall be responsible for providing medical cover to the IDPs, National risk assessment would identify highly vulnerable districts and DRR needs to involve local level actors. "Designated Evacuation Shelters" are provided to the people after the disaster. It is a facility where residents who have fled due to the dangers of a natural disaster may stay for as long as is necessary until the dangers of the natural disaster have receded. The purpose of these facilities is to offer temporary shelter for residents who are unable to return home due to the natural disaster. All public buildings like schools, colleges, etc. or elevated areas would be used as shelter in case of any disaster in town. The shelters are designated by the town government and awareness about them should be created among the general public.

E. Implementation

Presently, different proposals or schemes belonging to their respective sectors are identified by the departments and also incorporated separately in the Annual Development Programme (ADP). This creates a lot of problem as there would not be any harmony in the development of the city, as one scheme may create difficulties and problems for the other. It is necessary that all the public service sectors work together as a package that would result in proper development of the town.

The Government of Sindh would take responsibility of implementing various development proposals by utilizing its maximum resources and by engaging various public offices of government of Sindh, established in town. The concerned agency must ensure that the overall process must go after following themes of implementation process. The overall implementation process to be carried out in coordination with Town Planning and Urban Development Standards (Frameworks) in which redevelopment will be phased to prioritization.

Government may seek technical assistance from all the line department i.e. DUP&SP, Town Planning Department, Municipal Corporation, secretariat of Commissioner and Deputy Commissioner. A committee would be formed as the "Project Management and Implementation Unit" (PMIU) to implement on the Strategic Development Plan. The "Project Management and Implementation Unit" will mainly consist of qualified town and urban planners supported by other technical staff; architects, project managers, engineers, finance officers and any other technical staff expert in their relevant fields.

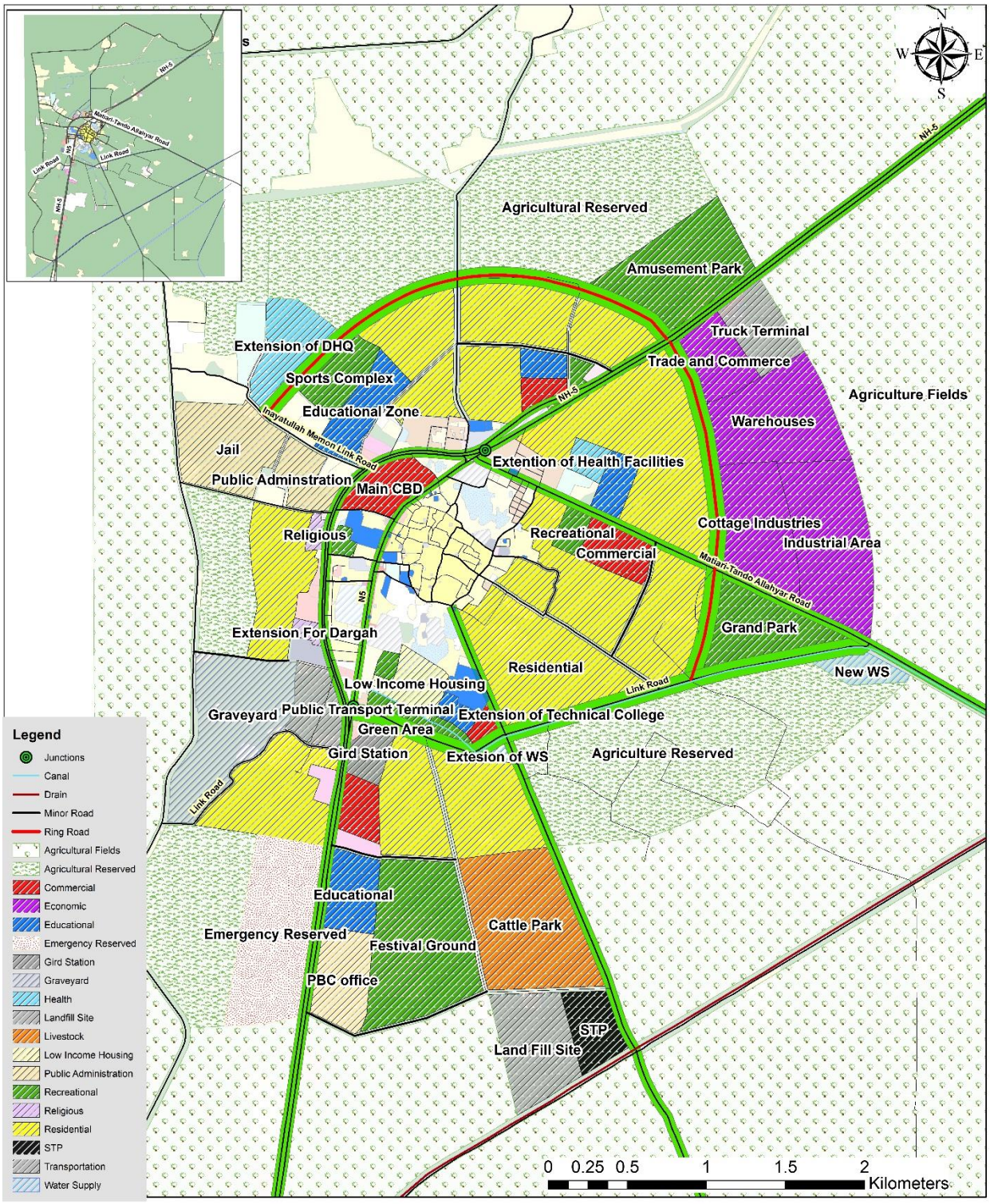
The "Project Management and Implementation Unit" shall supervise and coordinate respective urban developers involved in development activities, conduct monitory audits, prepare evaluation and impact reports. Planning and development department Government of Sindh shall lead "PMIU" to implement Master Plan.

F. Strategies For Future Development

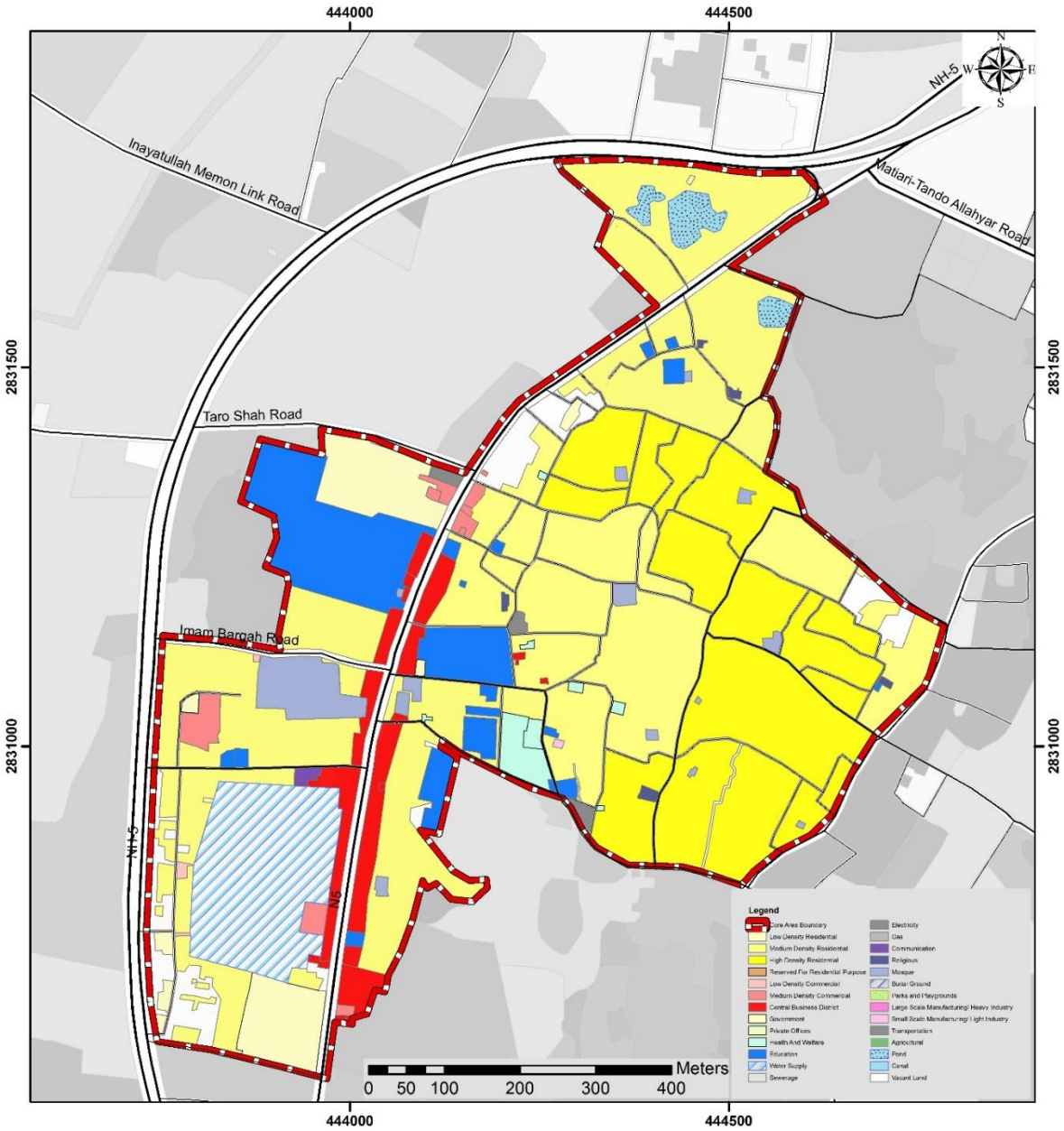
The strategies focus on revitalization of the affordable housing, provision of basic facilities, efficient transportation and communication, energy efficient technology, active service sector, implementation of pro-active governance, develop human resources, facilitate social infrastructure, reinforce the local governance institutions, modernize administration, preservation of heritage, sustainable environment, develop tourism resources, involve community participation and implementing Public-Private Partnership.

G. Master Plan Proposals

Proposed Master Plan For Matiari



H. Immediate Action Plan For Core Urban Area



I. SDGS ACCELERATION PLAN:

Under the contract of the Preparation of Development Master Plan of 14 DHQ towns, SDG Acceleration Plan was not part of the approved TORs, however keeping in view the Sindh Government's initiatives to mainstream SDGs targets in provincial planning (taking Islamkot as a model SDG Taluka) the Directorate and Consultant after due consultative process felt the need to include brief SDG Acceleration Plan as part of Development Master Plans. Further in consultation with SDG Unit Sindh, SDG 11 – *Sustainable Cities and Communities* was selected for SDG Acceleration Plan for 14 DHQ towns, since it is pertinent to urban planning and development. Please refer Annexure (A) for brief SDGs Acceleration Plan.

STRATEGIC DEVELOPMENT PLAN FOR MATIARI TOWN

1. SINDH – AN OVERVIEW

Sindh is the most urbanized province in Pakistan. Due to lack of interest in the planning and development of secondary cities District Headquarters towns, the public funding in development infrastructure had been sporadic resulting in un-informed adhoc decisions. Consequently the secondary cities have not been able to play their role as "Engines of Economic growth" and hinterland has remained poor facing abject poverty due to less economic opportunities and social facilities. The poverty head count ratio in the urban-cum-rural areas is almost double than that in the declared urban areas.

Sindh government took initiative by establishing Directorate of Urban Policy and Strategic planning within the P & D Department initiate and ensure planned growth of Secondary cities through the Preparation of Master Development Plans of District Headquarter Towns in September 2008.

1.1 Project Background

Sindh, Pakistan's second most populated province plays a pivotal role in the national economic and development agenda. The country's largest port city, Karachi, is the financial capital of the country. The Province comprises of 23% of Pakistan's population and 18% of its land area. It has the highest concentration of urban population at 49% as compared to an overall country average of 32.5%, making it the most urbanized province in the country. With 23% of country's population, its contribution to the national GDP is around 33%. Sindh collects 70% of Pakistan's Income Tax and 62% of Sales Tax.

Sindh has 54% of country's textile units, 45% of its sugar mills, 20% of pulp & paper mills and 35% of edible oil processed locally. Sindh accounts for 34% of total industrial capacity in large scale manufacturing and 25% of small scale manufacturing. Moreover the Province produces 70 % of Country's gas, 30% petroleum and 95% of Coal.

Despite global economic slowdown towards the end of 2008 and Pakistan's solidarity with the International cause for peace, playing a key role as the front line state, Sindh's manufacturing sector has been resilient and investments have continued to pour in the economic cycle. MNCs and local enterprises are committed to make investments worth around USD 8.0 billion in the province in coming years.

Sindh's diversified economy also comprises of a well-developed agricultural base supported by an effective irrigation network on the River Indus. Around 14% wheat, 30% rice, 30% sugar cane, 25% cotton and 30% vegetable crops grown in Pakistan are from Sindh. This provides immense opportunity for setting up export based agri-processing industry in the province. (http://www.sbi.gos.pk/sindh-economy.php).

1.2 General Issues

Despite of its significant contribution in National GDP, Sindh has not received the priority in development funding as it deserves. DUP&SP is the medium through which grass root development / strategy is being formulated by professionals for the betterment of people and create de-centralize economical hubs to counter higher migration rate towards developed urban centres resulting better socioeconomic condition of the people. While going through the available literature so far, several issues have been identified in this regards, such as:

- Non-existence of Sustainable planning policy, apparatus, regulatory framework and its implementation;
- Absence of current housing policy based on sustainable and smart growth mechanism;
- Lack of coordination between institutions responsible for development of a town or Absence of Institutional Framework.
- Previous Master / Development / Structure Plans of Town Planning Department have hardly been implemented due to poor implementation mechanism;
- Local cultural preferences and settlement patterns undermine the role of urbanization in supporting economic growth;
- In most of the District Headquarters Towns, in-effective municipal infrastructure and service delivery is a common cause of failures in water, waste water, SWM, etc.
- Non-existence of spatial and non-spatial database systems;

1.3 Objectives

The objective of the assignment, as mentioned in the TORs is to prepare Development Master Plans of Fourteen (14) District Headquarter Towns of Hyderabad, Mirpurkhas and Shaheed Benazirabad Divisions; for development of spatial planning and zoning system as well as local economic development strategies on the basis on ecological sustainability.

The Consultant is tasked to prepare strategies:

- To plan for social infrastructure at affordable standards for education, health, recreation and cultural needs.
- To upgrade the existing physical infrastructure and enhance the supply of potable water and to propose the required capacity of network for water supply, sewerage, drainage, flood waters till year 2037.
- To provide for modern sanitation, solid waste management and disposal.
- To improve existing road networks, extend links, upgrade intersections, bridges and flyovers; and other means of communication and proposed where needed.
- To provide for safe and efficient public transport.
- To plan for effective traffic management, smooth transit and provide for parking facilities, where required in multi-storey car parks.
- To plan for enhancement and revitalization of economic base by expansion of industrial and commercial base, and for rapid expansion of IT and Telecom sectors, tourism, agricultural activity, etc in the means of sustainable and smart concept.
- To propose alternate energy sources as country is facing acute shortage especially in summer season.

1.4 The Strategic Plan output

The proposed Development Master Plans of selected District Headquarter Towns of Sindh would focus on the following Tasks

- Review of Past Trends, Development Strategies and Prevalent Conditions
- Preparation of Digital Base Maps
- SWOT Analysis
- Carving out a Vision for the Future of these cities
- Preparation of Development Plan comprising of:
    - Long Term Development Plan
    - Growth Scenarios
    - Short Term Action Plans for Priority Infrastructures
    - Immediate Action Plan for the Core Urban Areas
    - Economic Development Plan
    - Disaster Management Plan and
    - Climate Change, Resilience & Adaptability Plans

1.5 Strategic Development Plan Report

Having gone through a detailed process of data collection and evaluation in the previous stages of the study and obtaining citizens input through the Consultative workshops with the stakeholders, the Consultants have identified development issues in the various sectors and provided sector wise strategies to resolve issues in an integrated manner. The issues are running of the development programmes. As funds are never unlimited, it would be utmost necessary to concentrate on projects that being meaningful and quick relief in the life of common man and significantly the quality of life. In the sections of the Report to follow, sector wise development strategies are listed. The focus should be to select projects which have a strong sequential links is the form of a “package” rather than stand-alone project.

2. AN OVERVIEW OF MATIARI AND ENVIRONMENTS

2.1 Matiari District

District Matiari was previously a taluka of district Hyderabad. On 4th May 2005, this taluka was separated from Hyderabad and was awarded the status of a district.

According to 1998 census population of taluka Matiari (now District Matiari) was 494,244 with 15% urban population and 85% rural population. The district is bounded by district Sanghar on the east, district Jamshoro on the west, district Shaheed Benazirabad on the north and district Hyderabad and Tando Allahyar on the south. This district has three talukas, named: Matiari, Hala and Saeedabad. The irrigation system of this district is dependent on two major sources i.e, Rohri Canal and Indus River. Rohri canal irrigates the eastern lands of this district and the Indus River irrigates the western parts of the district.[1]

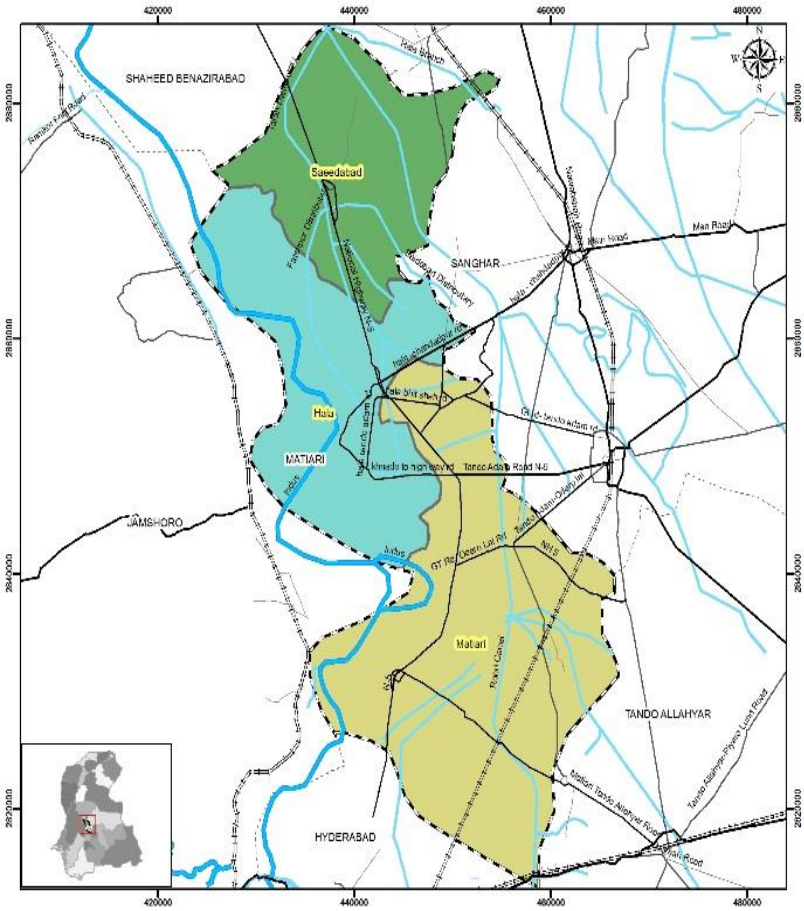


Figure 2:1: Tehsil Map of Matiari

Matiari is the one of oldest territory of Sindh. It has a very bright past from educational point of view. This region produced a number of religious scholars, Educators, Intellectuals, Poets which spread the essence of their knowledge all over the subcontinent. Matiari is the land of Shah Abdul Latif Bhitai, the great saint, soofi Poet and lover of Sindh and the world as well.

According to Population and Housing census of 2017, population of district Matiari is recorded as 769,349 souls with an average growth rate of 2.36%. Average Household size of Matiari is 5.4 with 143,023 Housing units.

[1] PESA – A Profile of Matiari Sindh

2.1.1 Topography and Geology

The whole district is irrigated through canals and the river. The plane lands of Matiari are very fertile and productive. Indus River flows alongside the western border of the district. The lands along the river are formed of silt and sandy loam. Being in the Indus basin, this district has hardly any barren lands. Only a few lands are barren while the rest are quite fertile croplands.

2.1.2 Geographical Location and Area

District Matiari lies in 68°14" 8' to 68° 14" 40' east longitudes to 25° 26" 20' to 26° 5" 43' north latitudes. This district is surrounded by district Sanghar on the east, district Jamshoro on the west, district Shaheed Benazirabad on the north and district Hyderabad and Tando Allahyar on the south.

Boundaries:

East:	District Sanghar
West:	District Jamshoro
North:	District Shaheed Benazirabad
South:	District Hyderabad and Tando Allahyar

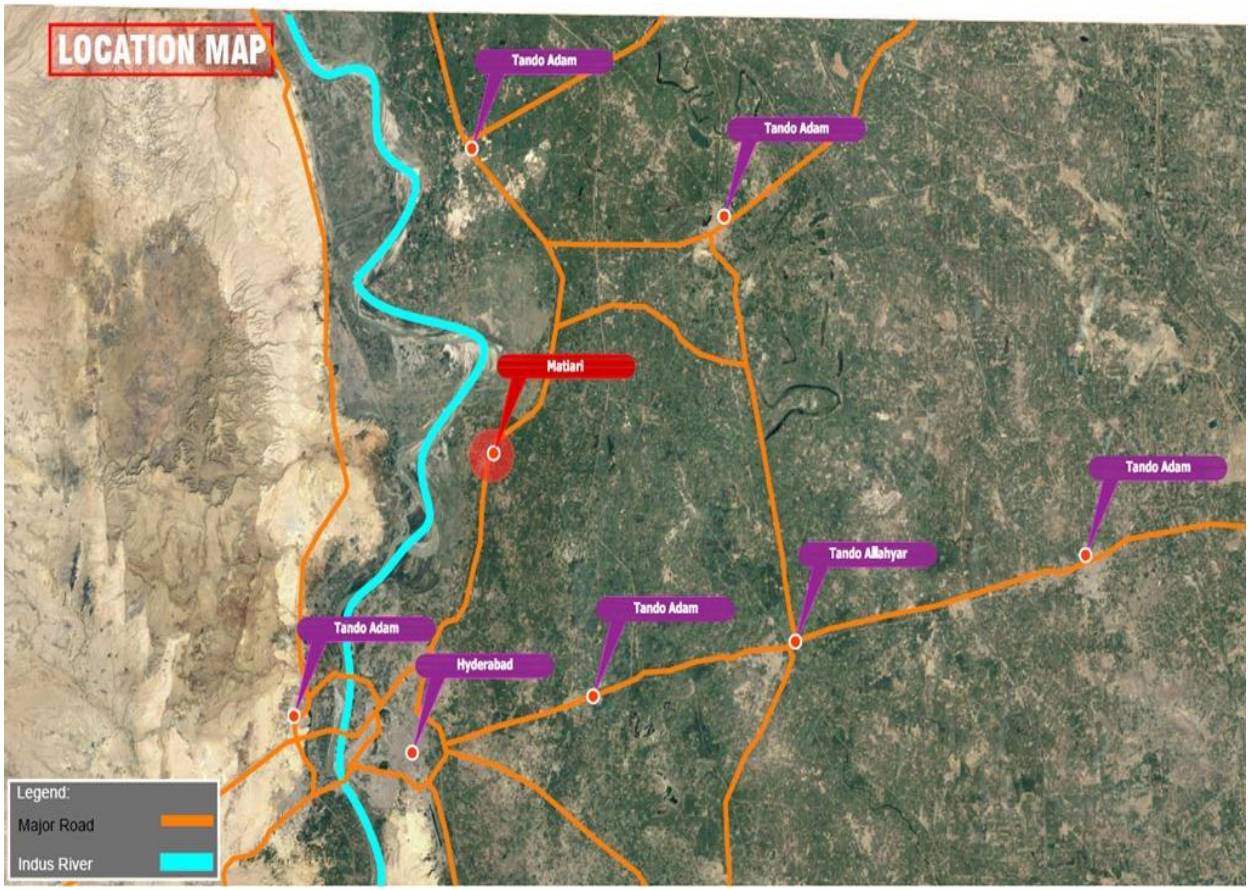


Figure 2:2: Location map of Matiari

2.1.3 Major Linkages

The main means of transport and communications in Matiari district are roads and railways. The National Highway connecting Karachi and Peshawar passes through this district. The Matiari is also linked with the national network of Pakistan Railways through the Karachi railway line via Karachi-Lahore lane. Tando Adam Junction and Odero Lal station are among the oldest railway stations in Pakistan.

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

Matiari district covers an area of 141,000 hectares yet it has only 178 kilometers of good quality roads which are grossly inadequate for the area and its population. A National Highway (N5) connects Matiari with Hyderabad and onwards to Karachi (provincial capital of Sindh province).

2.1.4 Administrative Set-up

The district was created in 2005 out of Hyderabad District. District Matiari has its district headquarters at Matiari city. This district has three talukas, named: Matiari, Hala and Saeedabad. It has 19 union councils and 123 Dehs (revenue village). Out of these 123 Dehs, 96 are rural, 7 are urban, 9 are partly urban and 11 are forests Dehs.

2.1.5 Climate

The climate of the district is moderate as a whole. The months of May and June are very hot during the day with maximum and minimum temperatures being 41°C and 26°C respectively. However, due to the pleasant breeze, the temperature falls abruptly as the night falls. December and January are the coldest months with maximum and minimum temperature of 25° C and 11°C.

2.1.6 Ethnicity, Culture and Politics

District Matiari is one of oldest territories of Sindh, the Dargah of Pir Sayed Sakhi Hashim Shah Badshah is located in Matiari. Matiari is



Figure 2:3: Dargah of Pir Sayed Sakhi Hashim Shah Badshah

well known for its ice-cream and Ajrak (Sindhi dressing).[2] Bhit shah Culture Center is famous at the national level for being the hub of cultural activities, in the realm of Sufism. Bhit shah Culture Centre consists of the following buildings:

- An Open Air Auditorium for Cultural Programs
- A Museum which represents Soormis of Shah Abdul Latif Bhittai
- Shah Abdul Latif Bhittai Research Cell
- An Excellence Centre Shah Jo Bagh (Garden)[3]

Hala is a small city and taluka of the district of Matiari of the province Sindh. Hala's has a very diverse and rich culture of Sindh. The males clad themselves in a very conventional and traditional style of Shalwar Kameez having very broader bottoms and the famous traditional Sindhi cap, earlier in the city of Hala, common wear for females was the proposed Gharara or "Parro" with the beautiful bangles all the way up till to their shoulders but nowadays this kind of wear is in the villages or countryside but not on the city of Hala.[4]

2.1.7 Historical / Famous Places

Matiari is famous for many historical places. Thousands of people from all over the country come to visit (ziarat) and pay tribute to this great Saint during the annual URS every year.

- **Shrine of Shah Abdul Latif Bhittai:**
- **Jamia Masjid Matiari:**
- **Shrine of Hazrat Makhdoom Sarwar Nooh:**
- **Saeedabad Monument:**



Figure 2:4: Tomb of Shah Abdul Latif Bhittai

2.1.8 Demography

Pakistan is among those four countries where life expectancy for females, at birth, is less than that of males, and as such the male population outnumbers the female population. The sex ratio in Matiari is 106.52 males per 100 females, which is equal to the ratio at the National level, which is 106:100. District Matiari is rural by its characteristics like the majority of the other districts in Sindh. Though 76.3 % of the total population resides in rural areas and the remaining 23.7% reside in urban areas.



Figure 2:5: Jamia Masjid Matiari

[2] https://wikivividly.com/wiki/Matiari

[3] http://sindhculture.gov.pk/index.php/component/content/article/2-uncategorised/48-bhitshah-culture-center

[4] https://www.sindhidunya.com/hala-the-fast-leading-city-of-sindh/

Table 2-1 Demographic Statistics: District Matiari

Project Area		Population		AGR		Average Household Size		Households	
		Census 1998	Census 2017	Census 1998	Census 2017	Census 1998	Census 2017	Census 1998	Census 2017
Matiari	District	494,244	769,349	0.71%	2.35	5.7	5.4	88,258	143,023

Source: Population Census 1998 and 2017

2.2 Matiari Town

2.2.1 History

Matiari is one of the oldest territories of Sindh. Matiari is the city of the Sayed's. The shrines of Hazrat Shah Abdul Latif Bhittai and Pir Sayed Sakhi Hashim Shah Badshah are located in Matiari.

The word Matiari is derived from Muthal of Mat-yari that means the relation with pots made of mud, clay to keep water cool and serve people that came from outside. It has been recorded by the historian that in the ancient times business troops travel through this way as it was provided with a shelter to save them from the heat of the sun and also arrangement for the pots for cold water, that's why the place is gradually known as a Mat-Yari means friendship which the pots made from mud.

This region was ruled by different dynasties, including the Soomras (1024-1351), the Summas (1335-1520), the Arghuns (1520-1650), the Kalhoras (1657-1783) and the Talpurs (1783-1843). When Britain invaded the subcontinent, General Charles Napier, a commander in the British Army, defeated the Talpur dynasty and conquered Sindh in 1843.[5]

The province was divided into different administrative units and assigned to Zamindars (landlords) to collect taxes for the British government. Later on, the rulers developed these areas as urban centers. People migrated from other districts and provinces as well and started to reside here. The British Empire named these small developed areas as "Talukas". They built a network of roads, schools, dispensaries and many other civic amenities throughout the province. At the time of the independence of Pakistan, in 1947, district Matiari was a taluka of district Hyderabad until 2005 when it was given the status of a district.

2.2.2 Geography

District Matiari has its Headquarter at Matiari city. It is situated at 68° 14" 8' to 68° 14" 40' east longitudes to 25° 26" 20' to 26° 5" 43' north latitudes.

[5] PESA – A Profile of District Matiari

2.2.3 Demography

According to the 1998 census, the population of Matiari town was 16,336. The population of Matiari town had an estimated growth rate of 1.41% per annum as per the 1998 Census Report. According to the latest census of 2017 population of Matiari town is 21,195 with a growth rate of 1.38%. Matiari TC has an average household size of 7.3 in 1998 which has decreased to 5.0 in 2017.

Table 2-2: Past Population Growth in Matiari TC

Project Area	Population		AGR		Average Household Size	
	Census 1998	Census 2017	Census 1998	Census 2017	Census 1998	Census 2017
Matiari TC	16,336	21,195	1.41%	1.38%	7.3	5.0
Matiari Taluka	218,065	340,677	1.57%	2.38%	5.6	5.16
Matiari District	494,244	769,349	0.71%	2.35%	5.7	5.4

Source: Census 1988, 2017 and Consultant's projections

- **Future Projections**

  In 1998 Population of Matiari TC was 16,336 and in 2017 census population of Matiari TC jumped to 21,195. Based on the annual growth rate of 2017 census, the population of Town committee of Matiari is projected as under:

Table 2-3: Future projections for Matiari

Year	Population (Matiari)	
	District	(Town Committee)
1998	494,244	16,336
2017	769,349	21,195
2022	864,366	22,698
2027	971,118	24,308
2032	1,091,053	26,032
2037	1,225,802	27,879

2.3 Urban Morphology

Total built up area of the city in 2004 was approximately 4.20 sq. km and reached up to 4.76 sq. km in 2016 (source Google Earth). The city extended in North -south along N-5 road. Town's spatial growth during last 12 years is 31 % increase in built up area. The city grew mainly in north-south and partially east-west directions. The administrative complex and offices are situated along N-5 Road. District headquarter town can be divided into two tracts with the help of "Google Earth and Satellite Imagery "one is eastern part and other one is western.

The development in project area shows that the present town centre originated along east side of National Highway. Later, city started growing on both sides of National Highway N-5 and as well as on By Pass road of city area. Mostly public projects were established along National Highway N-5 longitudinally. The commercial area of Matiari city is located on the both side of national highway N-5.

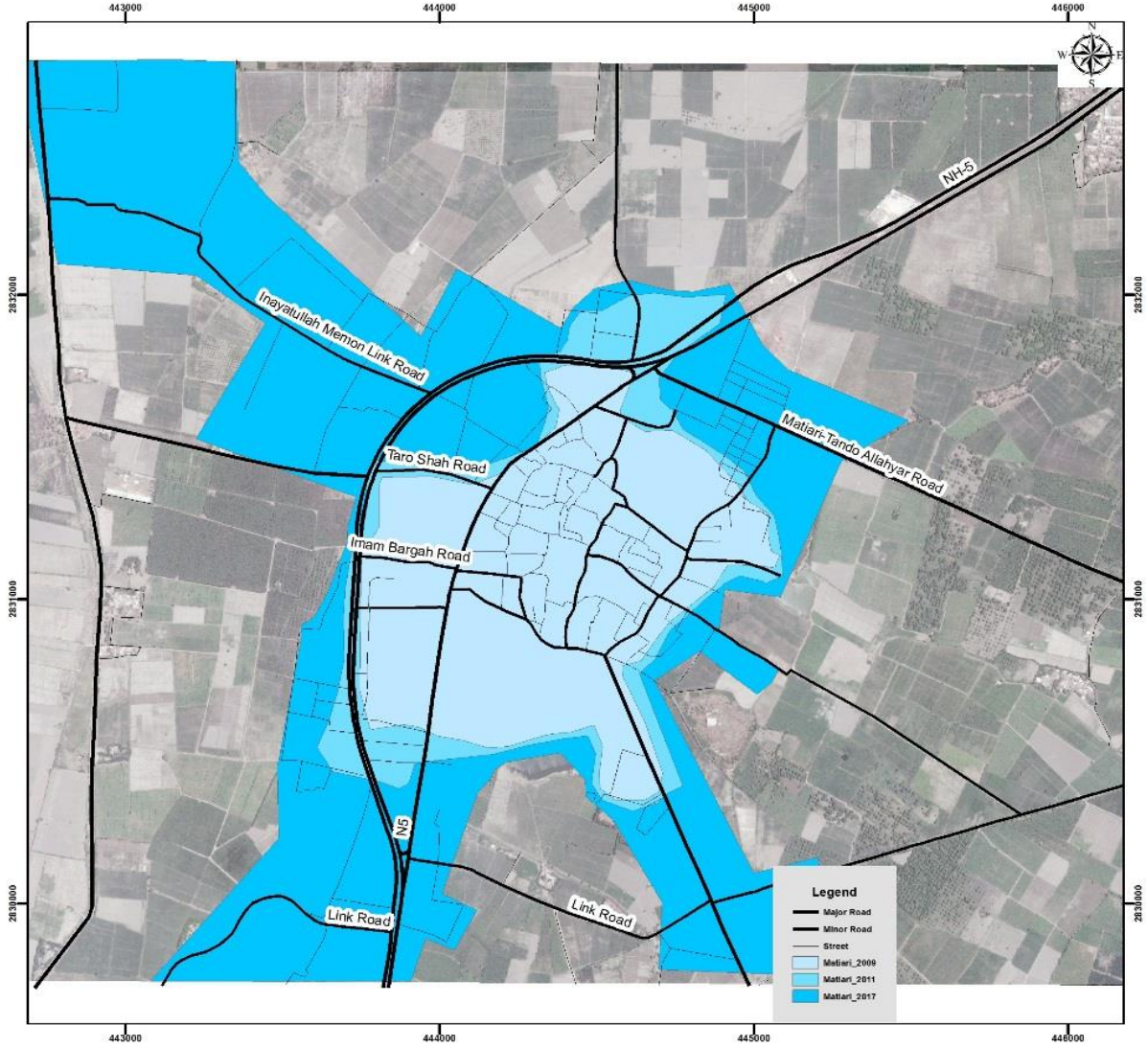


Figure 2:6: Historical Growth of Matiari

2.4 Land Use and Spatial Analysis

The built-up area of Matiari town comprises on around 557.5 acres of land as compare to consultant's urban boundary which is 2,695.3 acres. The land use analysis indicates that almost 11.2% of total urban boundary area is in use of residential purpose only. 56.7% of the area is covered by agriculture fields.

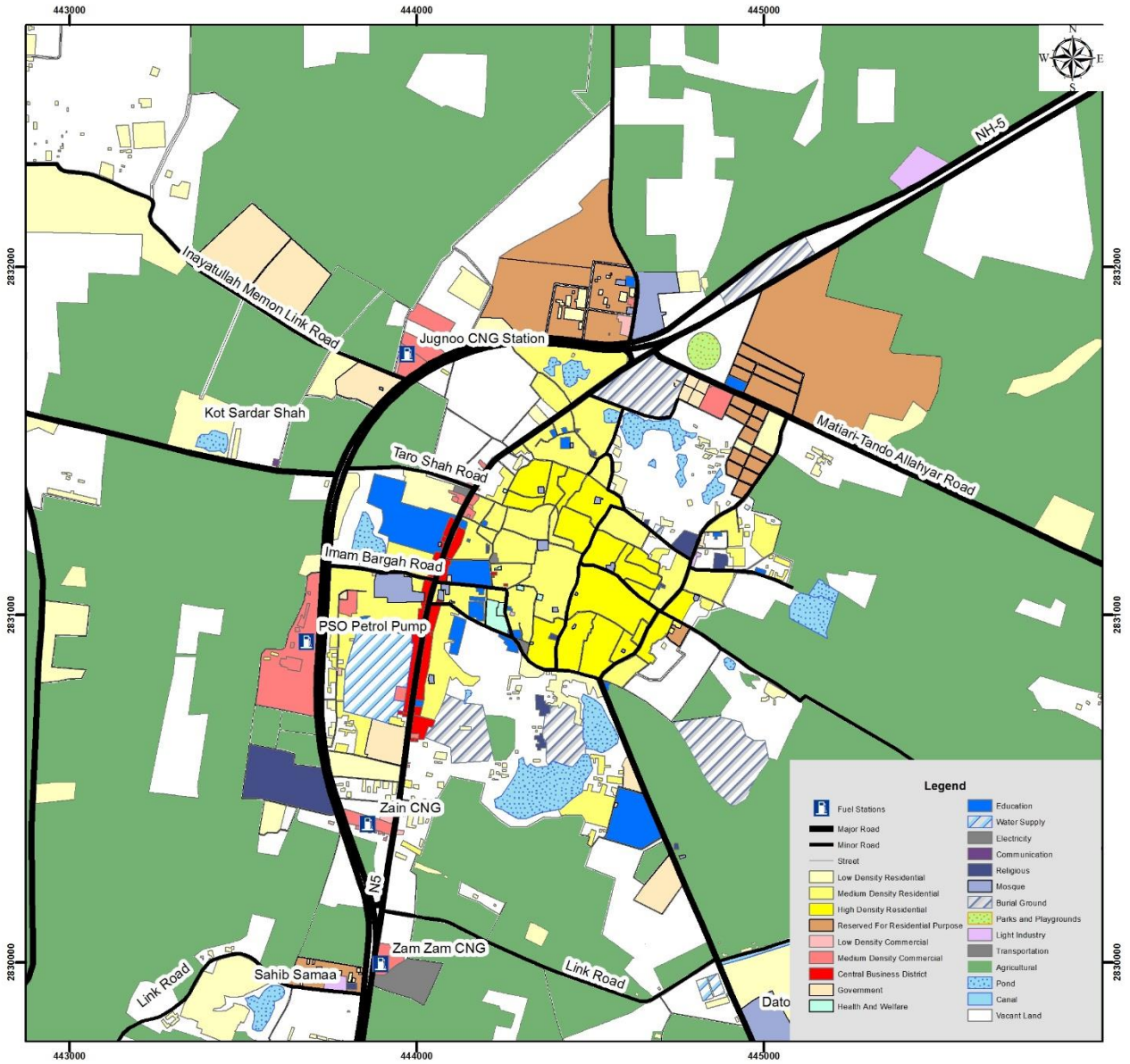


Figure 2:7: Land use Map of Matiari Town

Table 2-4: Land use Classification and Percentages

MATIARI (URBAN BOUNDARY)				2695.29	Acres
CATEGORIES	**LANDUSE CLASSIFICATION**			**AREA (ACRES)**	**%**
URBAN	Residential	Residential	Low Density Residential	112.95	4.2
			Medium Density Residential	50.41	1.9
			High Density Residential	34.67	1.3
			Mix Development	24.17	0.9
			Proposed Housing Schemes	80.37	3.0
	Sub Total			302.6	11.2
	Commercial	Commercial	Low Density Commercial	1.78	0.1
			Medium Density Commercial	19.67	0.7
			High Density Commercial	5.95	0.2
	Sub Total			27.4	1.0
	Parks and Playground	Parks and Playground	Parks and Playgrounds	1.99	0.1
	Sub Total			2.0	0.1
	Amenities	Institutional	Education	12.44	0.5
			Public Administration	19.49	0.7
			Health And Welfare	1.18	0.0
			Religious	20.98	0.8
		Utilities And Municipal Service Facilities	Electricity	2.70	0.1
			Sewerage	0	0.0
			Communication	0.24	0.0
			Water Supply	11.25	0.4
		Burial Ground	Burial Ground	31.49	1.2
	Sub Total			99.8	3.7
	Industrial	Manufacturing	Small-Scale Manufacturing/ Light Industry	4.61	0.2
			Large-Scale Manufacturing/ Heavy Industry	0.0	0.0
	Sub Total			4.6	0.2
	Transportation	Transportation	Transportation	121.04	4.5
	Sub Total			121.0	4.5
	Sub Total			557.5	20.7
NON-URBAN	Agriculture And Forestry		Agricultural	1528.35	56.7
	Sub Total			1528.4	56.7
	Water Bodies		Canal	0	0.0
			Water Bodies	25.00	0.9
	Sub Total			25.0	0.9
	Vacant Area			584.44	21.7
	Total			584.44	21.7
TOTAL				**2695.3**	**100.0**

Source: Spatial Analysis done by Consultants

2.5 Existing Zonal Plan:

Zone 1:

It comprises of mix development of residential and commercial area consisting of various housing colonies. This zone also contain Girls College and polytechnic institute.

Zone 2:

This zone old commercial area as well core urban area of Matiari Town seems to be a planned area. Thus this could be referred as the CBD of the town.

Zone 3:

Most of the future development is being carrying out in this zone. Other than new housing potential it also contains research and training center.

Zone 4:

Mostly public administrative office are within this zone and it also contains water Reservoirs. This also has bypass road which connect the N5 high way Road.

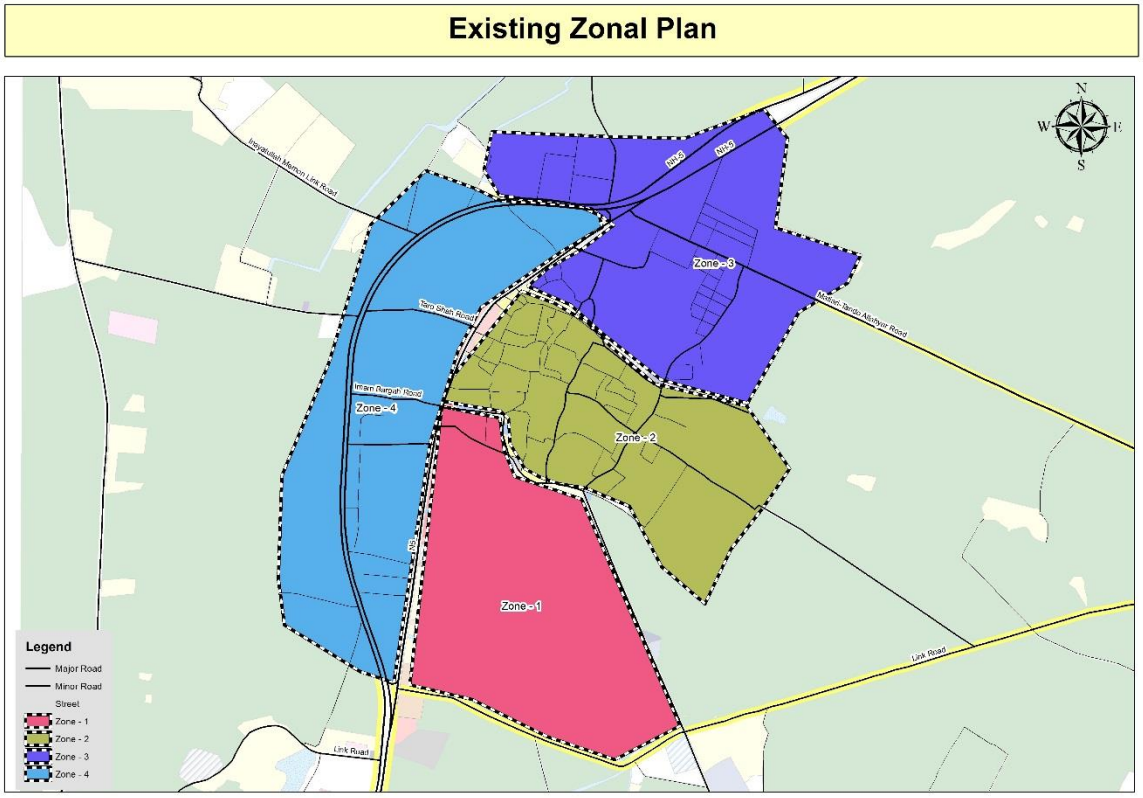


Figure 2:8: Existing Zonal Plan

3. VISION FOR STRATEGIC DEVELOPMENT PLAN OF MATIARI

The basic aim of vision formulation exercise is to have pluralistic approach to establish a shared and common vision for the development of Matiari DHQ town in the future, define its role as a leading regional centre in the Sindh province and the socio-economic uplift of the population. A vision formulating workshop was carried out with the main stakeholders on November 08, 2018. The stakeholders were mainly local citizens, government officials, businessmen and member of civil society.

3.1 Summation of Vision Formulation

The summations and conclusions are described hereunder:

1) Although the participants generally understood that vision should reflect citizens and stakeholders' aspirations as to where they want to see their town 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 high rate of population growth and migration. Urbanization and uncontrolled land use conversion is eating away lots of urban agricultural land and breaking social fabric of residential communities. Need for land management system has been stressed.



3) The socio- economic uplift of the population has been mentioned by most participants, which include provision of basic needs of housing facilities with sustainable utility services, health, education, parks and playgrounds, employment and income generation.

4) Peace, safety, security and proper governance are envisioned by the participants as the ultimate goal for the twenty year **Matiari's 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 Matiari's Vision Statement

The visioning process stems from the Stakeholders' Vision of the town which have been translated into tangible and concrete targets .The discussions in the Workshop that most people want to see:

Where a lot of investment is expected to be made;
The priority will first be given to improve the Core Urban Area of DHQ town. And then could go to remaining town and Peri-urban areas.

Existing utilities including water supply, sewerage & drainage as well as facilities are in bad state of repairs due to shortage of funds. The government should make sufficient fund allocations for the repairs and rehabilitation of existing facilities.

MATIARI
VISION 2037

"The city full filling all the basic needs, such as housing, water supply and sanitation, in clean and sustainable pollution free 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 liveable cities in the world."

PROPOSED MASTER PLAN FOR

MATIARI TOWN

4 PROPOSED MASTER PLAN OF MATIARI TOWN

4.1 Spatial Pattern

Matiari is one of the oldest territories of Sindh. Matiari is the city of the Sayed's. The shrines of Hazrat Shah Abdul Latif Bhittai and Pir Sayed Sakhi Hashim Shah Badshah are located in Matiari.

The climate of the district is moderate as a whole. The months of May and June are very hot during the day with maximum and minimum temperatures being 41°C and 26°C respectively. However, due to the pleasant breeze, the temperature falls abruptly as the night falls. December and January are the coldest months with maximum and minimum temperature of 25° C and 11°C.

The main means of transport and communications in Matiari district are roads and railways. The National Highway connecting Karachi and Peshawar passes through this district. The Matiari is also linked with the national network of Pakistan Railways through the Karachi railway line via Karachi-Lahore lane. Tando Adam Junction and Odero Lal station are among the oldest railway stations in Pakistan.

Matiari is famous for many historical places. Thousands of people from all over the country come to visit (ziarat) and pay tribute to this great Saint during the annual URS every year.

- **Shrine of Shah Abdul Latif Bhittai:**
- **Jamia Masjid Matiari:**
- **Shrine of Hazrat Makhdoom Sarwar Nooh: Saeedabad Monument**

The total built-up area of the city in 2004 was approximately 4.20 sq. km and reached up to 4.76 sq. km in 2016 (source Google Earth). The city extended in North-south along N-5 road. Town's spatial growth during the last 12 years is 31 % increase in built-up area. The city grew mainly in north-south and partially east-west directions. The administrative complex and offices are situated along N-5 Road. District headquarter town can be divided into two tracts with the help of "Google Earth and Satellite Imagery "one is the eastern part and other the one is western.

The development in the project area shows that the present town centre originated along the east side of National Highway. Later, the city started growing on both sides of National Highway N-5 and as well as on By-Pass road of the city area. Mostly public projects were established along National Highway N-5 longitudinally. The commercial area of Matiari city is located on both side of national highway N-5.

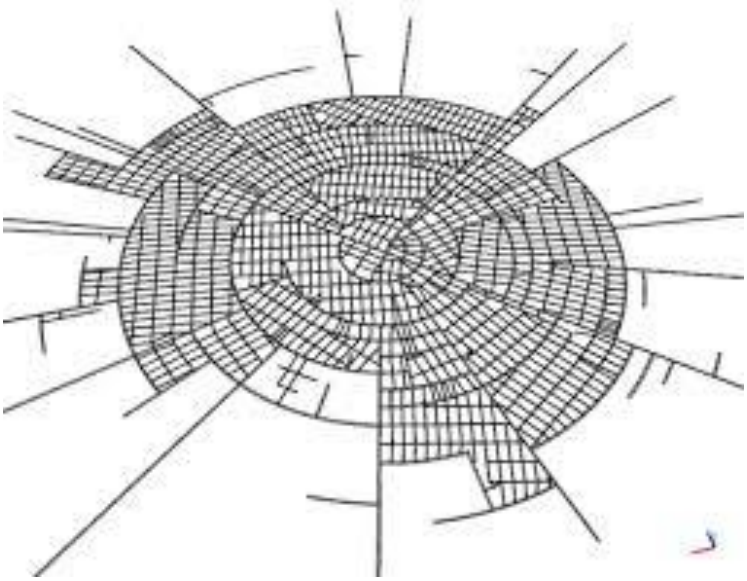
4.2 Basic Urban Form

The existing town is a small size lively and thriving urban center that fulfils the socio-economic and financial needs of its population and of surrounding towns. Specially those are not along major connectivity corridors are benefited, like Hala and Tando adam Town.



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

The existing core town would naturally be the physical nucleus of the future town, and the future development will radiate from it in all directions in form of different sectors.



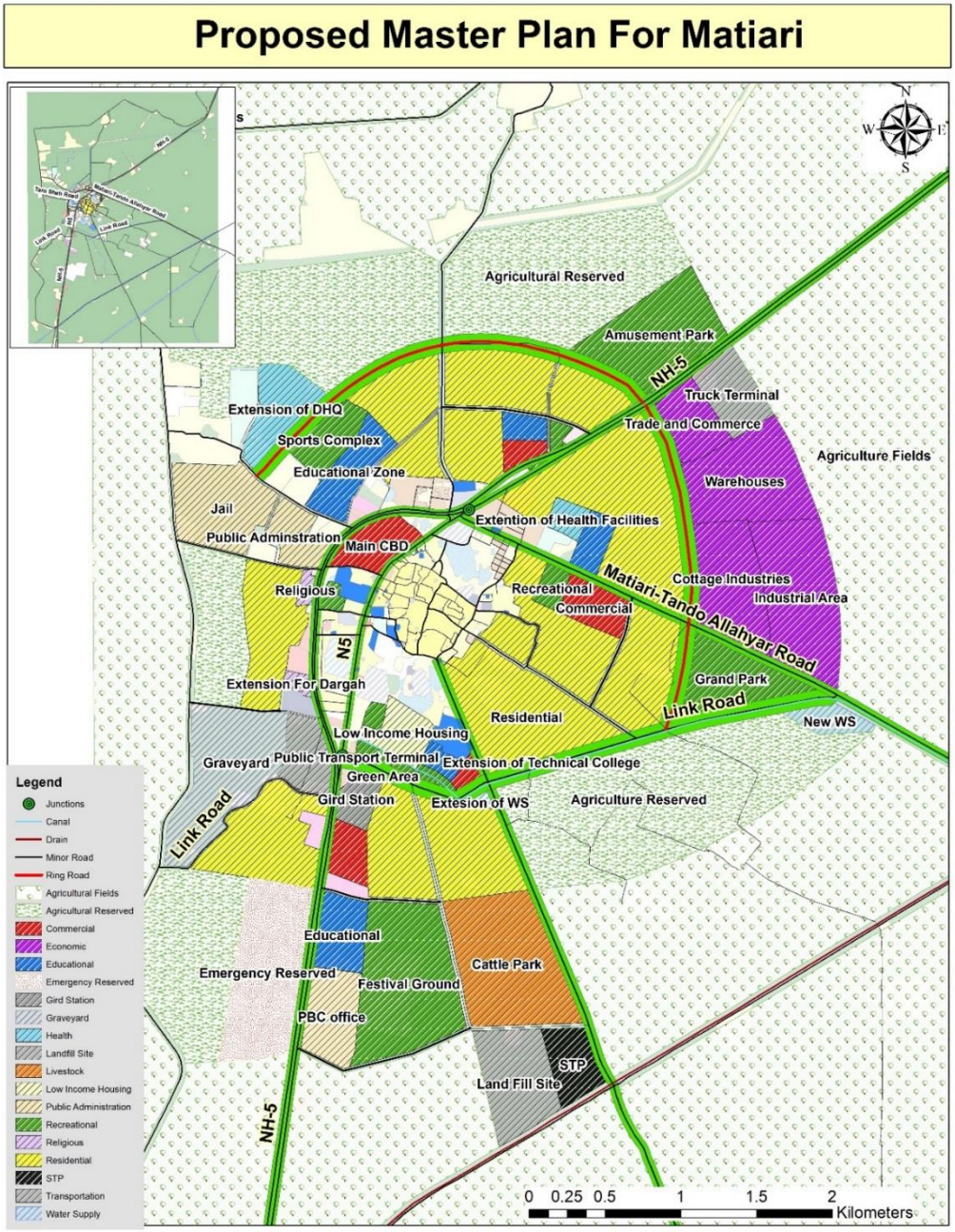
At present three major roads including Hyderabad – Matiari Road connects Matiari with the Hyderabad and Hala Towns. Most of these roads are converging on the town center and Matiari Bypass is passing in northwest. The unplanned development is spreading along bypass Roads. Some large investments have been made in the town for expansion of public services and facilities e.g DC office, District court, District headquarter Hospital and Mukhtiyarkar Office. The special facilities are scattered around the Town. Even though not in an ideal location, they have been retained in the plan. Thus in case of more expansion of city eastern Bypass is proposed starting from Hyderabad Road via Tando Allahyar connecting Link road and ending at NH-5 Road, to the northern Side of Town. And in addition interconnection of the radiating roads with the proposed Eastern Bypass Road around the proposed master plan, will keeps the development compact.

Since this town is not large enough in terms of its spatial spread then its projected future population, thus the alignment of Eastern Bypass made. The proposed Northern Bypass is semi-circle -shaped as it is basically formed by connecting existing spatial pattern and link Road. The proposed eastern road is exactly not in a circular form, as it is shaped considering the area for further development. In addition, existing Matiari Bypass would serve till Town expend.

4.3 Proposed Master Plan

The Proposed Master Plan for Matiari 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 Matiari Master Plan is 5,056 acres approx. for a population of 27,879 by 2037. In this way, Matiari Town in next twenty years is expected to have population density of 6 persons per acre but due to District Headquarter town its population may be increased against natural census growth and overall 4 housing units per acre with an average household size of 5.0.

The hallmark of the plan is that it is **compact without being congested**. As the future expansion of the Matiari Town is expected to be large, thus the complete Proposed Matiari Master Plan is catering for all the needs of a full-fledged metropolis of the future. Thus the plan will afford balanced development containing all required land uses.

The overall structure of the plan is somehow in circular shape, approximately with four parallel spines i.e. Hyderabad Road, Matiari- Tando Allahyar Road, Matiari – tando Adam Road and Matiari- Hala national high way. The New CBD has been designated in between Existing Bypass and NH-5. The other prime activities are placed around the existing town, with new proposed Eastern Bypass in semicircular form. The propose Eastern bypass Road is running all around the further development, irrigated land and periphery. Furthermore, four sub centers are placed at the intersection of bypasses and radial roads. Thus the intersection of radial roads and bypasses will also create 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.

4.3.1 Salient Features of Planning

- As the town is not in complete circular shape, there is a main CBD (Central Business Districts) with tourism occurs in slightly in western side of the town.
- In addition, sub commercial areas are also identified to reduce the burden over the main CBD at; existing bypass and main NH-5 roads.
- Considering wind direction and location of NH-5 with proposed Bypass Road and cottage industries, Trade and Commerce and Warehouses are proposed between Matiari- Tando Allahyar and NH-5. Moreover Small industries and technical services activities would be occurred in this zone.
- Two transport hubs are designated; one is for public transport along Hyderabad Road in southwestern direction and other is truck terminal along NH-5 Road in Northeastern side.
- The areas for graveyards have also been reserved at far western side behind the proposed public transport.
- The cattle and poultry areas are also proposed in the southeastern direction, accessible from Existing Tando adam link Road, to limit the town development further. It will also benefit the population of nearby villages and other settlements.

- Instead of large health and educational zones, with sub commercial centers, health and educational facilities are also suggested.
- Sports and Cultural Complex is proposed between existing DHQ hospital and proposed Educational Zone on western direction. And along Tando allahyar Road next to link road on eastern side of town, a Grand Park is proposed. Further 2 large recreational zones are placed along NH-5 on Northern side of Town named amusement park and other on the southern side named festival Ground and park. In addition to that some green parks are proposed in Town.
- The extension of public administration area, opposite the existing District Offices along Innayatullah memon Link Road is proposed to serve and manage this beautiful Matiari city.
- Along Hyderabad, Hala and Tando Alllahyar Roads, the areas have been reserved for agriculture after the proposed bypass Road, as these areas are benefitted with the existing irrigation network. This will be helpful in restricting housing development and preserving the agricultural farms from the onslaught of the housing projects by private sectors.

4.3.2 Proposed Eastern bypass

i. The proposed eastern road is exactly not in a circular form, as it is shaped considering the area for further development. It is placed considering the starting point of widening of exiting link road and will connect on northern side Town. After proposed eastern Road, in order to limit the physical extent of the town along Hyderabad, Tando Allahyar and NH-5 Roads.

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 complete Eastern bypass road. As the areas on both sides of the eastern bypass 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. The land hundred feet on both sides of the bypasses 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.
In addition to that another 100 ft road is proposed on northwestern side of town to connect NH-5 road with DHQ hospital and Public administration Area to the other talukas of Matiari district.

4.4 Proposed Land Use Zoning

The proposed land use zoning is broadly based on NRM Standards[6]. 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 Matiari as DHQ Town, secondary zoning i.e. Level-2, is also categorized accordingly, again in consideration to the NRM Standards[7]. The proposed land use zoning is shown in the table:

The total area requirement for full fledge metropolis will be around 5,056 acres. As shown in the table of proposed land use classification, the percentage of residential and commercial zones are slightly lower, in comparison to the NRM standards. Since the town has a trend of medium density development, thus it is expected that most of the residential and commercial development will required less space in comparison to other towns.

[6] Guidelines for Land Allocation to Zones in the Preliminary Design of a New Town, Table 10.3, page no. 305, National Reference Manual on Planning and Infrastructure Standards

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

S.No	NRM STANDARDS		PROPOSED LAND USE CLASSIFICATION		
	Land Use Zoning	Land Uses (%)	Level - 1 Functional Zoning	Areas (acres approx.)	Land Uses (%)
1	Residential	40-45%	Residential	1,328	26.3%
2	Commercial	2-3%	Commercial	124	2.5%
3	Industrial	2-10%	Economic	490	9.7%
			Livestock		
			Industrial		
4	Institutional	3-5%	Health and Welfare	398	7.9%
			Educational		
			Religious		
			Public Administration		
5	Community Open Spaces	4-6%	Recreational	371	7.3%
6	Graveyards	2-3%	Graveyards	151	3.0%
7	Arterial Circulation & Terminals	15-20%	Transportation	623	12.3%
			Utilities and Services		
8	Protected Reserved	15-25%	Urban Forestation	1,571	31.1%
			Agriculture		
			Water Bodies		
			Vacant / Reserved		
	Total Area of Proposed Master Plan of Matiari Town			5,056	100%

Table 4-1: Proposed Land Use Classification for Matiari

S.No	NRM STANDARDS		S.No	PROPOSED LAND USE CLASSIFICATION FOR MATIARI TOWN						
	Land Use Zoning	Land Uses (%)		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	303	1,328	26.3%	1,328	26.3%
					Proposed Residential	1,025				
2	Commercial	2-3%	2	Commercial	Existing Commercial	27	124	2.5%	124	2.5%
					New CBD	31				
					Commercial at N5 (towards Hyderabad)	21				
					Commercial at N5 (towards Hala)	10				
					Commercial at Tando Allahyar Road	28				
					Commercial at Link Road	6				
3	Industrial	2-10%	3	Economic	Trade and Commerce	39	144	2.8%	490	9.7%
					Warehouses	105				
			4	Livestock	Cattle Farms	141	141	2.8%		
			5	Industrial	Existing Industries	5	205	4.1%		
					Cottage Industries	81				
					New Industrial Area	119				
4	Institutional	3-5%	6	Health and Welfare	Existing Health and Welfare	1	59	1.2%	398	7.9%
					Extension of DHQ Hospital	46				
					Extension of Health Facilties at Tando Allahyar Road	13				
			7	Educational	Existing Educational	12	130	2.6%		
					Educational Area near CBD	41				
					Educational Area at N5 - towarsd Hyderabad	37				
					Educational Area at N5 - towards Hala	12				
					Educational Area at Tando Allahyar	19				
					Extension of Technical College	10				
			8	Religious	Existing Religious	21	32	0.6%		
					Religious	5				
					Extension for Dargah	5				
			9	Public Administration	Existing Public Adminitration	20	177	3.5%		
					Public Administration Area near CBD	29				
					Public Administration Area at N5	50				
					District Jail	78				

5	Community Open Spaces	4-6%	10	Recreational	Existing Parks and Playground	2	371	7.3%	371	7.3%
					Sports and Cultural Complex	31				
					Festival Grounds	147				
					Amusement Park	103				
					Large Public Park	59				
					Recreational at N5 towards Hala	5				
					Recreational at Tando Allahyar Road	12				
					Reacreational at Link Road	12				
6	Graveyards	2-3%	11	Graveyards	Existing Graveyards	32	151	3.0%	151	3.0%
					Graveyard	119				
7	Arterial Circulation & Terminals	15-20%	12	Transportation	Existing Transportation	121	457	9.0%	623	12.3%
					Public Transport Terminal at N5	34				
					Truck Transport Terminal at N5	42				
					Road Network	260				
			13	Utilities and Services	Existing Utilities and Services	14	166	3.3%		
					Water Supply	22				
					Sewerage	34				
					Land Fill	75				
					Electricity	22				
8	Protected Reserved	15-25%	14	Urban Forestation	Urban Forestation	150	150	3.0%	1,571	31.1%
			15	Agriculture	Agricultural Reserved	1,199	1,199	23.7%		
			16	Water Bodies	Canals and Ponds	105	105	2.1%		
			17	Vacant	Vacant Area	117	117	2.3%		
					Total Area for Future Development of Matiari	5,056	5,056	100%	5,056	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 1,328 acres of residential land use is proposed, which will create 4 housing units per acre on average. Thus in overall town more than 5,575 housing units are expected to be in town by 2037.

There are existing vacant land parcels in overall town, specially in southeast of the core urban area have a considerable potential of infill development for residential use. This will somehow fulfill the partial need of new migrants coming from other areas in search of better living in the immediate phase. For low income group in short term phase (priority project) land of 30 acres adjacent to Technical College has been proposed. While for other income groups, mixed density (low, medium and high) residential areas

are also proposed. Moving ahead, for the long term phase, areas are also being reserved for residential development as per future requirement, which will also include apartment buildings.

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

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

New Residential Scheme [8]		
S.No	**Land Use**	**SBCA Standards**
1	Residential	55% max
2	Commercial	5% max
3	Parks	5% min
4	Playgrounds	5% min
5	Public Uses	5% min
6	Educational	3% min
7	Roads	22% min

- **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 - Large commercial activities

Houses - Applicable SBCA Bylaws[9]					
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**

  In Matiari Town, the trend of vertical residential and commercial development, in form of apartments is already a little existing. Secondly, as new migrants are expected to come DHQ

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

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

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. 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 buildings 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

Apartments - Applicable SBCA Bylaws[10]					
Types	**Densities[11] 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)

4.4.2 Commercial Zone

This zone is mainly mixed use commercial with state of art buildings. The smart development will be preferred from medium to high density and less foot print, in order to utilize the land efficiently with sufficient open and green spaces.

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

- **New CBD (Commercial Business District)**
  Considering the shape and growth of the town, the New CBD has been located in the area of central attraction accessible from NH-5 Road and existing bypass. The main land uses of the CBD will be regional corporate headquarters, financial centers, media houses, IT / software,

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

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.

Matiari and it's environ have many sites of historical significance as Thousands of people from all over the country come to visit (ziarat) and pay tribute to this great Saint during the annual URS every year.

- **Shrine of Shah Abdul Latif Bhittai:**
- **Jamia Masjid Matiari:**
- **Shrine of Hazrat Makhdoom Sarwar Nooh: Saeedabad Monument**

Considering the potential of tourism, the New CBD area will also accommodate convention center, expo center, hotels, shopping malls, exhibition ground, etc.

- **Sub Commercial Centers**

  In continuation to the main CBD, it is recommended to place sub commercial areas at other major intersection to share the burden of commercial activities. Thus, four sub commercial centers are proposed along Hyderabad, Hala NH-5, Tando Allahyar and Tando Adam link Roads to accommodate commercial facilities. Further small commercials within the residential areas will be formed for retail commercial activities of everyday goods required to fulfill the daily need of the 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[12][13]	**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

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

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

4.4.3 Economic Zone

In view of contextual requirement, the emphasis is given to other economic activities also, instead of only industrial development. The main criteria is to rely on local economic potentials, which mostly related to technical service and upcoming new type of markets.

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

- **Trade and Commerce**
  In Northeast side of the town along NH-5 and proposed bypass Roads, trade and commerce area is positioned. This will provide in and out trading activities of the region specially to other areas of the district. It will includes grains, fruit and vegetable markets, wholesale markets, slaughter house, storage areas etc.

- **Warehouses**
  The warehouses area is proposed next to trade and commerce, also accessible from NH-5 via Proposed bypass Road. For all of these trading activities large to small scale warehouses will be required, comprises of 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.

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[14]	**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

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

4.4.4 Livestock Zone

Since Matiari is not only an agricultural and industrial town, local inhabitants rely on livestock for another source of income. In this regard livestock zone is placed in Southeast direction along Tando Adam link Road, to promote livestock production. The main emphasis is to be given to cattle production and their required facilities and services. In addition poultry is another requirement to fulfil through the livestock zone.

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.

- **Dairy Production**[15]
  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 buffaloes, cows, sheep, goats, camel, poultry and ostrich; 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

[15] Dairy Plots, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.8, page no 149.

4.4.5 Industrial Zone

In order to increase employment opportunities and production activities; industrial areas need to be developed. It will create more jobs, investment options, open new markets and at the end of the day will boost the economy of the town.

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

New Industrial Estate [16]		
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 labor and staff is allowed at rear.		

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

- **Cottage Industrial Area**
  This cottage industry is one of the main source of income as most the households indulge themselves with Ajrak manufacturing industry which is the trademark of Matiari district. Thus it is highly recommended to promote Ajrak production and its associated market in this area.

  In addition the cottage industries could also include Khaadi, kaashi handicrafts, souvenirs etc. Other than cottage Industries, the small scale industries will include flour mills, rice mills, ice factories, packaging of fruits and vegetables, feeder crops, etc.

- **New Industrial Area (Reserved)**
  The New Small Industrial Area is proposed along Tando Allahyar Road, beside to cottage industrial area. It is highly recommended to first filled the cottage industrial areas, then explore this reserved area according to the economic need of the town. This is more appropriate to develop small scale industries, and avoid further development of heavy industries to keep the city environment clean. It is not suggested to develop whole area at once, instead as per the need. Preferably starting from the road accessible side and keeping further area reserved for future use when firstly developed area utilized.

The following guidelines are for industrial zone development:

[16] Land Allocation for New Industrial Estate as per Sindh Building & Town Planning Regulations, Chapter 20.4.2, page no 124.

Permitted Uses	Allied Permissible Uses
- Small Scale Industries - Processing Units - Manufacturing Activities - Warehouses or Godowns - Workshops	- Showrooms - Mixed-used buildings - Residences for workers - Fueling stations
Applicable SBCA Bylaws[17]	**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

4.4.6 Health and Welfare Zone

This zone is specifically for health and welfare related large scale activities. It will be a specialized area with high tech health facilities, social welfare and supporting services; with advance infrastructure. The aim will be to provide all specialized health solution within the town, and to serve the population beyond city borders, like nearby urban and rural localities.

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

- **Health and Welfare Areas**
  Since DHQ Hospital is already upgraded, thus one sub health and welfare center is proposed along Tando Allahyar Road. This health area is marked in regards to the major radial roads and their connectivity, in order to make it accessible for other towns as well and to attract private investment in health and welfare sector.

  Along the DHQ Hospital it is suggested to have further extension of DHQ Hospital with Medical and Nursing Colleges, staff residence, hostels, community and allied facilities. It is widely possible that some of these areas will be utilized for distinct health and welfare facilities in long term phase; like specialized hospitals, research and welfare centers etc. These could also include; Rehabilitation Centers, Special children, Edhi Homes (orphanage / old age / women) etc. These will also comprises of the specialized units like oncology, urology, infertility centers, organ transplantation, and specialized treatment centers, research and development centers.

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

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[18]	**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

4.4.7 Educational Zone

The large scale educational land uses will be development in this zone, focusing towards the global trend of education specially for upcoming generations. The aim is to create a knowledge base hub, to provide quality education in all diversified filed, in order to upgrade the livelihood of the local as well as the regional population.

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

- **Educational Areas**
  Similarly to health facilities, five educational areas are proposed along major connectivity corridors, to provide educational facilities in all zones of the town. These areas are located at Hyderabad NH-5, Hala NH-5, Inyatullah Memon, Tando Allahyar and Tando Adam link Roads. One of these education areas, will mainly for the public sector general university, which is lacking in the town. The idea is to first introduce common educational fields like languages, humanities, applied sciences, arts, commerce, social sciences etc., which could be modified further. Afterwards broad-spectrum of new ranges of education will be added according to the demand of the society, in form of wings, departments and blocks.

  In addition to academic buildings; allied facilities like administration, sports grounds, and health clubs will also be accommodated here. Since it will be the primary level university of the

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

town, thus it will also contain large number of students, faculty and staff. This huge influx will also require residences with community facilities.

It is also proposed to provide government degree colleges for boys and girls, separately in most of these educational areas. It is suggested to accommodate all the required facilities and service like; libraries, laboratories, playgrounds, washrooms, etc. The library, data and information centers and scientific research institutes are also recommended in these areas to provide all kind of facilities for research and development in different fields.

Some of these areas will also include; poly technical college for boys and girls, women development center (working women hostels, day care centers), certified computer and IT training centers, research centers, etc. The vocational training centers are also suggested to be placed in some of these areas to cater need of under privileged youth for better skills and technical knowledge. This will provide space for skill development centers, technical education for the local and surrounding population to accommodate in the current job market.

As the society is moving towards global dynamics, diversified fields of education will be prerequisite. These could include upcoming need of the job market like; engineering, business, management, finance, media, IT and software, etc. The purpose behind is to involve regional level youth in the education and research, in order to enhance the educational attainment level.

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[19]	**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

[19] Ibid

4.4.8 Religious Zone

In the proposed master plan two religious sites are allocated in the Matiari Town. Both are accessible from bypass Road.. These are not necessarily to be developed soon, as presently there are sufficient religious places. These 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[2021]	**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 existing offices of Public Administration are mostly along Inayatullah Memon Road. Considering future requirements, the new public administration area is also marked opposite the existing area.

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

- **Extension of Public Administration Area**
  The public administration offices will includes District Secretariat, Development Authority, Town Committee Offices, Line Departments, Local Government Offices, Town Planning Department, Judiciary Complex, Circuit House etc.

  As Matiari is a district headquarter, in future with the rising activities more space for different public offices and institutions will be required. With this assumption future extension area for public administration need to be reserved.

[20] Ibid

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

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.

- **District Jail Extension**

  The District Jail is proposed along Inayatullah Memon Road in southwest direction. This will serve the purpose of District Jail with all required needs and will also fulfill the residential requirement of the staff of various levels.

The following guidelines are for public administration zone development:

Permitted Uses	Allied Permissible Uses
- District Secretariat, - 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[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

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:

- **Grand Park**

  At the intersection of Proposed Bypass and Tando Allahyar, a large Grand park is proposed in the town. 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.

[22] Ibid

- **Sports Complex**
  Behind the Existing Public administration area a Sports Complex is proposed. It will include cricket, football, hockey and other ground, cultural center and gymnasium. These type of sports facilities will be as per standards to promote domestic sports.
- **Amusement Park**
  The site for amusement park is proposed at the intersection of proposed DHQ Hospital Link Road and NH-5 Road. In this area large scale amusement facilities like thrilling rides in a safe and pleasant manner will be provided.

- **Festival Grounds**
  Behind the proposed Cattle park an area is located for the purpose of festival grounds. Considering local tradition and types of festivals, a large space is designated for such events. These grounds will be used for large population events like carnivals, eid festivals.

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

At present there are number of graveyards in the town, which have sufficient space available for immediate need. However, for long term there is one graveyard proposed in west of the town. This site is accessible from NH-5 Link Road.

This graveyards can be further divided according to the requirement of practicing religions in the town.

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

In Matiari Town, the transportation is mainly based on road network of radial roads and bypasses with terminals and intersections. 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 Level II secondary zoning of transportation land use will be as follow:

S. No.	Major Roads	ROW (ft)	Forestation (ft)
i.	New Bypass	200	200
ii.	Existing Bypass	200	200
iii.	Tando Allahyar Road	150	100
iv.	Tando Adam Link Road	150	100
v.	Proposed Link road for DHQ Hospital	100	50
vi.	DC Office Road (inaytullah Memon Rd)	100	50
vii.	Proposed Public transports Link Road	100	50
ROW – property to property distance **Forestation on both side of ROW**			

- **Proposed Road Network**

  The proposed road network is originate from the existing radial roads (Tando Adam, Hala, Hyderabad, Tando Allahyar and Tando Adam Lin Roads) and Matiari Bypass. By adding New Bypass the existing roads becomes major connecting corridors and Matiari Bypass act as main spine for the Matiari Town through widening and beatification.

  All proposed Major Roads (primary, secondary and tertiary roads) of the master plan will be dual carriageways with green medians in the center; as shown:

  Primary Roads: The two bypasses i.e. Matiari Bypass and New Bypass, running on the periphery of the town are considered as Primary Roads,. 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 side 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 the town with other towns and arteries connecting radial roads. It will have a right of way of 150 feet (min) with three lanes, service road, median, footpaths, and parking and cycle/pedestrian tracks. These roads includes; Tando allahyar, Tando Adam Link Road.

  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. These roads includes; Proposed Link road for DHQ Hospital, DC Office Road (Inaytullah Memon Rd), Proposed Public transports Link Road.

- **Public Transport Terminal**

  A public transport is proposed long the NH-5 in the south of the town. This 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 these major roads; as most of residential, educational and health related traffic will be generated and these will cover most of the town. 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 staff.

- **Truck Terminals**

  Likewise, in public transport terminal separate truck terminal is also proposed. Since from these point all industrial and economic activities are connected, these found more appropriate

locations for heavy traffic and goods transport. These proposed terminals will help in transporting goods from / into the town, which will benefit and boost the economic activities of the town.

Since Matiari is a regional trading center and it would also require containers facility. It is recommended to mainly comprise of the container yards and related functional spaces. In addition required residence for the drivers and other staff with small offices, rest areas, washrooms, shops etc.

- **Air and Railway Connectivity**

  Regarding air connectivity, it is recommended to use Hyderabad Airport at distances of 40 kilometers in South of Matiari Town. The City is also linked with the national network of Pakistan Railways through the Karachi railway line via Karachi-Lahore lane. Tando Adam Junction and Odero Lal station are among the oldest railway stations in Pakistan. This line is the part of the first railway line (Karachi-Kotri) for public traffic between Karachi and Lahore. Currently, railway traffic is limited due to its operational cost, but long route trains are running on tracks to facilitate the public. So it is suggested to Odero Lal and tando adam junction for Matiari Town.

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[23]	**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

The utilities and services provision is also made in the master plan. This land provision is mainly for large scale utilities and services.

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

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

- **Water Supply**
  The main water supply sources is Rohri canal, and its Brachnch, (Pano Shakh). In continuation of existing water supply network, an area along Tando allahyar Road is suggested for water supply works. This additional area has been reserved to extend the water reservoirs as per the town's water demand and related water supply infrastructure. This increase will also cater to water supply filtration plant and other advance purification mechanism.

- **Sewage Treatment Plant**
  The area is designated for STP and its related uses, in South direction accessible from tando adam link Road. The site is low in elevation level with respect to nearby main drain, which will helpful to relay mainly on gravity flow. From very first it is not necessary to setup a fully mechanized STP, but it is suggested to start with oxidation ponds then proceed toward advance management of waste water.

- **Landfill Site**
  A landfill site is proposed at outskirts of town area, in south side considering wind direction. This landfill site is directly accessible from Tando dam Link via Drainage Chanel Road. As the whole town will grow according to the master plan it will serve the population for next 20 years or even beyond.

- **Grid Station**
  Grid station in Matiari Town is existing along NH-5 Road. Its extension for immediate need is possible to extend in same premises. The extended facility will benefit the residents as per the need of the present consumption of the town. However the grid station extension is proposed for upcoming future load and requirement.

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 New Bypass 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 road after urban forestation reserved areas.

In order to protect New Bypass 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 New Bypass 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.

It is recommended to plant locally available species for urban forestation. This region is gifted with a large variety of natural vegetation of grasses, shrubs and trees.

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 along New Bypass. 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 recommended crops for production are; sugarcane, wheat, rapeseed and mustard, cotton, jowar, maize, gram, and barley. Due to its soil and topography, Matiari is an ideal place for sugarcane cultivation. In addition to these, fruit orchards are also found in this district.

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

In Matiari, the main water source is Rohri Canal and its Branch Pano Shakh. So it is suggested Pano minor's 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 is to cater the emergency need at time of any disaster. With this respect areas outside the town limit will 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 Matiari Town but being on the peripheral area, would not disturb the town activities in general and it is directly accessible from the New Bypass.

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.

SECTOR WISE PROPOSED STRATEGIES

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. 25% of the houses were constructed in between 6 to 10 years and 39% of the houses were below 120 sq. yards with an average of 6 members in each household. With this average number of family members, 44% of the houses have only two rooms. As far as the utility services in the houses are concerned, basic services need improvement as the sample survey reveals 71% of the houses have drained (flush system) in their houses while 29% of the houses have un-drained toilets which require manual cleaning. Only 71% of the houses have piped supply (House Connection) while 18% of the houses use groundwater by manual hand pumps. Conditions of drains are also alarming, 86% of the drains are open and only 2% of the households have covered drains. This section further elaborates on the general housing condition of Matiari town. Major reasons for this housing backlog in Matiari are lack of resources, inadequate planning, and wrong land development policies that favor the elite at the cost of poorer sections of the society. 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.

Table 5-1: Housing Statistics

Administration Unit	Past Census 1998				Current Census 2017				Projected 2037	
	Population	AGR	No. of HH	HH Size	Population	AGR	No. of HH	HH Size	Population	No. of HH
Matiari TC	16,336	1.38%	2,238	7.3	21,195	1.38%	4,169	5.1	27,879	5,484
Matiari Taluka	218,065	1.57%	38,940	5.6	340,677	2.38%	65,997	5.2	544,876	105,555
Matiari District	494,244	1.57%	88,258	5.6	769,349	2.36%	143,023	5.4	1,225,802	227,000

Katchi abadis

In urban areas, the problem manifests as unstoppable growth of squatter settlements known as katchi abadis and encroachment of state and private land. It is estimated that 50% of the urban population of Sindh, now lives in katchi abadis and informal settlements.

Katchi abadis of Matiari DHQ Town

According to data provided by Sindh katchi abadis Authority (SKAA), that there is only one site is identified (Yet to be notified) as Katchi abadi in Matiari DHQ Town named as Memon Colony. It spread over 12 acres covering 300 housing units with approx. 5,000 population. It is estimated that 25% population of Matiari TC resides in katchi abadis. Up gradation of Katchi Abadis and policy /strategic guidelines need to be formulated for stoppage of this practice.

5.2 Issues

The following are the major issues in the housing sector:

- Inadequate supply of developed land.
- Poor land administration with inadequate legal and regulatory systems.
- Housing and associated infrastructure is in dilapidated condition requiring improvement / replacement
- Unchecked growth of squatter settlements: Katchi Abadis encroachment on state and vacant land is a direct outcome of the housing shortage.
- Shortage of finance continues to be the major constraint in housing production, maintenance and growth.
- Due to inflationary trends in the economy; the cost of building material have sky rocketed.
- Most of the population of Matiari is living in slums areas and dilapidated houses in the core urban area of Matiari.
- The housing density is quite high in the core urban area of Matiari, causing congestion and issues of poor light and ventilation.
- There is a lack of basic utility services such as water supply, sewerage and drainage system in the entire city of Matiari, but the living conditions in the core urban area of Matiari are very poor due to the lack these services.

5.3 SWOT analysis

HOUSING			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Majority of the population lives in self owned houses 2. More than half of the urban area population has pacca houses 3. Most of the formal population is served by	1. Low demand of public housing. 2. Land shortage 3. High prices of houses in private sector	Opportunity for local micro financing for housing Installation of basic utility services through new projects	1. Homelessness 2. Commercialization 3. Increase in urban sprawl 4. Inflation of land. 5. Shortage of open spaces in urban areas 6. Formation of urban slums

electric, gas and water supply			7. Relocation of higher income groups to other towns

5.4 Need Assessment

As per the 2017 census population results, Matiari TC area had a household size of 5.0 persons and total housing stock of 4,169 households, Most of them were categorized as Pacca houses which include Pacca (Brick construction) and RCC houses.

Table 5-2: Housing Backlog

S. No.	Housing	Population	Household Size	No. of HH
1.	**Present 2017**	**21,195**	5.0	4,169
2.	**Future 2037**	**27,879**	5.0	5,484
3.	**Additional Required (2017-2037)**		5.0	1,315
Source: Consultants Estimate 2018 & 2017 Census Report of Matiari				

On basis of projected Population for year 2037 the increase in population is 27,879 with estimated additional housing requirement of 1,315

5.5 Policy Guidelines[24]

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

5.5.1 Policy Measures for Land

- Priority Identification of Land for Housing
  As an immediate measure, the provincial, municipal, metropolitan and local authorities under the plan shall identify parcels of state and other lands for housing development in the urban and rural settlements in their respective jurisdictions.
- Land Acquisition
  The procedural and legal bottlenecks in the acquisitions process shall be removed and land acquisition laws shall be suitably amended to make provision for unified, transparent and market value oriented systems
- Land Information System
  Development of a comprehensive land information system using modern technology to record correct and up to date information regarding inventory and land classification, settlement patterns, land values and land availability on all land in urban and rural areas.
- Land Registration and Tenure System

[24] National Housing Policy 2001

The informal and customary tenure systems shall be rationalized into a formal and registered social contract.

5.5.2 Policy Measures for Housing Finance

- Financial Institutions shall be encouraged to give mortgage loans for housing purposes at market rates.
- Housing finance institutions shall be encouraged to promote savings and provide micro loans for low income group through community organization, NGOs and CBOs.
- Part of the sale proceeds of valuable public land shall be set aside to subsidize low income housing and housing for the poor and needy.
- Subsidized loaning facilities shall be extended for rural housing construction and improvements through micro-financing system and institutions like Khushhali Bank, Zakat funds, etc.

5.5.3 Policy Measures for Katchi Abadis, Squatter Settlements & Slums

- The process of regularization and up-gradation of the pre-1997 Katchi Abadis shall continue as per current policy. However, Katchi Abadis, which are hazardous by virtue of being close to railways tracks or located under high tension power lines, or are on or close to the riverbeds, or on lands needed for operational /security purposes, need to be relocated at appropriate places by LOAs.
- Formation of new Katchi Abadis shall not be allowed and shall be discouraged by exercising strict development controls in all urban areas.

5.5.4 Policy Measures for Low Income Housing

- In all government and private housing schemes, 20% adequate plots for low income people shall be reserved to offer them at affordable prices. In addition private developers will also be encouraged to develop low cost housing schemes.
- City and District Government shall prepare housing plans to cater for the current and future housing needs for low income groups on incremental basis at affordable, cost.
- Building regulations, building by laws, and planning standards shall be revised to permit incremental development and lowering of planning standards to make it cost effective for low income groups.
- A mechanism of new approved housing schemes should be established in which TC should be bound to provide piped water, sewerage, electricity and gas connection to approved scheme with coordination with other relevant authorities.
- Shifting / removal of illegal settlements from hazardous zones in addition to Up gradation / regularization of notified Katchi Abadis in Matiari Town

- Construction of housing for low income group

5.6 Strategic Development Plan

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 2037, 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 etc. 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

i. Development of Housing Schemes for Low Income People

- **Project Scope & Justification**

Description	Results
Present Population census 2017	21,195
9% Population of Matiari Living in rental houses with no house ownership	1,908
Households required @ 5.0	382

Most of the population of town is living in slums areas and depreciated houses. Significant households in Matiari have low income. These households are unable to acquire their own houses so resolve their housing problem resulting rising the number of slums areas and encroachment. The living condition in such areas are poor they face so many problems and mostly don't have utility services. To relieve the problems occur by this situation, the public sector in Matiari should launch as part of the urban strategy, an affordable housing program for low income households.

The living condition in such areas is not very good, they face so many problems with limited facilities of utilities & infrastructure. According to Socio Economic Survey results, the status of ownership of houses is like 89% family owned, 2% rent free/Govt. employers and 9% on rent. Therefore on a priority basis, the provision of a developed site for residential purpose is proposed to accommodate at least 382 families in short term plan.

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 towns may be possible
- This process improve the living standard of the town

The development of housing site / scheme will be as per the minimum standards to reduce the cost of the project.

- **Project Benefits**

Part of the capital expenditure is expected to be recovered through Sale of commercial plots and buildings. The project is expected to generate direct income. The project will directly give benefit to the low income people. Improve in living conditions are associated with the improvement of social and long term economic benefit.

- **Implementing Authority -** Government of Sindh, Matiari Municipal Committee, HESCO etc.

- **Estimated Cost: 450.00 Million Approx. (Short Term)**

Project Name	Long / Short Term	Proposed Area (acre) & Lengths (m)	Preliminary Cost (million/- PKR)	Justification
Land acquisition for Low Income Group	Short Term	30 acre	150.00	382.00 Number of units up to 120 sq. yds. 20 houses per acre. For this proposed site land acquisition assumed five million per acre.
Development of Housing Site and Services for Low Income Group	Long Term	30 acre	300.00	382.00 Number of units up to 120 sq. yds. 20 houses per acre. For this proposed site development we have assumed ten million per acre with internal allied facilities and infrastructure.

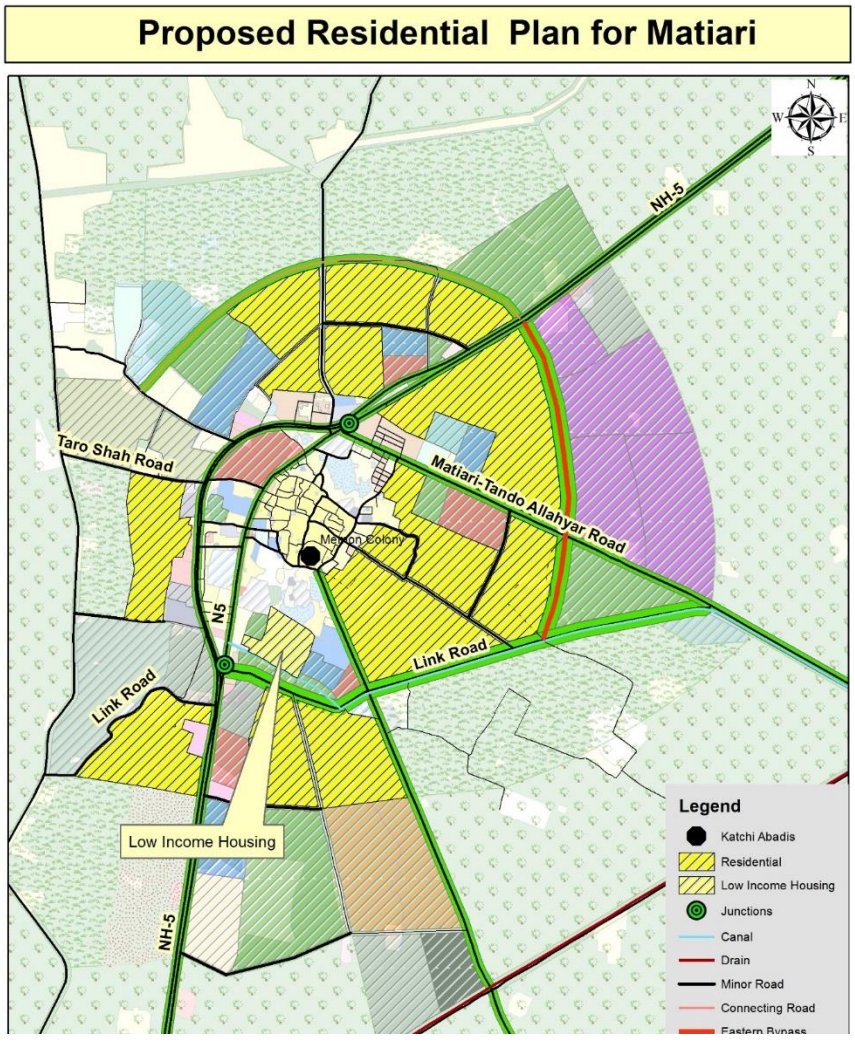


Figure 5:1: Proposed Residential Landuse for Matiari Town

6 SOCIAL INFRASTRUCTURE

6.1 Education

6.1.1 Existing Situation[25]

In district Matiari, there are 829 viable schools out of which 779 are functional, 21 schools are temporary dysfunctional, 15 schools are viable dysfunctional, and 14 are permanently dysfunctional. Furthermore, out of total viable schools in the district Matiari, 67 schools are for boys, 78 schools for girls and the remaining 684 schools are co-education. The enrolment in viable schools of the district is 93,622 (male 60,062 and female 33,560), the number of teaching Staff is 3,357 out of which 2,661 are male and 696 are female.



Figure 6:1: Govt. Boys Primary School Matiari

Furthermore, there are 767 primary schools in the district Matiari, out of which 720 are functional, 20 are temporary dysfunctional, 13 are viable dysfunctional, and 14 are permanently dysfunctional. Out of total primary schools in the district, 56 schools are for males, 70 for females, and other remaining 641 are co-education with an enrolment of 63,035 (male 39,749 and female 23,286) having Teaching Staff of about 2,107 out of which 1,694 are male and 413 are female teachers.

Additionally, the number of middle schools in the district Matiari is 17, out of these 14 are functional. Out of total middle schools in the district, 6 are for boys, 2 are for girls, and other remaining 9 schools are co-education. The enrolment in these schools is 2,160. Out of these enrolments, the number of boy's enrolment is 1,423 and girl's enrolment is 737 and the number of teaching staff is 112 out of which 101 are male teachers and other remaining 11 are female teachers.

Moreover, the available number of elementary schools in the district is 3 with full functionality. All elementary schools of the district are co-education schools. The enrolment in these schools is 1,087 having 680 boys and 407 girls' enrolment. There are 31 teachers are working in elementary schools of the schools of the district, out of which 30 are male and 1 is female. Also, the number of Secondary Schools in Matiari is 39, out of which 4 are boys, 6 are girls, and the other 29 are co-education schools. The enrolment in secondary schools is 23,983 (male 15,862 and female 8,121), with the teaching staff of 1,010 (768 male and 242 female) teachers.

[25] *Sindh Education Profile 2016-2017*

In addition, there are 3 High Secondary Schools in the district, 1 is for boys and other 2 are co-education, with an enrolment of 3,357 (male 2,348 and female 1,009) having Teaching Staff of about 97, out of which the 68 teachers are male and 29 are female teachers.

i. Condition of Educational Institutions

There is overall poor condition of schools and college due to repair Lack of and maintenance or buildings, lack of playgrounds, libraries, electricity, labs, toilets etc.

To bring universal education ratio there is need to double the efforts by engaging teachers, increasing capacity of schools, operationalization of existing closed school and opening of new schools.



Figure 6:2: Govt. Girls Primary School

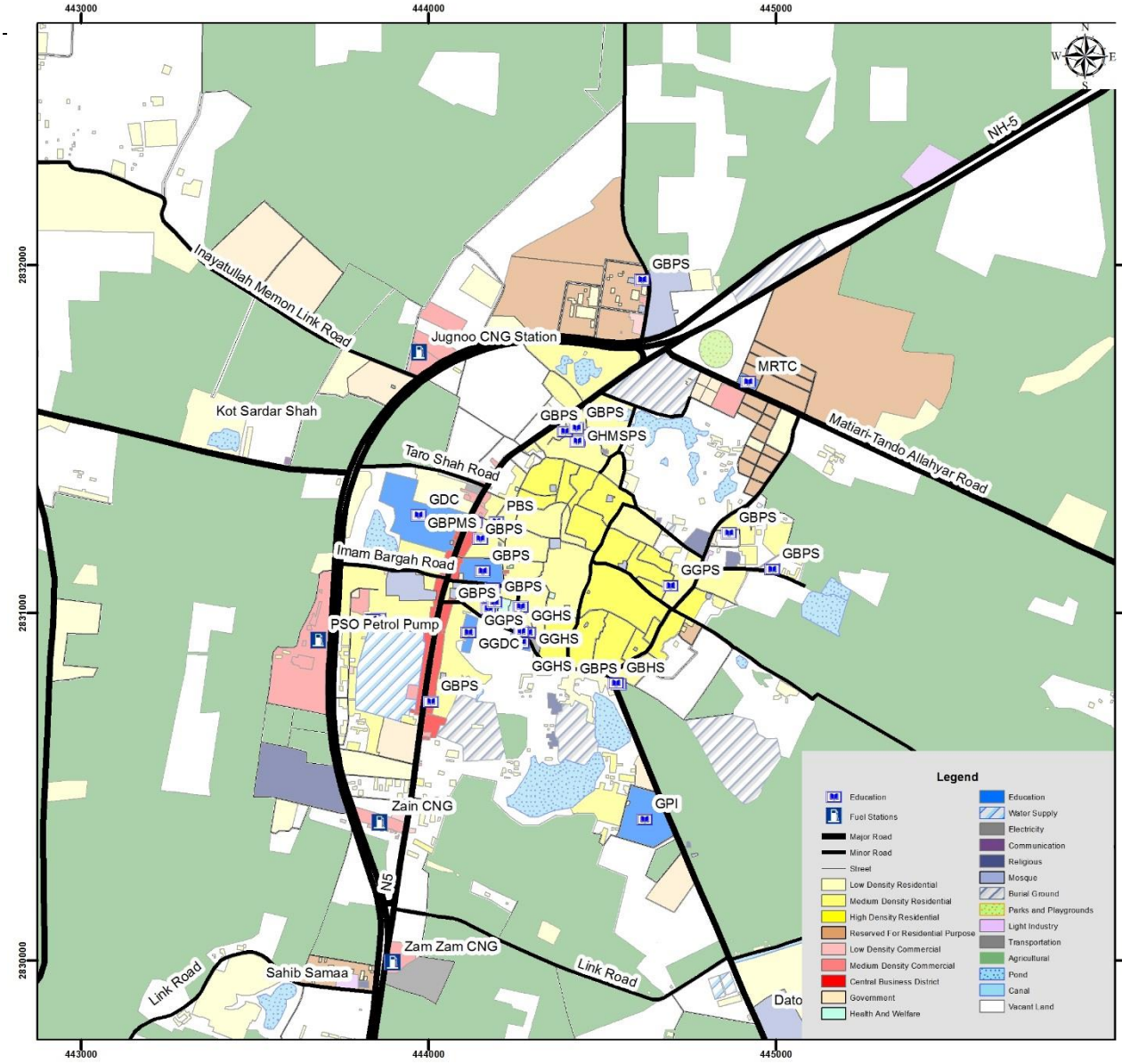


Figure 6:3: Educational Institutions in Matiari town

ii. Education Sector at Taluka Level

Table 6-1: Present Education Institutions and Enrolment Record at Taluka Matiari							
Primary, Middle, and Elementary Schools							
S. No	Type	Total Nos.	Class rooms	Total Teachers	Total Enroll	Student Capacity	Teacher Student
						Per Room	Ratio
1	Primary School (Co-education)	282	557	578	21,967	39	38
2	Govt. Girls Primary Schools (GGPS)	23	41	31	1,208	29	39
3	Govt. Boys Primary Schools (GBPS)	22	48	50	2,163	45	43
4	Middle Schools (Co-education)	4	23	40	780	34	20
5	Middle Schools (Girls)	2	2	5	13	7	3
6	Middle Schools (Boys)	4	7	17	189	27	11
7	Elementary Schools (Co-education)	2	9	10	418	46	42
Total		339	687	731	26,738	39	37
Source: RSU (Reform Support Unit RSU Education & Literacy Department. Government Of Sindh 2017)							

iii. High and Higher Schools

Table 6-2: Present Education Institutions and Enrolment Record at Taluka Matiari							
Secondary and High Secondary Schools							
S. No	Type	Total Nos.	Class rooms	Total Teachers	Total Enroll	Student Capacity	Teacher Student
						Per Room	Ratio
1	Secondary School (Mixed)	10	127	248	6,251	49	25
2	Secondary School (Girls)	2	11	32	856	78	27
3	Secondary School (Boys)	1	7	12	173	25	14
4	High Secondary Schools (Co-education)	2	23	54	1,562	68	29
5	Hi Secondary Schools (Boys)	1	23	43	1,795	78	42
Total		16	191	389	10,637	57	27
Source: RSU (Reform Support Unit RSU Education & Literacy Department. Government Of Sindh 2017)							

iv. Non-Professional Colleges

The present number of Non-Professional Colleges in district Matiari are 8 (male: 6, female: 2) further classified as 3 are Intermediate Colleges (male: 2, female: 1) with total enrolment of 1060 (male: 743, female: 317) and teaching staff of 49 (male:40, female: 9) and 5 are Degree Colleges (male: 4, female 1) with the total enrolment of 5,792 (male: 4412, female: 1380) and having teaching staff of 107 (male: 83, female: 24).[26]

Table 6-3: Present Non-Professional Colleges Enrolment Record

Institutions	No. of Institutions			Enrolment			Teaching Staff		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Intermediate	3	2	1	1,060	743	317	49	40	9
Degree	5	4	1	5,792	4,412	1,380	107	83	24
Total	**8**	**6**	**2**	**6,852**	**5,155**	**1,697**	**156**	**123**	**33**

Source: College Education Statistics-2014-15

v. Technical Institutions

The present number of technical institutions in district Matiari are 6 (male: 4, female: 2) further classified as 1 polytechnic institution for a male with a total enrolment of 270 and teaching staff of 18. Also, there is 1 Mono-technic Institution (male) with the enrolment of 390 and teaching staff of 8. Besides, there is 1 male commercial institution with 25 male enrolment and 7 male teachers and 3 Vocational institutions (male: 1, female 2) with the total enrolment of 99 (male: 45, female: 54) and having teaching staff of 14 (male: 6, female: 8).[27]

Table 6-4: Present Technical Institutions in District Matiari

Institutions	No. Of Institutions			Enrolment			Teaching Staff		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Polytechnic Institutions	1	1	-	270	270	-	18	18	-
Monotechnic Institutions	1	1	-	390	390	-	8	8	-
Commercial Institutions	1	1	-	25	25	-	7	7	-
Vocational Institutions and Vocational Schools	3	1	2	99	45	54	14	6	8
Total	**6**	**4**	**2**	**784**	**730**	**54**	**47**	**39**	**8**

Source: College Education Statistics-2014-15

[26] *College Education Statistics-2014-15*
[27] *College Education Statistics-2014-15*

6.1.2 Issues

- Shortage of class rooms as per current enrolment
- Low enrolment level with gender disparity
- Shortage of teachers causing low quality of education
- Lack of provision of basic facilities i.e. washrooms, electricity, drinking water etc.
- Poor condition of schools and colleges due to lack of repair and maintenance of buildings
- In addition to classrooms, the rehabilitation of existing educational buildings with all basic and allied facilities are also required. Lack of allied facilities includes furniture, playground, laboratories, libraries etc.

6.1.3 SWOT Analysis

Education & Literacy			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Urban literacy rate is higher than rural 2. Literacy rate is 61%	1. The education status is quite poor in district Matiari 2. Most of primary schools do not have basic facilities in satisfactory condition, like drinking water, electricity and toilets 3. High demand rate for private schooling education system	1. More people will move to urban areas for education 2. More educational institutes are required 3. More PPP is required for educational sector.	1. Relocation of educated class to other major towns of province 2. The trend is barrier to establish higher education institutes by private sector 3. Expensive quality education

6.1.4 Need Assessment

I. Taluka Matiari (Includes primary, Middle, and Elementary education institutions)

- For the short term plan, the present need of classrooms in schools (Primary to Secondary) of taluka Matiari is 204 with the repairing of existing buildings with all basic facilities and training of teaching staff is required.

Table 6-5: Present need of Classrooms in Taluka Matiari		
S. No.	**Description**	**Results**
In Schools of Matiari taluka (Primary, Middle, and Elementary)		
1	Total Present Enrolments	26,738
2	Classrooms available at present	687
3	Students per classrooms at present	39
4	Classrooms required for present need @ 30 students per class room	891
5	Present shortage pf classrooms	204
Source: *RSU (Reform Support Unit RSU Education & Literacy Department. Government Of Sindh 2017) and Consultant's Estimates 2017*		

II. Taluka Matiari (Includes Secondary and High Secondary education institutions)

- The available number of classrooms for students are 191. As per the present figures provided by Reform support unit RSU education & literacy department, the occupancy rate in present classrooms is very high with an average 56 students per classroom. As per National Reference Manual (NRM) 40 students per classroom is the standard for college-level education. On the basis of standard occupancy of 40 students per classroom currently, there is a need of 75 additional classrooms in Secondary and High Secondary Schools.

Table 6-6: Present need of Classrooms in Taluka Matiari		
S. No.	**Description**	**Results**
In Schools of Matiari taluka (Secondary and High Secondary)		
1	Total Present Enrolments	10,637
2	Classrooms available at present	191
3	Students per classrooms at present	57
4	Classrooms required for present need @ 40 students per class room	266
5	Present shortage pf classrooms	75
Source: ***RSU (Reform Support Unit RSU Education & Literacy Department. Government Of Sindh 2017) and Consultant's Estimates 2017***		

III. Future Assessment (2037)

a. <u>District Matiari</u>

- <u>Primary to Higher Secondary</u>

The long term plan target is to achieve 100% enrolment with a 1:1 male-female ratio by 2037; therefore 4,794 additional classrooms will be required to accommodate the upcoming generation for the next twenty years. This need could be fulfilled either by addition in existing buildings or more new schools and colleges will need to constructed in future to serve an additional estimated population of 233,076 (10 and above).

Table 6-7: Future Requirement of Classrooms in Matiari District		
S. No.	**Description**	**Results**
Primary to Higher secondary		
1	Expected total enrolment by 2037 @ 100% enrolment	233,076
2	Total classrooms requirement till 2037	7,769
3	Present Supply (2017)	2,975
4	Additional classrooms requirement till 2037	4,794

b. Taluka Matiari

- Primary to High Secondary

The long term plan target is to achieve 100% enrolment with a 1:1 male-female ratio by 2037; therefore 2,286 additional classrooms will be required to accommodate the upcoming generation for the next twenty years. This need could be fulfilled either by addition to existing buildings or more new schools and colleges will need to construct.

Table 6-8: Future Requirement of Classrooms in Matiari taluka		
S. No.	**Description**	**Results**
Primary to High Secondary		
1	Expected total enrolment by 2037 @ 100% enrolment	94,946
2	Total classrooms requirement till 2037	3,164
3	Present Supply (2017)	878
4	Additional classrooms requirement till 2037	2,286

6.1.5 Policy Guidelines[28]

- Development of Teachers and professional substitutes;
- Construct required schools and higher education institutions in all districts. Take stock of operational and staffed schools and eliminate ghost schools.
- Launch a rural education program.
- 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.

[28] Sindh Vision 2030

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 increased the literacy ratio, living standard, employment opportunities of the future population.

i. Long Term Plan

- Increasing equitable access to quality ECE, primary and secondary education
- Improving the quality of learning outcomes through strengthening the teaching/learning process, improving the quality of teachers through merit-based selection and recruitment; improved accountability, and establishing a competency-based constructivist system of educational professional development.
- 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.
- Sindh Technical and Vocational Training authority (STEVTA) is providing the technical education to the people of Sindh for increasing their technical Skills. In Matiari, the peoples are significantly deficit in technical skills. By implementation of this project, people will enhance their technical skills and it also increase the employment status of the district.

ii. Short Term Plan

- Rehabilitations of Schools and Colleges with allied infrastructure
- TC to take over all site provided for schools in the new housing schemes to eliminate the chances of misuse and encroachment.
- Training programme for teachers to increase capacity building
- Vocational and skill training centers in alliance with contemporary demand
- Rehabilitation/Construction of Women Hostels for Teaching Staff and Working Women in Matiari

6.1.7 Priority Projects

i. <u>Rehabilitation of Schools and Allied Infrastructure</u>

➢ **Project Justification**

Education Plays Very Important Role to achieve the goals of any urban strategy. Currently, the situation of Primary to Higher Secondary in Matiari is not in satisfactory condition. Education should be the one of major goal of any urban strategy. Importance must be placed on girls schools because it was badly disregarded. At present, the condition of exisiting schools in DHQ town needs rehabilation and improvement of the infrastructure and Allied basic facilities like water, electricity,

toilet, playgrounds etc. (excluded the Core Urban Area of Matiari)*. The List of the schools in this project are given bellow:

S. No.	Name	Area (acres)
1	Govt. Girls High School Matiari	0.31
2	GBPS. Kachhi Mohalla	0.09
3	GBPS. Pir Sarhandi @ Kot Abdul Razzaque	0.14
4	GBPS. Muslim Matiari	0.11
5	Public Library Matiari	0.56
6	Polytechnic Institute	9.49
7	Govt. Boys Primary School	1.86
8	Matiari Research & Training Centre	0.44
9	Technical Collage Matiari	3.12
	Total	**16.13**

- **Project Benefits:** By the increasing in the litracy ratio the living standard of the population will improve and increase the employment oppertunities with in the district.

- **Implementing Authority:** Department of Education, Provincial Government and Matiari Municipal Committee

- **Estimated Cost: 632.36 Million PKR Approx.**

ii. <u>Establishment of Various capacity Building Training Programms to enhance Teaching / Academic capacities of Teachers.</u>

- **Project Justification:** Teacher's capacity Building Training Programs shall help to enhance Academic capacities. They note a marked improvement in their understanding of learning methodologies, child development, teacher-student relationship and the value of quality academic environment. By the implementation of this project, academic related people will enhance their teaching skills and it also introduces modern methods of teaching.

- **Project Benefits:** By implementation of this project, it will Increase the technical interests of the district and also increase literacy ratio to increase the employment and also boosts the city development.

- **Implementing Authority -** Government of Sindh, STEVTA, Education Department and District Works & Services Department Government of Sindh.

- **Estimated Cost: 20.00** Million PKR Approx.

Project Name	Short Term	Proposed Area (acre) & Lengths (m)	Preliminary Cost (million/- PKR)	Justification
Rehabilitation of Schools & Allied Infrastructure (excluding Core Urban Area with 30% buildup area)	Short Term	16.13 acre	632.36	4.83acre = 210786.8 sft, at the rate of 3000/- PKR per sft construction cost with all infrastructure cost. (considered 30% as Built up Area)
Establishment of Various capacity Building Training Programms to enhance Teaching / Academic capacities.	Short Term	-	20.00	Teachers Capacity building programs can also strengthen their teaching skills for better results.

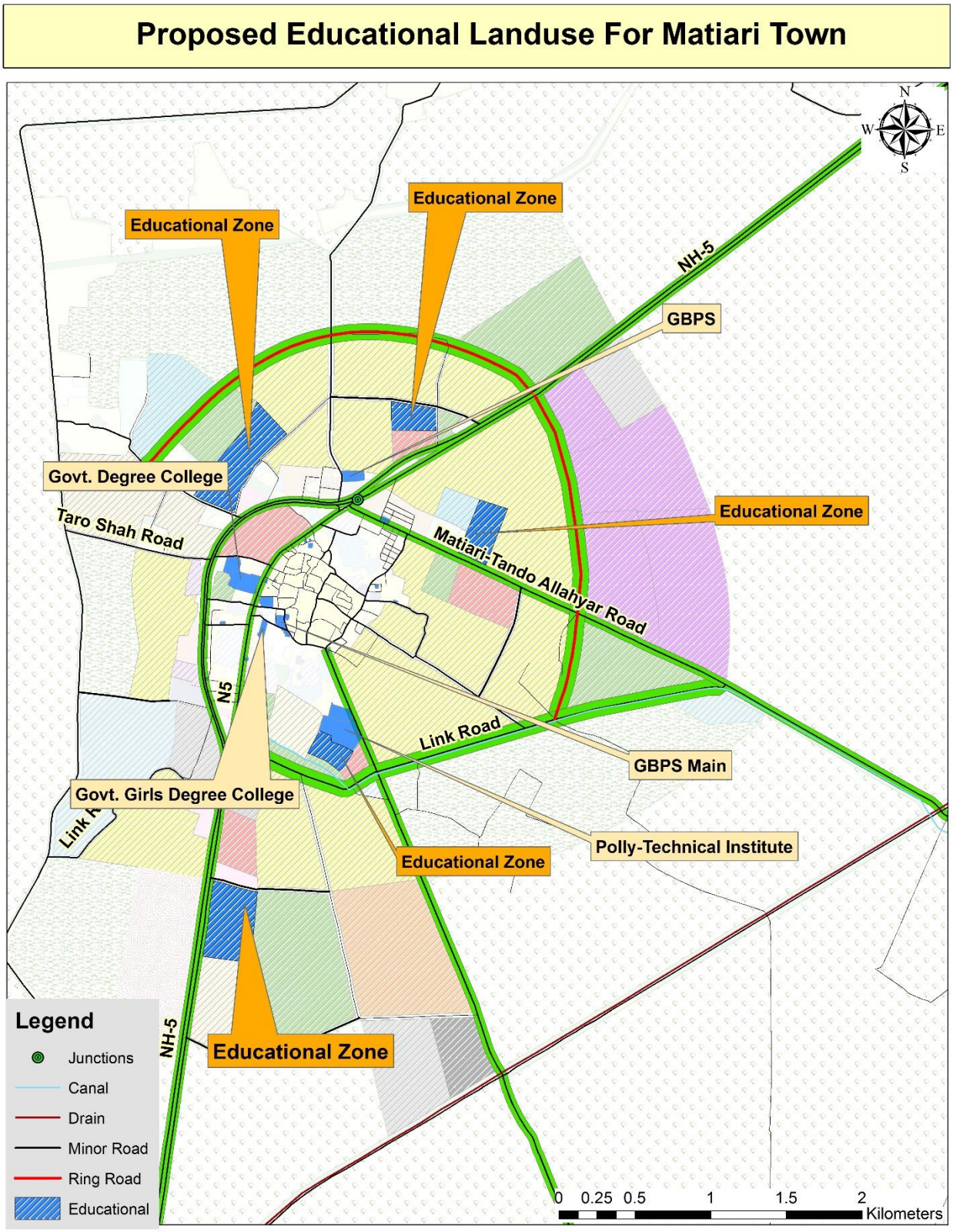


Figure 6:4: Proposed Educational landuse for Matiari Town

6.1.8 Immediate Action Plan for Core Urban Area –Education Sector

i. Rehabilitation and Up gradation of Educational Facilities

ii. All educational institutes & schools marked in core urban area should be rehabilitate with the structural stability, building repair work, access to utilities, provision of facilities, replacement of old furniture, presence of teaching and non-teaching staff etc.

iii. The up gradation could be made through addition of new building in same compound or addition of number of floors for new class rooms and allied facilities.

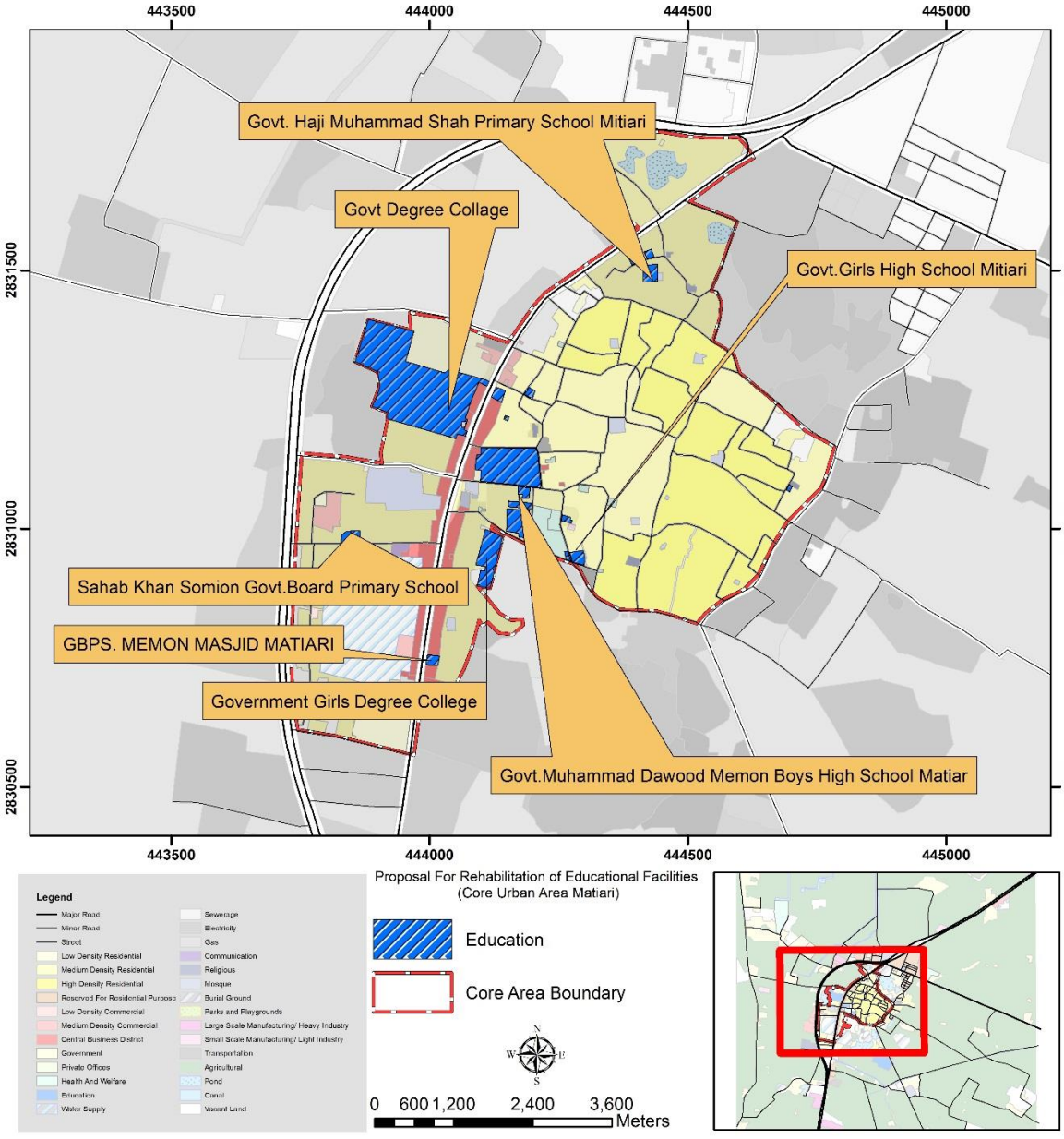


Figure 6-5: Rehabilitation & Up gradation of school & Colleges located in Core Urban Area

MATIARI - CORE TOWN AREA			REHABILITATION OF EDUCATION FACILITIES							
S. No	Education Facility Name	Area (acre)	Rehabilitation Required Area wise or job wise cost (PKR)							
			Street / Road / Parking	Utility Facilities					School Building Repair/ Renovation	Security
				Electricity	Water Supply	Sewerage	Gas	PTCL		
1	Government Girls Degree College	0.85	0.85	0.97	1.27	1.27	0.85	0.21	0.42	0.21
2	Govt. Haji Muhammad Shah Primary School Mitiari	0.22	0.22	0.26	0.33	0.33	0.22	0.06	0.11	0.06
3	Sahab Khan Somion Govt.Board Primary School	0.11	0.11	0.13	0.16	0.16	0.11	0.03	0.05	0.03
4	Govt.Girls High School Mitiari	0.15	0.15	0.17	0.22	0.22	0.15	0.04	0.07	0.04
5	Govt.Muhammad Dawood Memon Boys High School Matiari	0.10	0.10	0.12	0.15	0.15	0.10	0.03	0.05	0.03
6	Govt Degree College	7.09	7.09	8.15	10.63	10.63	7.09	1.77	3.54	1.77
7	GBPS. MEMON MASJID MATIARI	0.11	0.11	0.13	0.17	0.17	0.11	0.03	0.06	0.03
Total		**8.63**	8.63	9.92	12.94	12.94	8.63	2.16	4.31	2.16
Total PKR Rs. Million			**61.70**							

6.2 Health

6.2.1 Existing Situation

Currently, tertiary level health facilities of Taluka hospital THQ and BHUs are serving the regional population of Sindh at Matiari district. There is one civil hospital having 30 beds and 2 Taluka Hospitals at District having 90 beds to serve the district. The other health facilities spread over entire district are 4 RHC (Rural Health Center) having 52 beds, 7 TB Clinics, 21 BHUs (Basic Health Unit) having bed strength of 42, 71 dispensaries having 24 number of beds and 3 M.C.H.C (Mother Child Health Center).

Table 6-9: Government Health with bed capacity in District Matiari

Type	No.	Beds
Civil	1	30
THQs	2	96
BHUs	21	42
RHCs	4	52
Dispensaries	71	24
Total	99	244

Source: Health Profile of Sindh, 2017

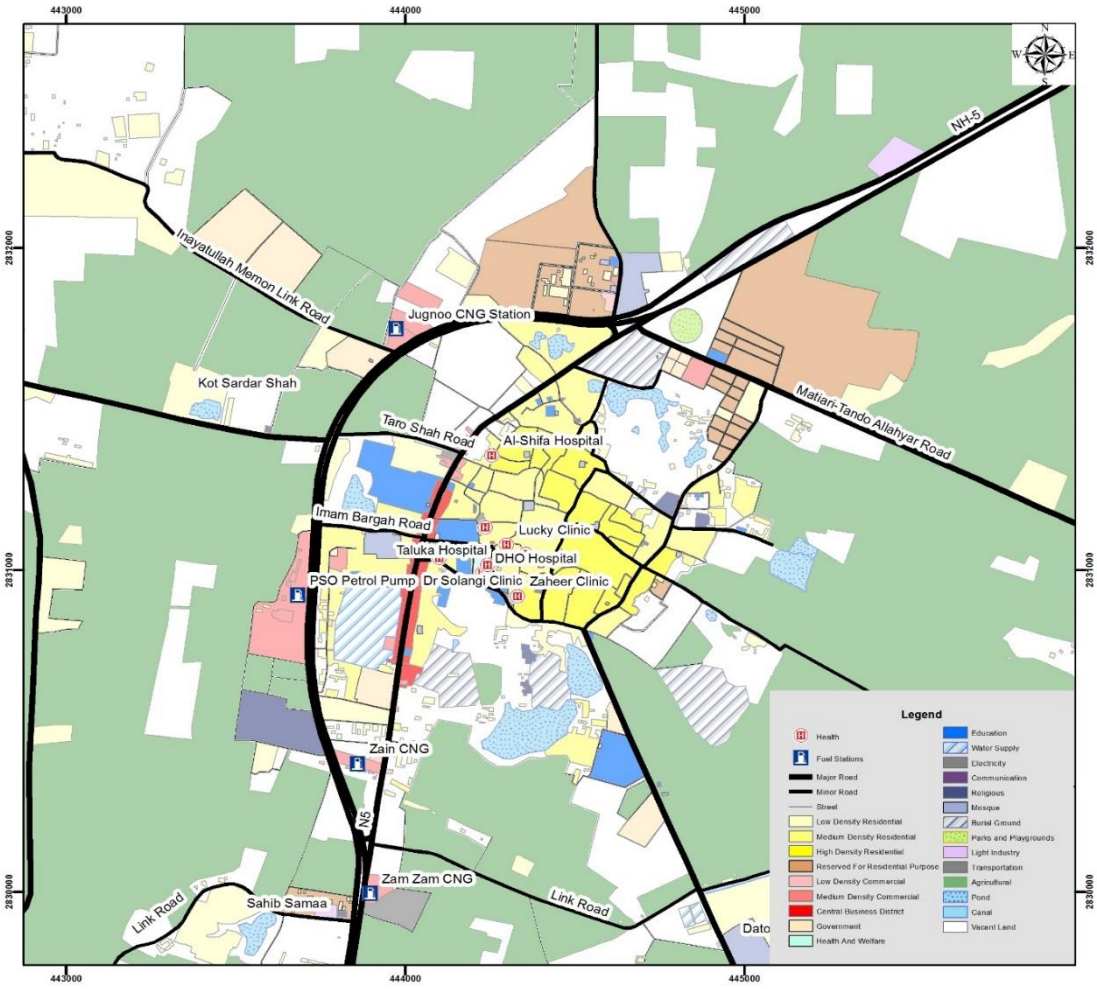


Figure 6:6: Health Map of Matiari TC

- **Medical & Para Medical Staff**

It is a quite disappointing the fact that more than 68% of sanctioned posts of doctors and para-medics are filled. At present, Matiari DHQ town has 34 sanctioned doctors out of which 23 are the actual appoint and remaining are vacant (including both male and female doctors). 11 positions of nurses are filled and the remaining 1 is vacant, 82 dispenser and other paramedic and non-paramedic staff performing their jobs i.e. ward boys, sweepers, gardeners, electricians and lab attendant. This number of medical staff is exclusive for private practicing doctors and paramedics.

Table 6-10: Medical & Para Medical Staff

S.No	DHQ Matiari			
	Posts	**Sanctioned**	**Filled**	**Vacant**
02	Doctors	34	23	11
03	Staff Nurse	12	11	1
04	Dispensers and Paramedics & Non-Paramedic Staff	88	82	6
	Source: District Health Officer, Matiari 2017			

- **Laboratories**

Currently, THQ/DHQ is facing a lot of problems due to the unavailability of Laboratorial facilities. The shortage of electricity, surgical instruments, and lack of machinery are major issues.

- **Drug Supplies**

The complete range of items was not available at the majority of the surveyed facilities. The most common reason for their non-availability was undersupply and delayed supply or lack of procurement powers at the district level. The DHQ/THQ Hospital and other health facilities are facing a lot of problems regarding the shortage of medicines supply. Most of the patients have to purchase medicines from the local market. The presence of sub-standard medicines in local markets adds troubles for the patients.

- **Private Health Facilities**

The Aga Khan University inaugurated its Mother and Child Health Research and Training Centre in Matiari. Purpose of the center is to expand its research capacity on mother and child health issues in support of national health policy as well as to strengthen the capacity of local healthcare practitioners.

- **Preventive Health Care**

Provincial Health Department Government of Sindh and Thatta District Administration is quite active in preventive health measures and from time to time has run various campaigns such as:

  - Polio Eradication (Anti-polio campaign)
  - Malaria Control Program
  - Epidemiological Data Collection
  - TB Control Program DOTs

- Leishmianiasis
- Leprosy Control Program
- Aids Awareness Program

6.2.2 Issues

- Large number of Vacant posts of doctors and medical staffs in health institutes of the district.
- Lack of training and housing facilities for LHW and paramedical staff
- Accessibility to health care facilities in remote rural areas is difficult.
- Lack of Health facilities such as wards, labs and OT facilities
- Lack of diagnostic and other Health equipment
- Deficiency of transferring serious cases from rural areas to hospitals

6.2.3 SWOT Analysis

Health			
Strength	**Weakness**	**Opportunity**	**Threats**
1.There is one Civil Hospital serving the district.	1. Limited health facilities in urban area 2. There are 244 beds for total population which are insufficient 1. Ambulance facility is lacking on accidental or emergency response system	1. More investment is required through PPP in health sector 2. More job opportunities for doctors 3. More job opportunities for the paramedical staff 4. More political will is needed to solve the issues of hospitals in Matiari	1. Less emergency response to health incidents 2. Death rate may increase. 3. Difficult to control eradication of epidemic diseases

6.2.4 Need Assessment

The NRM (National reference Manual) recommends 2 beds per thousand as the medium-term target. On this basis, approximately 1,539 beds will be required to provide gradually. Even though available beds are 244, further 1,295 beds are required to fulfill the present need of the inhabitants for bed capacity. The shortage of doctors and paramedical staff, laboratory equipment, diagnostic services and quality of buildings are an evident problem in small/medium towns and will need to be tackled with an increase in beds.

Table 6-11: Present Assessment of District Matiari						
Present Population	**Available Beds**	**Present need**	**Required Beds**	**Available Doctors**	**Present Need**	**Required Doctors**
769,349	244	1,539	1,295	202	769	567

According to WHO (World Health Organization) standards, doctor to population ratio is 1:1000, so taking that as a reference point, the present need of doctors is 769 while the number of available doctors is 202, and on this basis, the 567 more doctors are required to the health facilities of the public sector.

- Future Need Assessment (Population, Bed Ratio) 2037

The target up to the year 2037 is to provide 2 beds per 1000 projected district population as per standard is given in the National Reference Manual on Planning and Infrastructure Standards (NRM). **The required beds for 2037 are 2,208 and doctors are 1,024, the given numbers are excluded from the private hospitals and Clinics**. Present Need-Supply of beds and Doctors are given in the below table.

Table 6-12: Future Need Assessment at District Level

Future Health Need Assessment at Matiari District till 2037						
Future Population (2037)	**Available Beds**	**Future Need**	**Required Beds**	**Available Doctors**	**Future Need of Doctors**	**Required Doctors**
1,225,806	244	2,452	2,208	202	1,226	1,024

6.2.5 Policy Guidelines[29]

- Enhance basic health care by making it more accessible & affordable, efficient, effective and timely. This will be achieved by diversifying outlets through the involvement and support of other organizations that provide health or health related services.
- Regulate protection from disease and the quality of healthcare across the province.
- 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.

6.2.6 Strategic Development Plan

i. Long Term

- Provision of Mobile Health Unit for the peripheral area of Town (under supervision of district Hospital)

[29] Sindh Vision 2030

- Up gradation of BHUs, RHCs and MCHCs.
- Health awareness programme for the deprived population
- Research and development programme for doctors and paramedics staff
- Provision of diagnostic facilities, ambulance, pharmacy in all hospitals
- Tertiary Level Specialized Hospitals to cater District
- Enhancement of Mobile Health Unit for far-flung areas of the District
- Accommodation facilities for Doctors and Paramedic Staff

ii. **Short Term**

- Improve access to healthcare facilities as due to long journeys to hospitals many patient 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 District 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. The condition of BHUs and RHCs are also very poor, there should need to be rehabilitation of these institutes to provide sufficient and high quality health to the people of Matiari.

6.2.7 Priority Projects

i. Provision of Missing Facilities at DHQ Hospital

- **Project Justification**

Health is the fundamental need of the people. Currently health institutes are facing lot of problems due to unavailability of Laboratorial facilities. Shortage of filled doctors, surgical instruments, and lack of machinery are the major issues. Lake of female doctors and female staff. And the condition of BHUs and RHCs are also very poor, there should need to be rehabilation of these insitutes to provide sufficent and high quility health to the people of Matiari.

- **Project Benefits:** This project will provide high quality health facilities and free medicines to the people of District Matiari.
- **Implementing Authority:** Government of Sindh - Health Department
- **Estimated Cost: 10**0 Million PKR Approx. (Short Term)

Project Name	Short Term	Proposed Area (acre) & Lengths (m)	Preliminary Cost (million /- PKR)	Justification
Provision of Missing Facilities at Civil Hospital	Short Term	1.25 acre	100.00	Provision of pharmacy, diagnostic and ambulance facilities and installation of incinerators.

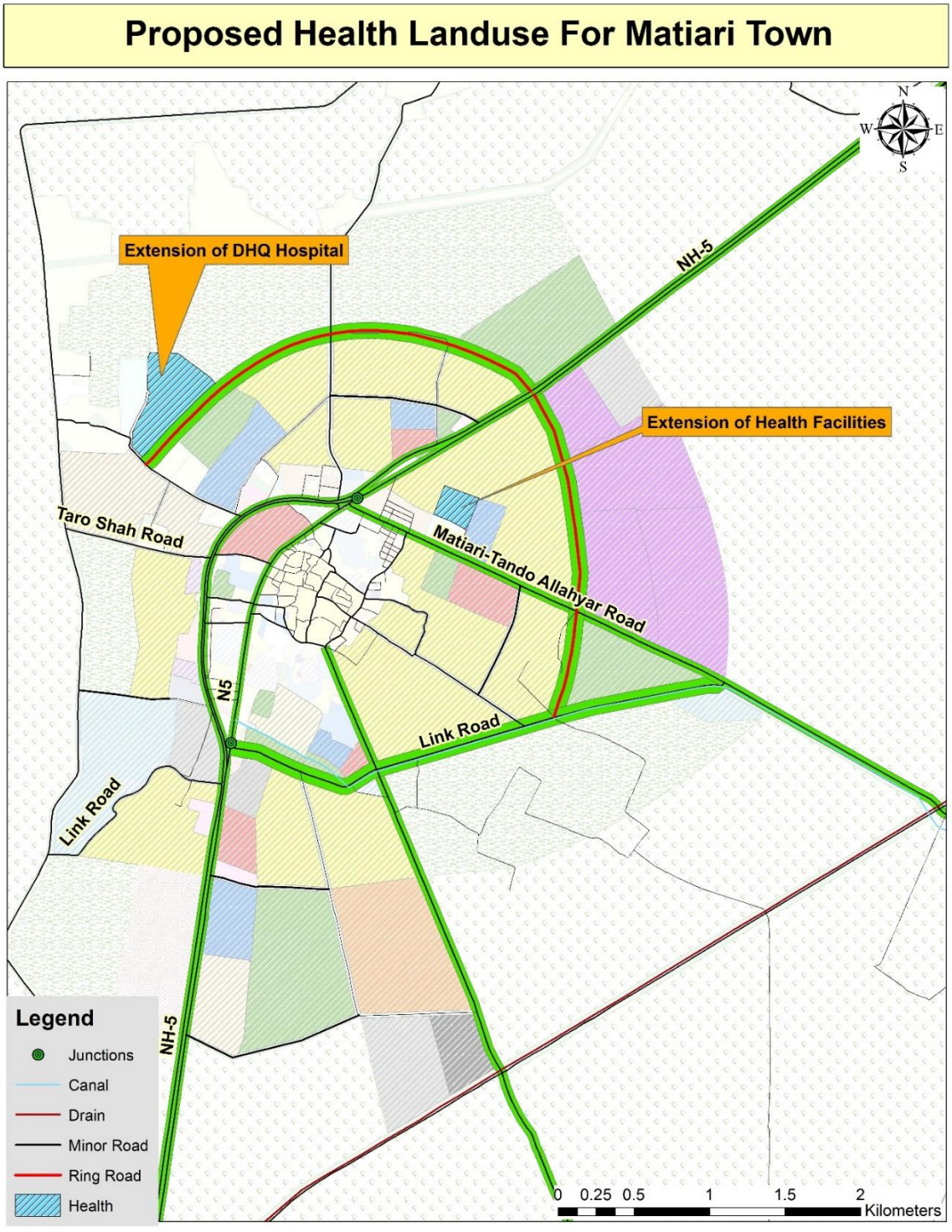


Figure 6:7: Proposed Health Landuses for Matiari Town

6.2.8 Immediate Action Plan for Core Urban Area Health Sector

i. Rehabilitation and Up gradation of DHQ Hospital Matiari

DHQ Hospital Matiari is suffering due to lack of basic facilities like unavailability of incinerator, waiting area for patients, subsidized drugs, Basic Laboratorial facilities, shortage of doctors' & para medic staff. DHQ Hospital Matiari is providing basic health facilities to Matiari district & bordering areas of neighboring districts i.e. Nawabshah, Sanghar and Hyderabad District.

Matiari - Core Town Area			Rehabilitation of Civil Hospital			
S. No	Area / Locality / Address	Area (acre)	Rehabilitation Required Sector wise with Area & cost (PKR)			
			Street / Road / Parking	Provision of all 4 utilities	Public Facilities	Security
1	Rehabilitation of Civil Hospital	1.25	**1.25**	**0.81**	**6.10**	**0.31**
Total		**1.25**	**1.25**	**0.81**	**6.10**	**0.31**
Grand Total (Rs. Million)			**8.47**			

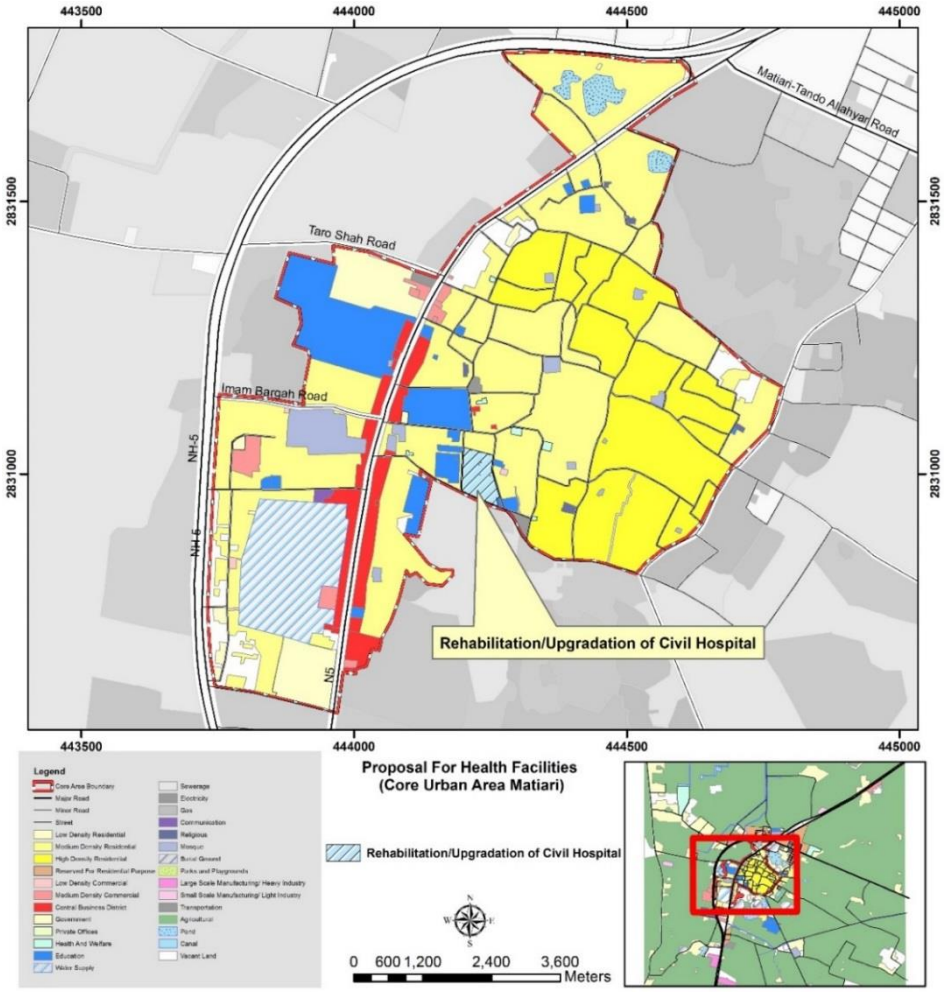


Figure 6:8: Proposal for Rehabilitation of Civil Hospital (Core Urban Area) - Matiari

6.3 Recreational/Tourism/Culture

6.3.1 Existing Situation

Recreational and entertainment are necessary for the mental, physical and spiritual development of a community. Recreation can be active like organized sports or passive like breathing in a fresh air or standing in a green landscaped park with friends and family. Currently there is no any parks and play areas available in the matiari Town.

Historical Places in District Matiari

Historically, Matiari district holds the honour to be ruled over by one of the prominent dynasties such as the Soomras, the Summas, the Arghuns , the Kalhoras and the Talpurs at Sindh. At the time of independence of Pakistan, in 1947, district Matiari was a taluka of district Hyderabad until in 2005, when it was given the status of a district. Matiari district is famous for its unique culture and values. This region gave rise to a number of religious scholars, intellectuals, poets, who spread the essence of their knowledge all over the subcontinent. Matiari is the domain of famous Saint and religious poet of Sindh, Shah Abdul Latif Bhittai. There is mosque 500 years old named as Jamia Medina Masjid is present in Matirari, which need preservation.

Tourism

Matiari have a great potential to attract local and regional tourists for tourism. Availabilty of basic facilities for tourists could increase tourism activities. More tourism activities could strengthen local economy. Religious tourism Potential areas are given as below;

- **Shrine of Shah Abdul Latif Bhittai**
  Shah Abdul Latif Bhittai (1689-1752) was a Sindhi Sufi scholar, mystic, saint, poet, philosopher, tourist and musician. He is widely considered to be one of the greatest poets of the world, who narrated his message for mankind in Sindhi language. His collected poems are assembled in the compilation well known as “Shah Jo Risalo”. Which exists in numerous versions and has been translated to English, Urdu, Punjabi, German and other languages? Shah Latif is worldwide recognition due to his message of peace prosperity.

- **Cultural Museum, Bhitshah**
  There is a museum at Bhitshah Culture Centre. Shah's Soormis and Surs like Sur Samoondi, Sur Wanjari, Sur Suhni Mehar, Sur Noori Jam Tamachi, Sur Sassui Punhoon, Sur Momal Ranoo, Sur Sorath Rai Diyaach, Sur Kapaiti, Sur Umer Marwi, are thematically depicted Its inauguration was done by Mr. Farooq Ahmed Leghari, the then President of Pakistan on 10th July 1996, 16th Safar 1417 A.D 252 Uris of Shah Abdul Latif Bhitai (R.A)

- **Hala Monuments (Mirs Tombs), Matiari**

It is an extensive graveyard dating back to the first half of the 19th century A.D. This graveyard is divided into two portions with a number of graves small tombs and a mosque.

6.3.2 Issues/Problems

- Disappearance of incidental open spaces
- Lack of planned open spaces is a major problem.
- In-active tourist development program
- Tourism marketing is weak.
- Unavailability of basic facilities
- Encroachments
- There is no playground available for sports in core urban area, youngsters are forced to play on Burial grounds and vacant land etc.

6.3.3 SWOT Analysis

Strengths	Weakness	Opportunity	Threats
Sports & Recreation			
1. Matiari is a small town so local environment of town supports green urbanism	1. Lack of recreational facilities 2. Due to absence of sports Infrastructure willingness of sports in young generation is decreasing.	1. Good health of local communities 2. Air pollution reduction 3. Healthy environment 4. Protection of natural habitat	1. Give birth to passive recreation 2. Obesity 3. Loss of cultural values
Culture			
1. Several annual festivals are celebrated in this district Among these, urs (Mela) of Shah Abdul Latif Bhittai (festival) is famous all over the country 2. Strong potential for ornamented products used in daily life i.e. Ajrak and Sindhi Topi	1. Poor Management for organizing cultural events 2. Lack of infrastructure to accommodate visitors into such events 3. Lack of opportunities to commercialize / merchandize cultural goods	1. Arrangement of full security and residential places for the visitors can attract people towards the town 2. Culturally ornamented products should be brought in to brand and revenue can be generated from it	1. Security Threats 2. Demise of cultural values and norms

6.3.4 Policy Guidelines[30]

- Federally-managed lands and waters afford critically needed opportunities for outdoor recreation,
- Diverse recreation opportunities on Federally-managed lands and waters are an important complement to recreation opportunities on state and adjacent lands,
- Providing enhanced and expanded opportunities for outdoor recreation can be done within the provisions of existing, multiple-use;
- Matiari needs infrastructure and programmes for sports activities, sport, gymnasium and family parks, and children play area and gardens.
- Preservation and conservation measures for historic places
- Formulation of comprehensive plan for promotion of tourism

6.3.5 Strategic Development Plan

i. Long Term Plan

- Provide Recreational Infrastructure of International Standards at District, Protect and conserve the cultural heritage, promote language, art and culture of District and dissemination of information through media.
- Feasibility Study for Establishment of Museum and Research Center at Archeological Site.
- Youth development program for sports and recreation
- Promote religious tourism through provision of support facilities
- Establishment of new open spaces as well as establishment of indoor and outdoor game facilities.

ii. Short Term Plan

- Existing open spaces in core urban area should be restored and maintained. New open spaces should be identified and created.
- The old houses marked for demolition by Town Committee due to danger may be purchased by TC or Local CBO. They may purchase these old houses which have out lived its age and these houses can be converted into small parks
- Development and preservation of cultural heritage
- Rehabilitation and construction of family parks and playground near residential areas
- Construction/Rehabilitation Of Recreational Facilities' In Matiari TC
- Construct More Parks and Rehabilitate the Available Parks to Facilitate the People of Matiari Town.
- Construction of auditoriums for art councils
- Establishment of synthetic grounds, playing turf (for hockey, football)and indoor gym facility.

[30] NOPRA 2005

6.3.6 Priority Projects

i. Construction of Multipurpose Sports Grounds / Stadium at Matiari

- **Project Justification**

  Matiari town is significantly deficit in Recreational facilities, there is no any type of recreational or sports facilities available in DHQ town except sports ground located in premises of services hospital matiari. There is need multi purpse sports ground in town where people can enjoy with their families.

- **Project Benefits:** It will boost the local economic potential with significant Benefits from local to national level. It will create unique city landscape and generate number of employment opportunities.

- **Implementing Authority:** Sindh Government, Local Government and private investors

- **Estimated Cost: 214.24 Million PKR Approx.**

ii. Provision of Open Spaces, Parks and Playgrounds

- **Project Justification**

  Currently, there are no recreational facilities in this region. It should be considered making parks and reserve land for playgrounds. Availability of recreational facilities can be a vehicle for positive social change for youth.

- **Project Benefits:**

  With these measures not only youth will prosper but the environmental threats will also be reduced to some extent. It benefits beyond the traditional aspirations of improved health and wellbeing.

- **Implementing Authority:** Sindh Government, Local Government and private investors

- **Estimated Cost: Million PKR Approx.**

Project Name	Short Term	Proposed Area (acre) & Lengths (m)	Preliminary Cost (million/-) PKR	Justification
Construction of Multipurpose Sports Grounds / Stadium	Short Term	6 acre	214.24	**A.** Spectator area 20,000 sft. Repair & Rehab; @ the rate of 2,000/ sft. - Total 40.00 Million for the Construction of Spectator area. **B.** Playground Area 4.0 Acres (174,240 sft, @ the rate of playground @ rate of 1000/ sft. o Total 174.24 Million **A+B = 214.24 Millions**
Provision of Open Spaces, Parks and Playgrounds	Short Term			

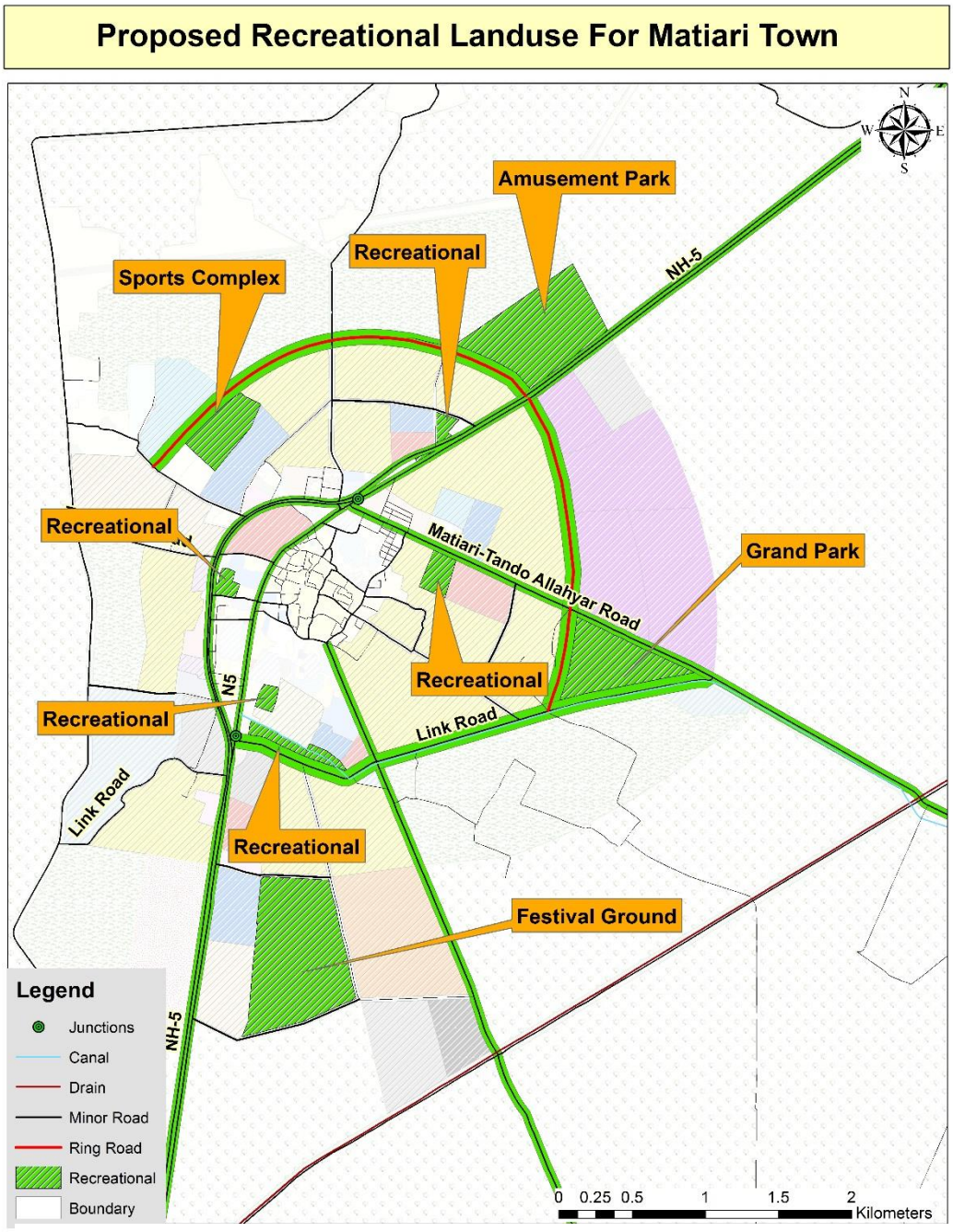


Figure 6:9: Future Recreational Proposals Matiari Town Map

6.3.7 Immediate Action Plan for Core Urban Area – Recreational Sector

- **Cultural Preservation**
  Jamia Medina Masjid is an ancient mosque located in the core urban area of Matiari. It is located along the old National Highway-5. It is a place for tourists because of mosque's beautiful art and architecture.



Figure 6:10 Medina Mosque

Repair and Rehabilitation of Recreational Facilities and Provision of Preservation							
S. No.	**Heritage / Cultural Site Name**	**Area / Locality /Address**	**Area (acre)**	**Rehabilitation Required Area wise or job wise cost (PKR)**			
				Street / Road/ Parking	**Utility infrastructure**	**Public Facilities**	**Security**
1	**Conservation of Medina Mosque**		1.50	1.50	1.73	1.88	0.38
Total PKR Rs. Million				**1.50**	**1.73**	**1.88**	**0.38**
Total PKR Rs. Million				**5.48**			

Note:
1. Rehabilitation of lanes, streets and connection minor and major roads.
2. Utility Infrastructure rehabilitation includes basic services of Water supply, Electricity supply and Gas supply.
3. Public facilities include rehabilitation and provisioning of public toilets, proper seating arrangements.
4. As per the law and order situation security concerns makes the overall impact to uplift the society life wrt to secured environment.
5. All these basic services in every DHQ town core areas need to be rehab for quicker revitalization of people's life.

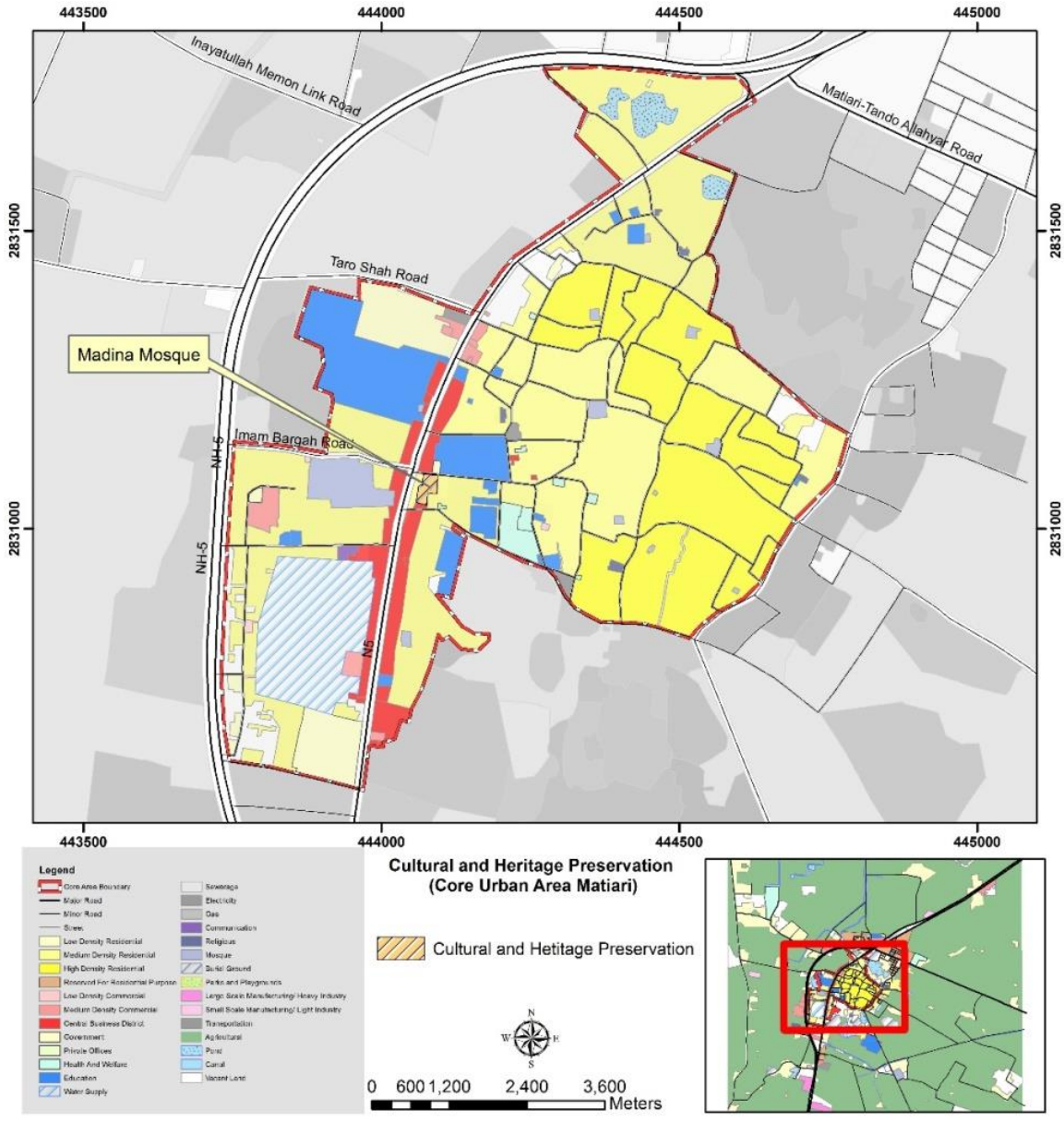


Figure 6:11: Proposal for Cultural Facilities Preservation (Core Urban Area) - Matiari

7 ECONOMIC DEVELOPMENT PLAN

Economy of Matiari District is based mostly on Agriculture. It has Matiari Sugar Mill, Chemical Factory, Cotton Factories, Ice & Cold Storage and Floor Mills, etc. Cottage industries are also prevalent in the district as handicrafts, khaddar and ajrak cloth are famous. Besides, handmade potteries of Hala town are well-known. The progress of economic activities in district depends upon facilitation to farmers for using modern techniques. The district as a whole is well-known due to its characteristic of agriculture engine which serves all over Sindh by using market of Hyderabad, the regional Hub

i. Policy Guidelines for Overall Economic Development

- Creating a better quality of life for the citizens of the district by encouraging private sector to invest in the district.[31]
- Increase farmer's income.[32]
- Improving infrastructure and key services necessary for economic uplift.
- Providing un-interrupted power supply.

ii. Inclusion of Poverty Reduction Strategy in Economic Development Plan

The poverty reduction strategy (PRS) is aimed to act as medium-term instrument to address the challenge of poverty in Sindh. One of the intervention of PRS has its foundation resting on poverty reduction at the household level, together with the introduction of an urban programme incorporating a model of urban economic clusters for SME-based enterprise development in small cities and towns, and a model of rural growth centres at meso level that would provide a catalytic effect to the PRS. It has the strength to become a keystone for investment planning in the province, while focusing on Economic Development strategies via PRS lens that will boost the employment opportunities as well as enterprise development in the province.

iii. Strategic Plan for Overall Economic Development

- Modernize and revitalize the service sector.
- Implement proactive governance centered on accelerated and balanced economic growth.
- Develop Human resources through capacity building for employment opportunities.
- Reinforce the local governance institutions.
- Modernize local / district / divisional administration.
- Decentralization of governance authorities.
- Involve community participation.

[31] ADP 20017-18 Industries Punjab
[32] ADP 2017-2018 Agriculture Punjab

7.1 Agriculture

7.1.1 Existing Situation

Matiari contributes significantly in the agriculture sector of Sindh because its climate is suitable for production of various crops, including the Kharif crops of maize, rice, sugarcane, cotton and bajra and Rabi crops of wheat and barley. In addition to these, fruit orchards are abundant in this district. This district is famous, all over Pakistan, for its Bananas and mangoes.

The total geographical area of district Matiari is 142,000 hectares out of this cultivated area is up to 86,000 hectares. Out of cultivable land dividing 2016-17, actually cultivated to 76,000 hectares leaving 11,000 hectares as fallow. Waste land available and not available for utilization land was 16,000 hectares.

Table 7–1: Comparison of Land Utilization

S. No	Type of Cultivated area	2012-13	2013-14	2014-15	2015-16	2016-17
1	Cultivated area	87,000	87,000	84,000	87,000	86,000
2	Current Fallow	18,000	17,000	11,000	11,000	11,000
3	Net area sown	69,000	70,000	74,000	77,000	76,000
4	Cultivated Waste	15,000	16,000	16,000	16,000	16,000
5	Not available for cultivated	16,000	16,000	19,000	16,000	16,000
Source: Development Statistics of Sindh, 2018						

During the year 2016-17, the Production of Wheat was 158,204 M.Tons, Sugarcane 890,036 Bales, cotton 247,373 Bales, and Maize 532 M.Tons. Whereas, the crops, production field, and land utilization are given tables as under:

Table 7-2: Comparison of Crops Production

Sr. No	Major Crops	2013-14		2014-15		2015-16		2016-17	
		Area	Production	Area	Production	Area	Production	Area	Production
1	Rice	1,569	3,989	959	2,358	-	-	-	-
2	Wheat	37,330	150,755	38,649	150,170	43,500	163,687	39,940	158,204
3	Sugar Cane (Bales)	13,178	911,796	13,373	713,794	15,081	968,933	13,853	890,036
4	Cotton (Bales)	40,387	283,126	41,916	265,346	40,550	221,901	51,925	247,373
5	Maize	435	516	420	540	411	491	439	532
Source: Development Statistics of Sindh, 2018									

The irrigation system of this district is dependent on two major sources i.e, Rohri Canal and Indus River. Rohri canal irrigates the eastern lands of this district and the Indus River irrigates the western parts of the district.

7.1.2 Problems/ issues

- The sugarcane prices are unstable in Matiari 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.
- High price of Inputs (Fertilizers Material, Pesticides and Quality seed)
- Water logging and salinity.
- Lack of Tube well installation facilities and Shortage of irrigation water.
- Irrigation and Drainage problem
- Shortage of food godowns and warehouses.
- Insufficiency of covered storage.

7.1.3 SWOT Analysis

Agriculture			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Agriculture based economy 2. Strong network of distribution of agro based products Suitable climate for production of various crops.	1. Shortage of technical and home based industry 2. Low demand of home grown food products 3. Less revenue generation by local government 4. Water logging and salinity 5. Lack of agriculture credit facilities	1. Job opportunity for rural population 2. Healthy population 3. Strong transport system 4. Outside investors show interest in agriculture sector 5. Export quality Agriculture products can be produced	1. Less efficient local markets 2. Shortage of agro based products 3. High land prices

7.1.4 Strategic Development Plan

District Matiari is irrigated by river Indus and canals and although the agricultural land in the district is limited, yet the available cultivable land is very productive in this region. Wheat, Cotton and Sugarcane are the major crops of this district.

Utilization of Cultivable waste land of 1600 hectares may increase the crop production. As analyzed about 43% of arable land used for cultivation of Cotton followed by wheat by 39%, might be the reason that the soil and climate of the region suits to these crops, therefore grower and Government may focus to reclaim

more waste land to convert the same into arable land and **priority may be given to Cotton and Wheat crops in the district**.

Moreover, Government and grower need to focus to explore ways and means to improve utilization of waste land for other crops also for which the consultant recommends that existing Research Centers may be strengthened by employing modern technologies and methods. Research needed:

- To improve and evolve new crop varieties with high yields & good quality.
- To solve the day to day problems of the farming community /growers.
- Evolution of new high yielding and insect, pest, disease resistant varieties of major and minor crops
- To improve production technologies for crops / plants to get higher yields.
- Disseminate improved production technologies to the growers

i. Long Term

- Agricultural technology development, dissemination and adoption.
- To address the property issue / raising of income level ,waste land available should be granted to land less
- Enhancing crop productivity through adoption of new technologies
- Provision of agricultural infrastructure for the welfare and prosperity of local population.

ii. Short Term

- Modernize and revitalize agriculture.
- Use of modern techniques for cultivation by choosing healthy seeds and fertilizers for increasing yield per acre.
- Increase the supply and quality of agricultural crops
- Enhancement of the storage capacity.
- Provision of warehouses, food gowdowns for storage of agricultural products.
- Construction of covered gowdown.

In order to improve the crop production improvement and intervention from government departments are needed in the following areas:

- Agriculture credit facilities
- Regular supply of irrigation water
- Availability of fertilizer, pesticides and quality seed that results in Improvement in crop yield/acre that in turn increase the crop production for internal consumption & exports
- Installation of tube wells
- Measures to reduce water logging and salinity
- Construction of farm to market roads

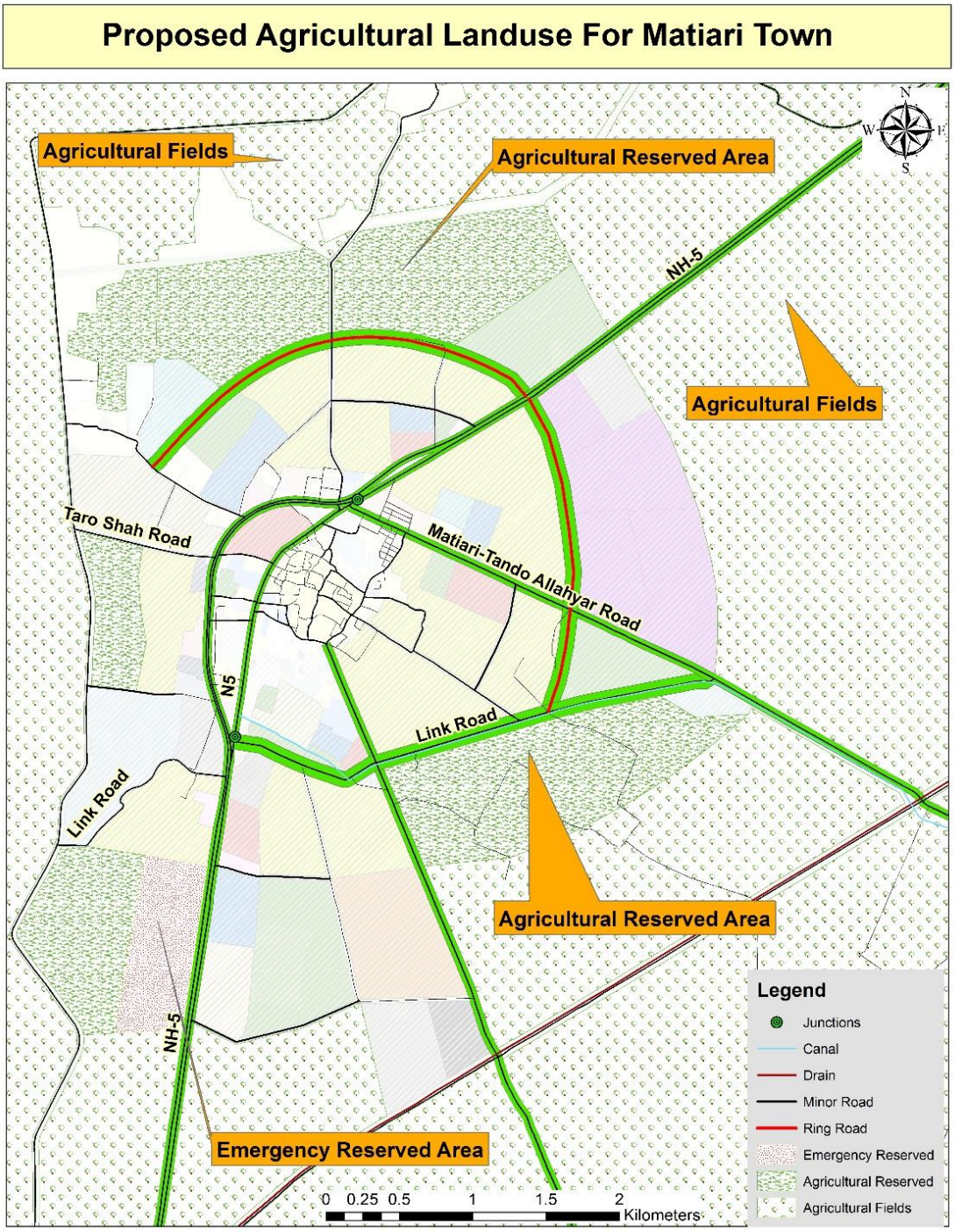


Figure 7:1: Proposed Reserved Agriculture Area

7.2 Livestock

7.2.1 Existing Situation

Livestock is one of the major sub-sector of agriculture and the backbone of Sindh's economy. Its main by-products including hides and skins have substantial potential as semi-finished products. Substantial growth in Livestock products such as milk, meat, beef, mutton, poultry, and eggs have been noticed for many years for the people of district Matiari. This district is producing animal-based food (meat & meat products) in surplus to its requirements.

7.2.2 Livestock

Livestock good breed of buffalos and cows are found in the district. Sheep, goats, camels, horses, asses, and mules are some of the other main livestock of the district. The number of large animals exceeds the number of smaller animals, showing people's preferences for keeping cattle rather than goats or sheep. Livestock in the district suffers in particular from the shortage of high quality feed.

Table 7–3: Population of Livestock

Livestock	Population 2006	Population projected (As on 2017)
Cattle	335,000	366,134
Buffalo	531,000	735,261
Sheep	52,000	50,000
Goat	820,000	1,300,000
Camel	3,000	2,000
Horse	1,000	1,000
Asses/Mules	37,000	50,000

Source: Development Statistics Sindh, 2018

According to Development Statistics Sindh 2018, District Matiari is a richly populated area with having animal population of 1,779,000 in 2006. Out of this, the highest number belongs to goats having 820,000 heads, followed by buffalos 531,000 heads and cattle 335,000.

Table 7–4: Veterinary Service

S. No	Items	Numbers
1	Veterinary Hospital	7
2	Veterinary Centers	23
3	Animal Treated	
A	Vaccinated	320,142
B	Treated	31,391
c	Castrated	1,291

Source: *Development Statistics of Sindh, 2018*

This district is well known with a different type of breeds of cattle, goats, and sheep. For this population of Animals, the services are not sufficient and not serving all populations of animals. There are only seven veterinary hospital with 23 veterinary centers.

7.2.3 Issues and Problems:

- Landlessness and small holding prevents 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

7.2.4 SWOT Analysis

Livestock & Fisheries			
Strengths	**Weakness**	**Opportunity**	**Threats**
1. Mechanism for milk collection available 2. Favorable environment is available for livestock growth (Pasture) and poultry farming in surroundings of city Local skills and vet services available	1. Large scale breading has not developed 2. Lack of facilities to industrialize livestock based products.	1. Cooperative dairy farming and in-land fisheries has sufficient scope 2. Large pasture land and labour force available for livestock growth 3. 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) 3. Vet services insufficient

7.2.5 Need Assessment

The Livestock is served by seven Veterinary Hospitals and 23 Veterinary Centers. The services for veterinary in district Badin are deficient because District Matiari is richly populated area having animal's population of large and small animals. For this population of Animals, the services are not sufficient and not serving the all population of animals.

Improvement in Cattle Farms and Veterinary services would be needed to maintain the sustainable growth by Livestock Department along with private sector. Livestock in the district suffers in particular from shortage of high quality feed.

7.2.6 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 and quantity of milk.
- Enhancing Veterinary Services.
  ADP project already initiated by Sindh Government to overcome the rural Sindh Livestock.

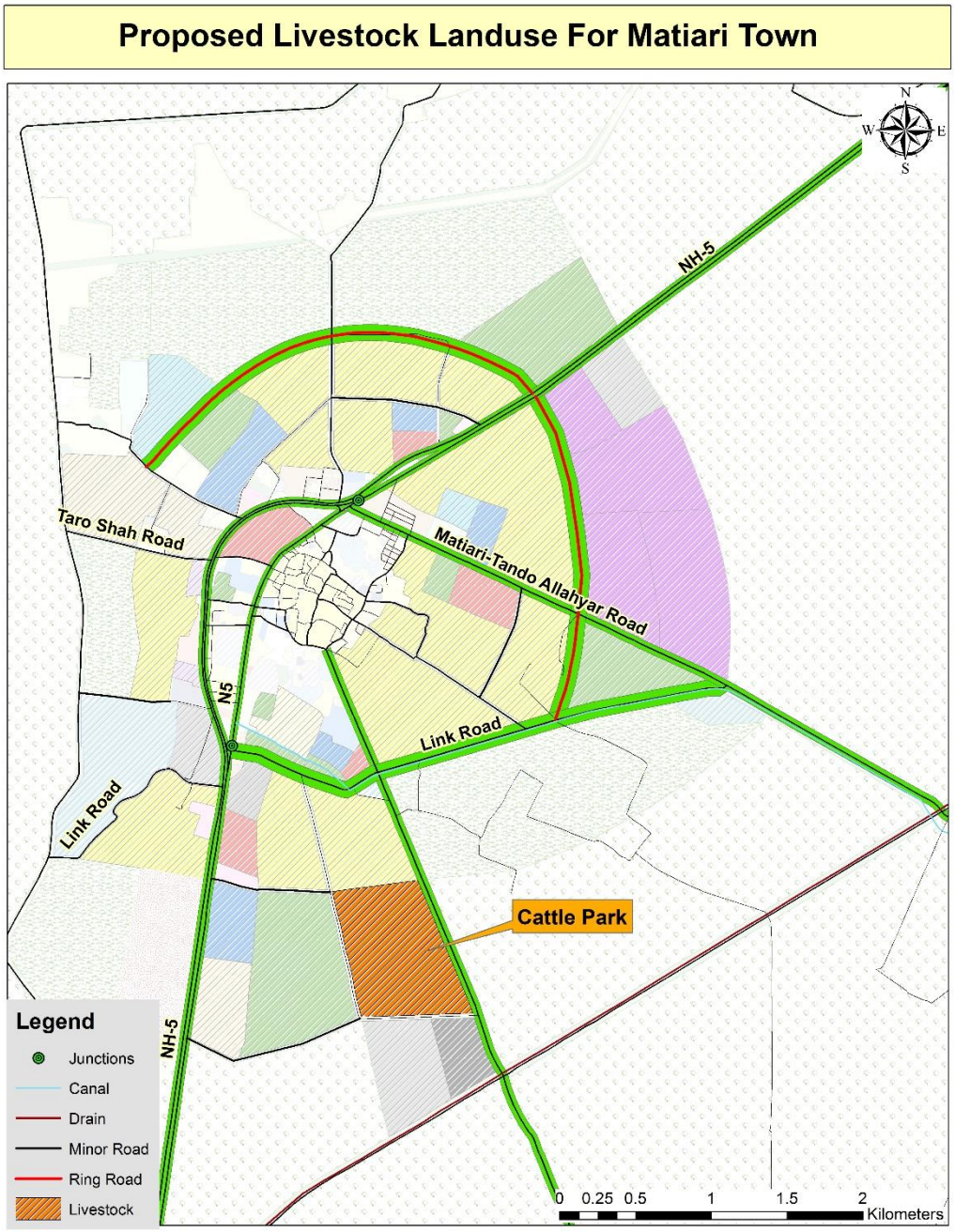


Figure 7:2: Proposed Cattle Park

7.3 Fisheries

7.3.1 Existing Situation

There are 230 fishermen in district who are experiencing their luck in fish farms of the district Matiari. These fishermen are earning their wages by utilizing 86 boats and the annual production of fish in Matiari district is approximately 5,901 tons.

Table 7-5 :Fisheries-Water bodies, Fish farms & Production

1	Number of Boats	86
2	Number of Fishermen	230
3	Annual Fish Production	5,901 (M. Tons)

Source: Development statistics of Sindh 2018

7.3.2 Issues

- Leasing rights issues
- Lack of training programs

7.3.3 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.

7.3.4 Strategic Development Plan

- Need for extension services in private sector
- Lease of fishing rights, conservation, management and promotion of fisheries
- Local publicity and awareness
- Training through open training schools
- 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

7.3.5 Economic Development

It is expected that sustainable growth of livestock will be maintained as per main objectives of Livestock & Fisheries Department along with the participation of private sector. Hence there is possibility to:

- Establish livestock and dairy farms to meet the increasing 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.
- Moreover, 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 under PPP mode.

7.4 Industries

7.4.1 Existing Situation

As Matiari is very near to Hyderabad (only 25 km), so the people of Matiari do accomplish their industrial needs from there as well. But the old industrial products of Matiari are still very much popular all over Pakistan and abroad. These industrial products are “Khadee”, “Kashee” and “Jundi” of Hala, and “AJRAK” of “Matiari” City. New addition in industries of Matiari is Matiari Sugar Mill, which is situated in the east of Matiari city at the distance of near about 6 km.

- **Types of Industries**

  The major industry in the district is Matiari Sugar Mill, since sugarcane is cultivated on large scale in this district. Other medium sized industries include flour mills, chemical factories, cotton factories, ice factories and handy crafts. Cottage industries are also prevalent in the district as khaddar and Ajrak cloth of this district are famous. Thus most of households indulges themselves with Ajrak, Sindhi Topi and Khadee manufacturing industry. Besides, handmade potteries of Hala town are well-known.

Name	Activities
Mattiari Sugar Mill, Matiari	Sugar
Banglani Cotton Factory	Textile, Wearing Apparel & Leather Products
Dastagir Cotton Factory	Textile, Wearing Apparel & Leather Products
Kohistan Cotton & Oil mill	Textile, Wearing Apparel & Leather Products
Makhdoom Shahnawaz Cotton Factory	Textile, Wearing Apparel & Leather Products
New Model Shinwari	Textile, Wearing Apparel & Leather Products
New Saeed Abad Cotton Factory	Textile, Wearing Apparel & Leather Products
Qalandri Cotton Ginnging Factory	Textile, Wearing Apparel & Leather Products
Rahman Cotton Factory	Textile, Wearing Apparel & Leather Products

- **Industrial Estate**

  The government has established a Small Industrial Estate over 10 acres at the Hala-Shahdadpur Road to encourage cottage industry in the area. The object is to establish planned industrial areas where industrialists could have all the facilities such as land, road, railway, water supply, electricity, gas, telephone, godowns, sanitation, drainage, labour colonies and other necessary public amenities.

7.4.2 SWOT Analysis

Industries			
Strengths	**Weakness**	**Opportunities**	**Threats**
1. The only major industry in Matiari district is sugar mill i.e. Matiari Sugar Mills 2. The old industrial products of Matiari are very much popular all over Pakistan and abroad. I.e. "Khadee", "Kashee" and "Jundi" of Hala, and "Ajrak" of "Matiari" City	1. Limited industrial profile. 2. Less job employment in agriculture sector 3. Less power available for running of industrial sector	1. More international trade 2. New Job employment 3. Cottage industries can be encouraged to make them visible on large level on market basis 4. Marketing of old industrial products in export markets can generate handsome amount of revenue	1. Isolated economy 2. Air pollution 3. Water contamination to river Indus resources

7.4.3 Need Assessment

- Vocational training to Women force should be encouraged
- Establishment of cottage industries
- Establishment of Small industrial zone

7.4.4 Strategic Development Plan

i. Long Term Plan

- Sufficient market infrastructure to ensure optimal value addition
- Development of Industrial Estates / Apparel Park / Special Economic Zone in District
- Heritage saving through empowerment of artisans for development of handicrafts
- Paradigm shift from industrial agriculture to diversified agro ecological Systems
- Provision of infrastructure for establishment of new industries.

ii. Short Term Plan

- Support industrial development.
- Modernize and revitalize the service sector.
- Enhancement of colonization in SIEs through provision of missing facilities
- Provision of vocational training and employable skills to the unemployed youth of the district
- Customized lending and micro financing to small industries

7.4.5 Economic Development Plan

On the basis of projected increase in crop production up to 2037 and present industrial base, there is potential for enhancing the capacity utilization of present units and establishing new industrial units with following limitations:

- Addition in industrial units suggested may vary as it is dependent upon the production capacity of each unit. As noted earlier, establishment of a Small Industrial Estate is already in process which should be completed with required facilities
- The area of industrial estate may need extension with necessary facilities for encouraging the investors to establish new units
- Training should be provided to local workers in relvany industies and women working force to establish cottage industry.
- Incentives to private investors for establishment of new industrial units and enhance the production capacity of present industry. Sindh Investment Board and Sindh Small Industries Corporation have vital role to play.

The increase in industrial growth will obviously contribute towards better economy of the districts with increase in per capita income, reduction in unemplyment rate and poverty allleviation.

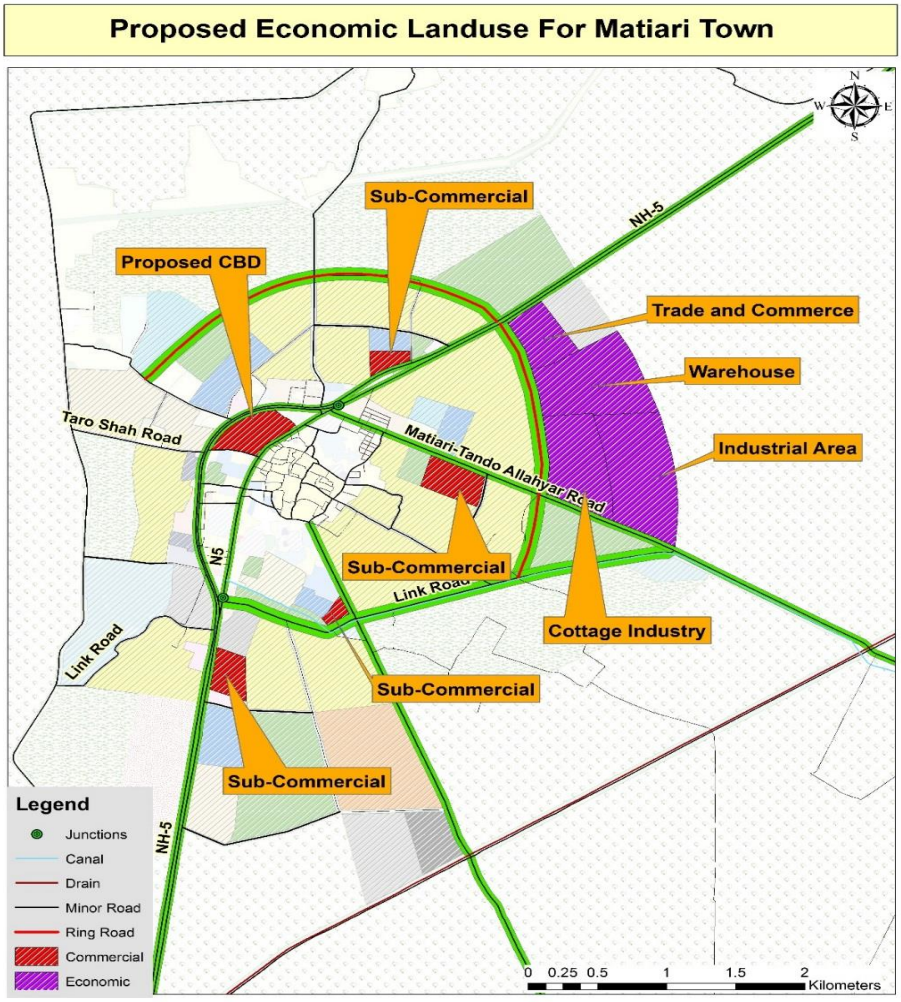


Figure 7:3: Proposed Economic Landuse for Matiari Town

7.5 Trade and Commerce

There is the presence of strong local retail market along the main road. There are different banks such as Bank Islami, Bank Alfalah and Mezaan Bank etc., mobile facilitation centers and number of food shops.

7.5.1 SWOT analysis

Trade & Commerce			
Strengths	**Weakness**	**Opportunities**	**Threats**
1. Availability of financial institutes 1. Strong local retail	2. Demise of local agriculture market 3. Un-planned local business activities 1. Less effectiveness of price control department	1. More opportunities for public private partnership 2. Support to local economy 3. Home grown handicrafts can be promoted through proper exposure to export market	1. Security issues (which lead a large number of agriculturists and business persons to migrating from the city) 2. Inflation 3. Low subsidies provided by local and provincial government

7.5.2 Issues

- The failure of PPP (Public Private Partnership) trouble for locals and government.
- Demise of local agriculture market.
- Un-planned local business activities.

7.5.3 Strategic Development Plan

- Provision of Slaughter House
- Provision of parking for existing commercial areas
- Up gradation of old bazaar area
- Establishment of Fruit and vegetable market
- Specialized Wholesales market
- Construction of Building for service industry
- Provision of Cold storage and warehouses

7.5.4 Priority Projects

i. Establishment of Fruit and Vegetable Market at Matiari DHQ Town

- **Project Scope & Justification**

At present there is no designated fruit & vegetable market present in Matiari DHQ Town. Ordinary retail shops for vegetables and fruits are located on the main roads, which causes traffic congestion & garbage issues in the town. Establishment of planned Fruit and Vegetable Market at Matiari with allied facilities shall attract entrepreneur to expand their investment and will also improve the urban environment.

In SDP Matiari a landuse for Trade & Commerce Zone is proposed for future trade activities. In that zone six acres land comprising general shopping area and offices is reserved for fruit and vegetable market on priority basis. Whereas remaining area of trade & commerce is reserved for Whole sale Market, Slaughter House & Ware Houses for future need.

- **Project Benefits**

It will give ease to the local population to earn their living through it and will also improve the taxation, employment and the traffic congestion which is the major issue of Matiari Town due to availability of market in the main core city area.

- **Implementing Authority - Matiari Town Committee/ Private Investors.**
- **Estimated Cost: Rs.130.68.00 Million approx. (Short Term).**

Project Name	Sector	Short Term	Proposed Area (acre) & Lengths (m)	Preliminary Cost (million/- PKR)	Justification
Establishment of Fruit and Vegetable Market at Matiari	Economic Development (Trade & Commerce)	Short Term	6.00 acres	130.68	6.0 acre = 261360 sft , at the rate of 1,000/- PKR per sft construction cost with all infrastructure cost (considering 50% Built-up Area)

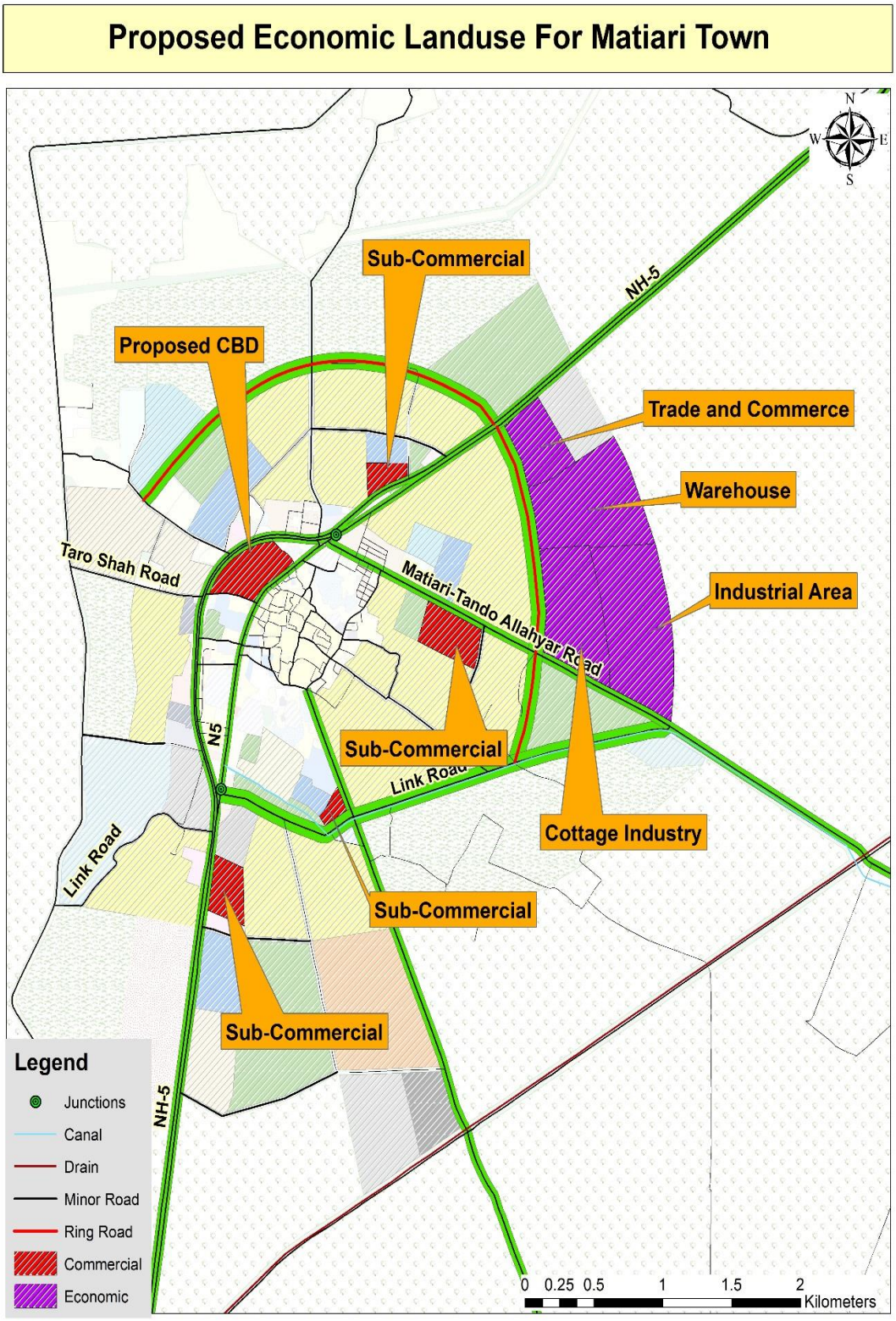


Figure 7:4: Proposed CBD, Trade Center and Dry Port

7.5.5 Immediate Action Plan for Core Urban Area

- **Modernization of Commercial Activity in the Core Urban Area**

The core town area is the oldest and the most congested part of the Matiari town. Which is facing lot of problems i.e. unavailability of footpaths, outdated sewerage system, encroachments, illegal rikshaw stands etc. main CBD is thriving trade and retail businesses centre with narrow streets and high density housing in low rise buildings occupied by population belonging to various income groups.

The commercial area of Matiari City is located on both sides of the Old National Highway-5. Mostly public projects were established along the Old National Highway-5 longitudinally. The commercial area includes Banks, Traders, Tailoring Shops, General Stores, Auto Shops, Petrol Pumps, Hotels, Medical Stores, etc.

The proposed projects for core urban area of Matiari consists of; Removal of encroachments from town center and bazaars, created by the shopkeepers and hawkers; Rehabilitation & Beautification of main Bazar area i.e Shahi Bazar area; Rehabilitation of bazaars located along main old N-5 and rehabilitation of Qenchi Bazaar etc. Provision of pedestrian facility in Bazar area; Up gradation & Rehabilitation of internal Bazaar roads.



Matiari has major commercial hub like; Shahi Bazar and commercial activities along main Old N-5 Madarsa Roads Link Road Imam Bargah Road Civil Hospital and Taxi Stand Road and Ice Factory Road. Main CBD includes traders, wholesale markets, and traditional embroidery shops, Auto Shops, restaurants, schools, clinics and general stores etc.

Town Committee old markets are present in old commercial area of Matiari. Land encroachers have grabbed a few municipality properties and not paying any rent. The suggested project include:

- Rehabilitation of Shahi Bazar Area
- Provision of pedestrian facility in main Bazar area for visitors
- Up gradation of old Bazaar area's main road
- Removal of encroachments
- Removal of illegal Bus stands

List of proposed projects in Immediate Action Plan for betterment of the existing CBD area are given below;

REHABILITATION OF COMMERCIAL AREAS Rehabilitation Required Area wise or job wise cost (PKR)						
S. No	**Area / Locality / Address**	**Area (acre)**	**Cost in PKR million.**			
			Street / Road/Parking	**Utility infrastructure**	**Public Facilities**	**Security**
1	Rehabilitation of Commercial Area along Old National Highway-5	**24**	6.06	0.73	9.09	6.06
Total (Rs. Million)			**21.95**			

Note:

1. Commercial areas should be enlisted in Govt. Agency for all services of Trade, Retail, Marketing, Sale etc.
2. All commercial areas security services are associated with combine effort of commercial trade union and local Govt.
3. Commercial areas accessibility for daily users and marketers is well define with ease.

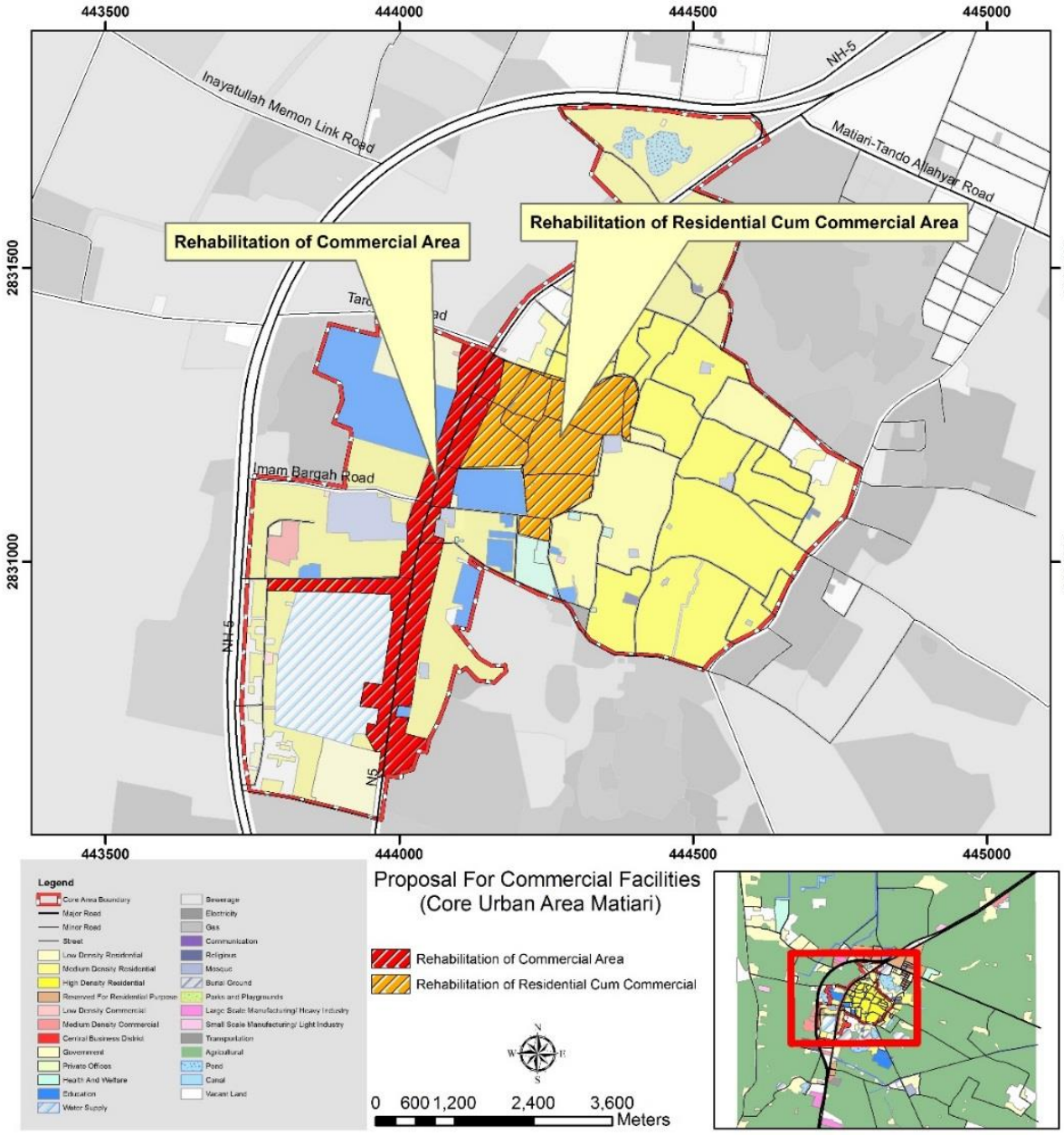


Figure 7:5 Proposal for Rehabilitation of Commercial Area Matiari Core Urban Area

7.6 Economic Development Plan of Headquarter Town with Poverty Reduction Strategy (PRS)

Poverty Reduction Strategy (PRS)

Sindh province is leading the way in being the first province to have taken the bold step of formulating a specific Poverty Reduction Strategy (PRS) for the entire province, which has been approved by the Sindh cabinet on 16th October, 2018. The PRS developed is aimed to act as medium-term instrument to address the challenge of poverty in Sindh and to have a specific focus on Community Driven Local Development (CDLD). This is a logical approach for Sindh, given the GoS initiatives over the last decade in CDLD, through the Union Council Based Poverty Reduction Programme (UCBPRP).

i. A Vision for Poverty Reduction in Sindh

The poverty reduction strategy is aimed to act as medium-term instrument to address the challenge of poverty in Sindh. As such, the long-term intentions and aspirations of the GoS in reducing poverty should be clear, with a definable 'vision' for poverty reduction and associated goals and targets to be achieved over the specified duration of the Strategy.

ii. Poverty Reduction Strategy (PRS) Approaches

The PRS illustrates three dimensional approaches to reduce poverty at Rural and Urban Level

I. This includes continuation of People Poverty Reduction Program to carry out interventions of financial support and capacity building at grass root level
II. The second proposal entails a model of Rural Growth Centers which will serve as a business hub by clustering the geographically connected and demographically viable village
III. The third approach envisages reducing urban poverty by adding urban economic clusters and creating linkages between rural and urban poverty reduction activities

iii. Poverty Reduction Strategies

The three key strategies of the PRS, and their core components, are:

STRATEGY I Community Driven Local Development (CDLD) – the Foundation

The CDLD Policy is incorporated within and is a component of the PRS continuation of a CDLD approach consists of:

- Building on and expanding the UCBPRP programme
- Mainstreaming a CDLD approach, and integration of this approach with line department activities.

STRATEGY II Addressing Urban Poverty

- The direction of the strategy to address urban poverty is on emphasizing ' urban within rural' – focusing on the small towns within rural areas of Sindh
- The strategy focuses on targeting employment opportunities and enterprise development

- A key approach within this is utilising urban economic clusters as a means to facilitate cooperatives in enterprise development.

Urban Income Enhancement Program and Economic Cluster

In order to address the issues of human development and poverty in districts, the policies and programs are to be developed both for rural and urban areas. These issues for the development of city have been tackled by linking with "Urban Income Enhancement Program" which emphasizes in establishment of "Urban Economic Cluster" focusing on:

- Small Enterprise Development,
- Vocational training and
- Encouraging Women Force for establishing handicrafts and cottage industry

This would lead to creating the opportunities for income generation and employment.

STRATEGY III Rural Growth Centres, or 'Service Hubs'

- This strategy consists of a new approach in the way forward to address rural poverty and development. This involves identification of locational focal points or villages that can serve as a centre for improved facilities and provision of services to the surrounding clusters of villages
- The intention is to consolidate services and facilities in these hubs, to provide growth and development opportunities.

Rural Growth Centre

Include the following components but not limited to

- Housing and village up-gradation (internal roads, drains, parks, Masjid)
- Commercial facilities to support local agri-based businesses and services - for example, storage facilities including refrigerated facilities for storage of agricultural inputs and outputs), distribution centers, sale outlets, bank, milk chilling plant, veterinary clinic
- High school for students from villages in the cluster
- Rural Health Centre
- Vocational centre and other community facilities, such as RSP centre
- Drinking water plants.

iv. Mainstreaming the Poverty & Policy & Program

In order to initiate the development of a stronger economy of towns, its policies need to be embedded in sector strategies of the following departments along with Municipal Town Committee and Katchi Abadi regulators.

- Industries & Commerce Department
- Local Govt. Department
- Works & Services Department

  - Transport Department
  - Planning & Development Department
- Reinforce the local governance institutions.
- Modernize local / district / divisional administration.
- Decentralization of governance authorities.
- Involve community participation.
- Exploring and implementing PPP (Public Private Partnership) in all sectors.

v. Access to Micro-Finance

Access to demand-driven microfinance provided by sustainable microfinance institutions (MFIs) has proven to be a powerful tool for poverty reduction by improving the ability of poor people to increase incomes, build assets, and reduce their vulnerability during periods of economic hardship.

8 BASIC UTILITIES

8.1 Water Supply

8.1.1 Existing Situation

The existing system was found totally stuck up and no operation & maintenance methods are being applied; especially in the absence of regular sampling & testing lab, the quality of water remains doubtful. The sample testing revealed that the water supplied to the residents remains polluted.

The Town Committee is supplying contaminated water which is not acceptable for drinking purposes. Standard maintenance system is not being followed due to which un-safe water is supplied.

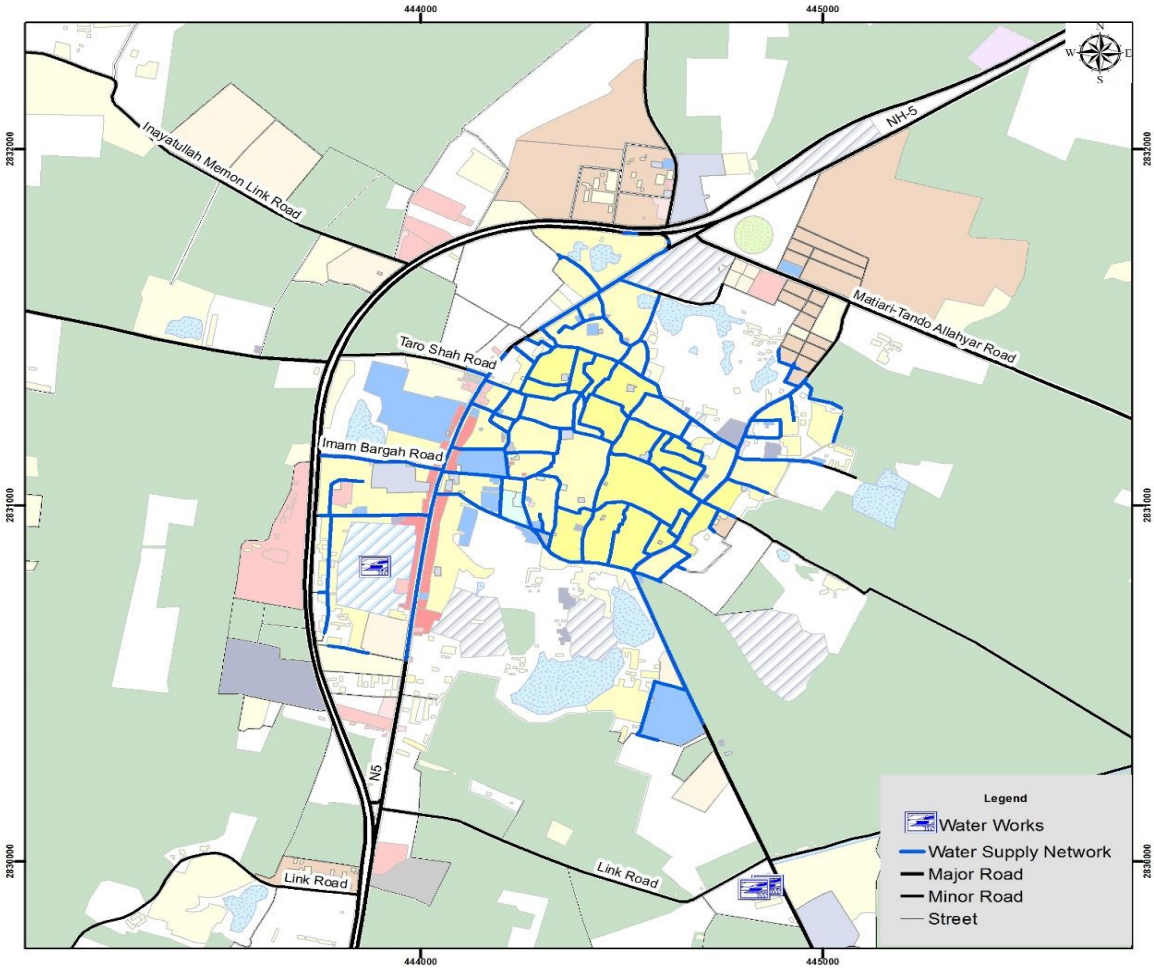


Figure 8:1: Existing Water Works of Matiari Town

I. Distribution Network

The intake works are withdrawing 1.0 mgd for distribution to the area. The distribution system covers the areas of Pirzada Mohalla and Bhatti Mohalla as per PHED Mariari. The overall supply from Rohri Canal and its branch (Pano Shakh) main is 1.0 mgd. Which is pumped through 2 major Pumping Stations are:

- Bhatti Mohalla
- Pirzada Mohalla

Moreover, the distribution network includes AC/PVC/RCC pipes of sizes from 3" to 12" diameter 16"dia AC pipes are used for rising mains. There is no zoning system of distribution and no water meters are installed. Distribution network improvement (DNI) is essentially required for equitable distribution.

II. Water Treatment Plant

There is no indicative treatment or no treatment of raw water although there are three RO plants out of which only one is operational and the other two are not functional. The water is drawn from the Rohri irrigation canal water services and they are susceptible to pollution from effluent discharges upstream. Water supplies are also contaminated from sewage and wastewater leakages through old pipes and poor joints, negative pressure caused by intermittent delivery timings and pumping from empty pipes. Land availability for a rapid gravity filter plant needs the acquisition of land at this stage of planning (approximately 20 acres of land is required).

III. Water Quality Assessment

Consultants carried out water sampling of Matiari, the test report is attached. Testing parameter results are not within permissible limits WHO/SSDWQ established for drinking water. The city's groundwater source is depleting and contaminated at present but the utility is not in a position to abandon the majority of TWs or alarm the citizens of the critical situation.

Surface Water Quality

The attached sample was collected from pumping Stations of the Matiari Town. This was found contaminated as per details are given in analytical report show non-compliance of WHO and SEPA standards against the following parameters.

- Cadmium
- Lead and Mercury
- Residual chlorine
- Coliforms (Total coliform, fecal coliform).

Ground water Quality

The sample was taken from a hand pump in Matiari Town. The testing failed due to the presence of marginal Arsenic, cadmium, lead, Mercury and Barium.The Microbiological analysis confirms the presence

of total coliform, total coliform, and E-coli.The Micro biological analysis confirms presence of total coliform and E-coli.

Contaminant Transport Characteristics. The presence of microorganisms in groundwater is heavily dependent upon geologic conditions such as flow pathways and mechanisms, sunlight, temperature, pH, and soil properties. The type, size, and activity of the microbial community are also important factors that influence the transport of microorganisms. So there is need to conduct the geological test of soil.

8.1.2 Issues

- The old systems have collapsed due to lack of maintenance and poor design in the town.
- The water is supplied intermittently. As the water lines are laid adjacent to the sewers/ drains the wastewater is sucked into the water lines. Often water lines have been tapped informally using poor joints and connections, again leading to contamination by sewage.
- High proportion of non-revenue water
- There is also inadequate technical capacity and capability in government agencies to plan and implement and an absence of management information systems
- Good quality drinking water is not available to the general public in the core urban area of Matiari and water is being supplied to the people without any treatment and filtration. Only some rich people can afford to use bottled water for drinking.

8.1.3 SWOT Analysis:

Water Supply & Distribution			
Strengths	**Weakness**	**Opportunity**	**Strength**
1. Intake sources available	1. Under ground water is the only source of water 2. Poor administrative setup for water supply management and distribution	1. Adequate water resources available for water supply system development. 2. PPP in service delivery	1. Negative externalities on human and plant health

8.1.4 Need Assessment

Water demand and supply has been estimated on PHED parameters is as under:

Table 8-1: Water Supply & Demand Projected up to Year 2037

Town		2017	2022	2027	2032	2037
Matiari TC	**Population**	21,195	22,699	24,309	26,033	**27,879**
	Per Capita daily demand @30 gped)	**0.64 mgd**	**0.68 mgd**	**0.73 mgd**	**0.78mgd**	**0.84mgd**

Source: Consultant's estimation based on PHED criteria

It is expected that the Matiari TC will have a population of about 27,879 Persons by 2037 and the daily

demand for water for the town will increase up to 0.84 for a whole-day supply. At present the supply is 1 mgd, so there is no gap in 2037 in the Town, already extra water is supplied to whole town, but there is need to improve the water quality and network distribution of the Town.

8.1.5 Sindh Drinking Water Policy 2017[33]

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.
- 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.

[33] Sindh Water and Sanitation Policy 2017

8.1.6 Strategic Development Plan

i. Long Term Plan

- 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

- Rehabilitation existing water supply network of Whole Town
- The design and layout of water supply pipes, storage tanks etc. should ensure that there is no contamination by overflowing sewerage systems, for example by maintaining a minimum distance between the two systems.
- Wherever possible, preference should be given to rehabilitate existing schemes (functioning or not) over the construction of new schemes, unless there are special reasons to justify otherwise.
- Construction of water treatment plant for Town
- Feasibility Study for identification of new water sources for town
- Exploration and regulation of fresh groundwater

8.1.7 Priority projects

i. Repair & Rehabilitation of Water Supply Network of Matiari TC (Approx. 329.33 Acres)

➢ **Project Identification & Justification**

Almost All the network of Water Supply in Matiari is in poor condition and most of it requires repair & rehabilitation. According to data provided by PHED Matiari, present water supply is sufficient which 1.0 mgd against the demand of 0.64 mgd. Out of total 82% of total population has piped water connection. People purchase their potable water through tankers due to the unavailability of water supply network. This project will help to supply water in those areas where the network is not available.

Population	**21,195**
Total Urban Area in acres (excluding the Core Area "155.87 Acres", water bodies, agriculture and vacant area)	401.63
82% of Total Urban Area	456.74
Proposal for Repair & Rehabilitation of Existing Water supply scheme shall help to supply safe potable water to 82% served population of Matiari town. One Million per 329.33 Acre	329.33 Million

The objective of the project is to get uninterrupted water supply for treatment to supply potable water to the inhabitants of

Matiari town. The project is to improve the collection of raw water supply collection. This project includes increasing the number of pumping stations and up gradation the sizes of pipelines.

Repair and rehabilitation of existing water supply network cover below main components such as;

- Excavation
- Pipe cost
- Gate valve/ Washout valve/ Air release valve
- Joints repairs
- Balancing slopes at all network
- Checking of pipe life with rupture checker Valves for area wise pressure maintenance

➢ **Project Benefits**

After implementing of this project, the Potable water will be supplied to rest of area of Matiari DHQ town.

➢ **Implementing Authority -** Government of Sindh- PHE Department Matiari

➢ **Estimated Cost: 329.33 Million PKR Approx. (Short Term)**

ii. Provision of New water supply network for remaining 18% of Matiari TC (Approx. 72.30 Acres)

➢ **Project Identification & Justification**

Matiari Population	21,195
Total Urban Area in acres (excluding the Core Area, water bodies, agriculture and vacant area)	401.63
Unserved area 18% of Total Urban Area in Acres	72.30
Installation of New water supply scheme is proposed to cater rest 18% population / Area of Matiari town @ Rate of 3.0 Million Per Acre	220.00 Million

Almost All the network of Water Supply in Matiari is in poor condition and most of it requires repair & rehabilitation. According to socio economic survey results approx. 29% of the population of Matiari has no Water Supply Network & dependent on hand pump & community wells. People purchase their potable water through tankers due to the unavailability of water supply network. This project will help to supply water in those areas where the network is not available. Provision of New Water Supply Network will cover main components i.e. Excavation, Pipe cost, Gate valve/ Washout valve/ Air release valve, Joints repairs, Balancing slopes at all network, Checking of pipe life with rupture checker and Valves for area wise pressure maintenance

➢ **Project Benefits**

After implementing of this project, the Potable water will be supplied to rest of area of Matiari DHQ town.

➢ **Implementing Authority - Government of Sindh- PHE Department Matiari**

➢ **Estimated Cost: 220.00** Million PKR Approx. (Short Term)

iii. Installation of Water treatment Plant

- **Project Justification**

- **Ground Water Quality:** The consultants carried out ground water sampling of Matiari, the test report are attached in situation analysis report. Testing parameter results are not within permissible limits WHO/SSDWQ established for drinking water. The city's groundwater source is depleting and contaminated at present but the utility is not in a position to abandon the majority of TWs or alarm the citizens of the critical situation.

- **Surface Water Quality:** The attached sample was collected from pumping Stations of the Matiari Town. This was found contaminated as per details are given in analytical report show non-compliance of WHO and SEPA standards against the parameters of Cadmium, Lead and Mercury, Residual chlorine & Coliforms (Total coliform, fecal coliform)

- **Project Identification**

  As the city is getting 1.00 mgd water supply, which is very contaminated and not fit for human consumption. So there is need for treatment of water. It will improve the living standard of the Matiari town, and also benefit the wellbeing of community.

- **Project benefit.**

  After implementing of this project, every person will get healthy drinking water at their home step.

- **Implementing Authority - Government of Sindh- PHE Department Matiari**

- **Estimate Cost: Rs.350.00 million approx.**

PROPOSED PRIORITY PROJECTS						
S. No.	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Water Supply						
1	Repair & Rehabilitation of Water Supply Network of Matiari TC (Approx. 329.33 Acres)	329.33	-	Non ADP	(Phase Wise)	-
2	Provision of New water supply network for remaining 18% of Matiari TC (Approx. 72.30 Acres)	220.00		Non ADP	(Phase Wise)	-
3	Installation of Water treatment Plant	350.00		Non ADP		

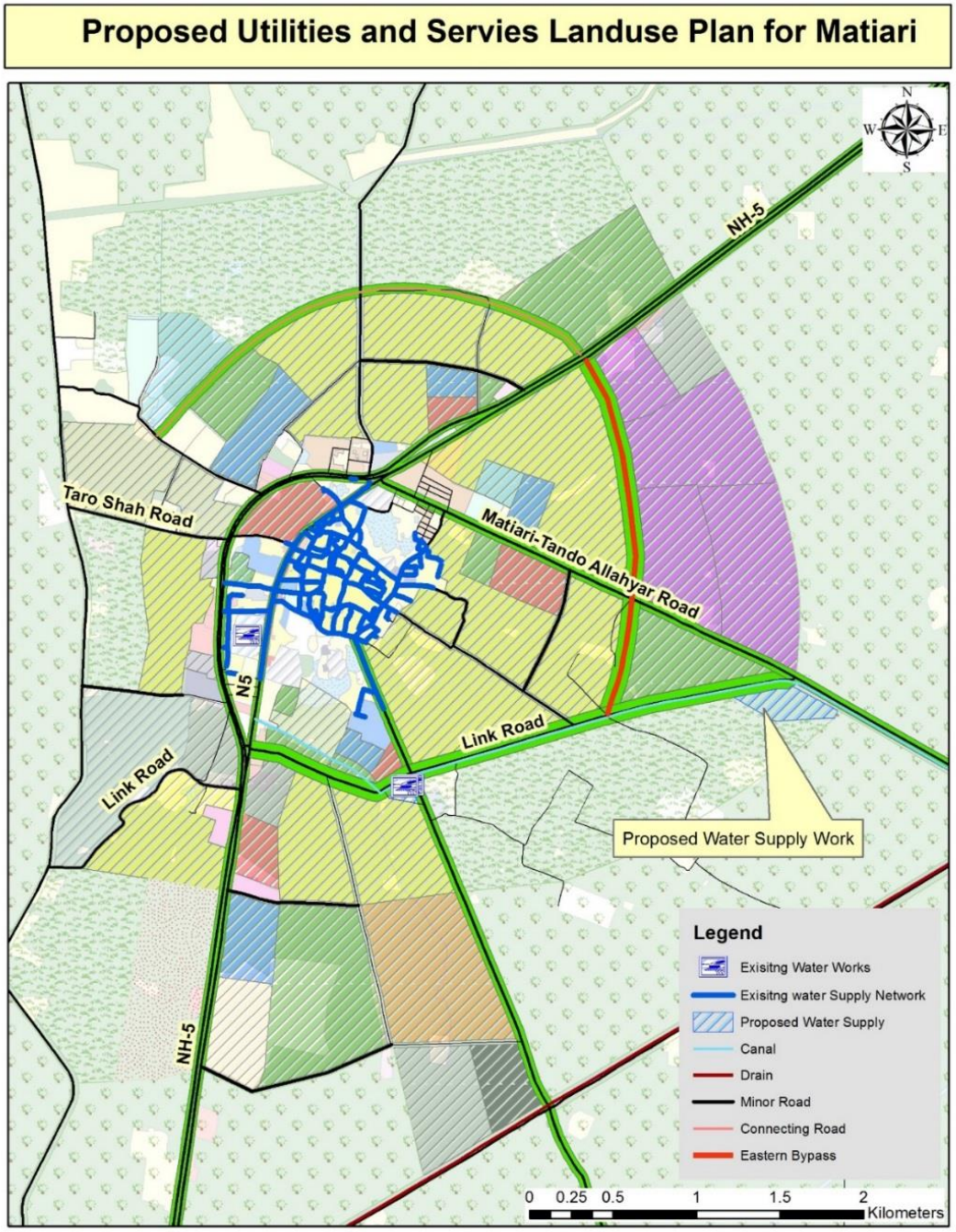


Figure 8:2Proposed Water Works

8.1.8 Immediate Action Plan for Core Urban Area – Water Supply

- **Exiting Water Supply Scheme**

  Almost the whole network of Water Supply in Matiari is in poor condition. In most of the areas people purchase water through tankers due to unavailability of proper Water Supply Network.

- **Immediate Action Plan for Core Urban Area**

  - Repair and Rehabilitation of Water Supply Network

Rehabilitation of Existing Water Supply Network of Core Urban Area Matiari				
S. No.	**Name**	**Area (acre)**	**Per acre cost (PKR) million**	**Cost (PKR)**
Total Core Urban Area : 155.87 acre				
1	**Water Supply System:** *(Water supply system renovation includes supply pipe networks, pumping machinery and equipment's for more efficient and effective supply of water).*	**155.87**	**1.0 million Per acre**	**155.88**
			Total Cost (PKR). Million	**155.88**

Note:

- Water supply system renovation includes supply pipe networks, pumping machinery and equipment's for more efficient and effective supply of water.

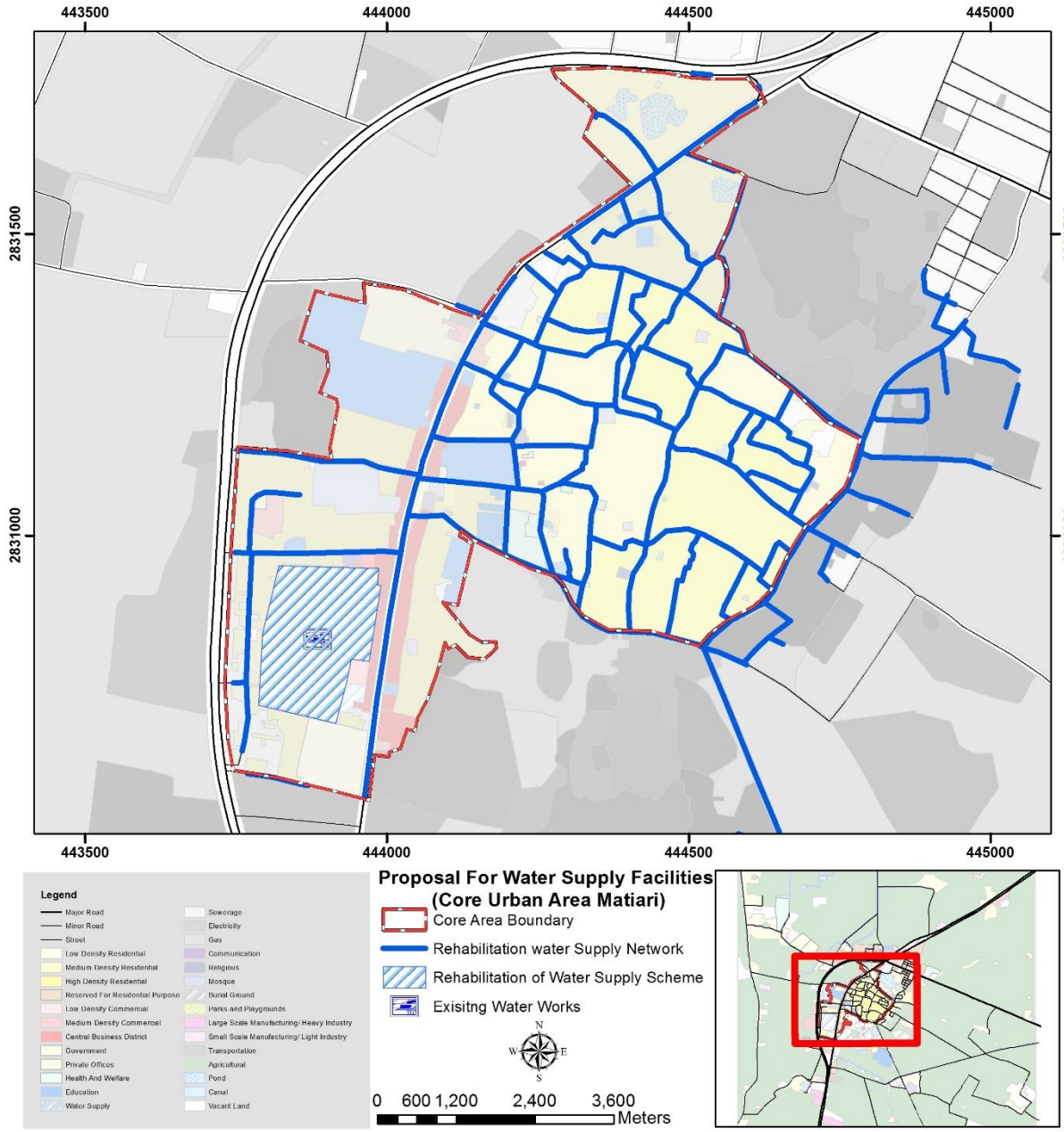


Figure 8:3: Water Supply Map Core Town Area Matiari

8.2 Sewerage and Drainage

8.2.1 Existing Situation

The existing system of Matiari comprises Domestic or Sanitary Wastewater which refers to liquid discharge from residences, business buildings, and institutions. Industrial waste is discharged from manufacturing plants.

Municipal wastewater is the general term applied to liquid collected in sanitary sewers/drains discharge reaching sewage disposal station/sump well from where it should go to stabilization pond but at present raw sewage without treatment is either discharged to Canal or to ditches. There are no stabilization ponds have been constructed.

There are four disposal stations of sewerage located at Gaddih, Pir Noor Shah, Kali kadh, and Bhatti Goth near to sugar mill. Sewer Pipe sizes being used are; 6", 4" diameter RCC pipe 12" dia laid underground.

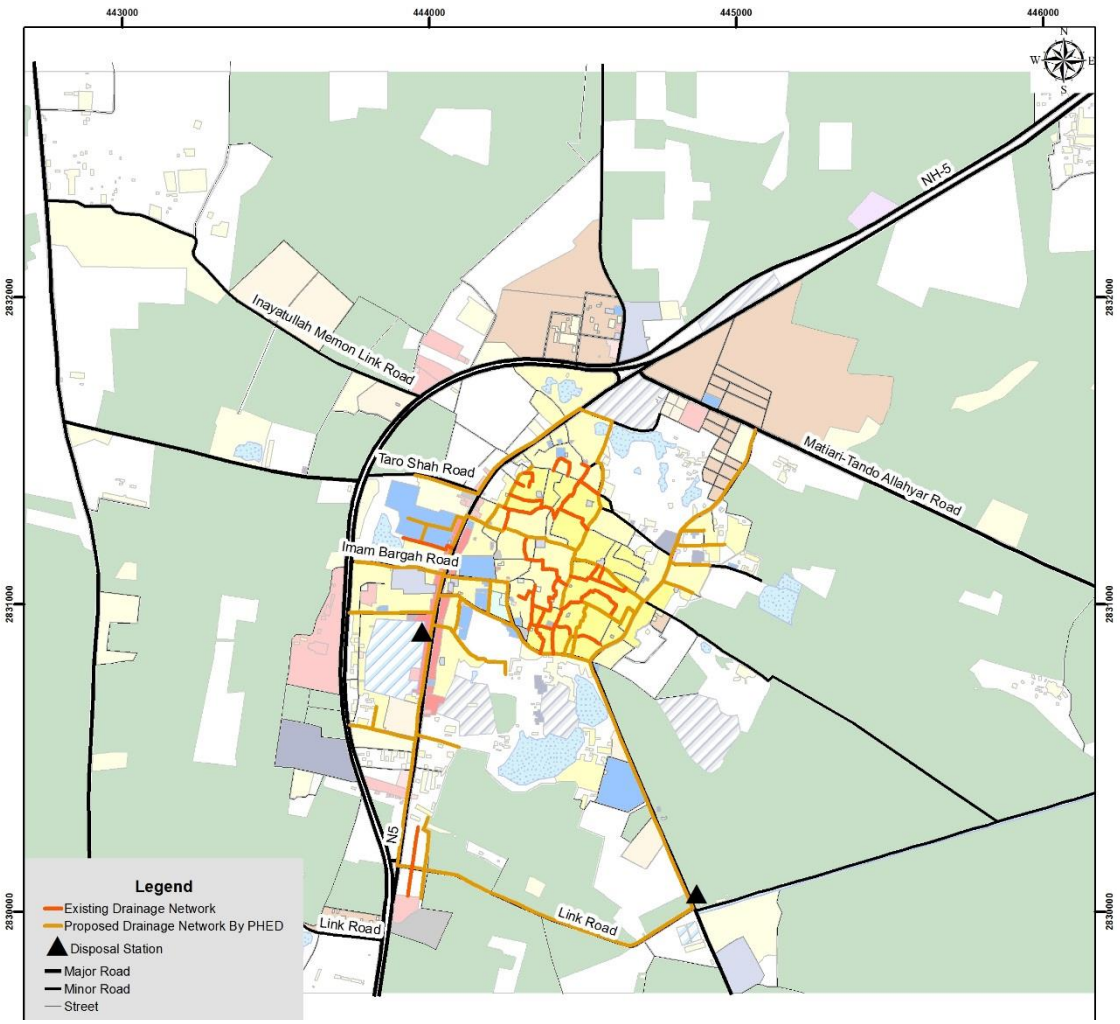


Figure 8:4: Drainage Map of Matiari



Figure 8:5: Broken Drains



Figure 8:6: Damaged & Overflowing Gutters

Waste Water Treatment Plant

Sewage is mainly disposed of in roadside drains, and untreated sewage collects in ponds/swamps. Wastewater is not treated since treatment plant is not available in Matiari TC.

8.2.2 Issues:

- There is no standby pumping equipment at disposal stations. There are 4 disposal stations having no standby diesel pump sets for use during power cuts this causes backup of effluent and overflow on streets.
- The drainage system and structures are in poor condition with open smelly drains and sewers. There is no sewerage treatment and untreated sewerage collects in ponds / swamps or directly discharged in to irrigation canal or agricultural land. The residents were dissatisfied with current sewerage system.
- Land acquisition at this stage for stabilization pond is to be confirmed taking into account the available land of oxidation ditches.
- Provision of stabilization ponds and reuse of treated effluent is practiced at many places

8.2.3 SWOT analysis

Sewage Collection & Disposal			
Strength	**Weakness**	**Opportunity**	**Threats**
1. The existing sewerage system facilitates the	1. Combine system (open channel and sewer) serving most of the town area	1. An appropriate sewerage system plan should be implemented	1. Public health 2. Storm water flooding/ over flow of sewers

Sewage Collection & Disposal			
Strength	**Weakness**	**Opportunity**	**Threats**
urban area of the city 2. Sufficient land for disposal sites is available	2. Wastewater is not treated, since treatment plants (oxidation ponds) are not available 3. Drain water is disposed of untreated into canals and disposal site 4. Open sewers, outdated and disconnected network 5. No policy for re-cycling, and reduction in generation of sewerage 6. Mixing of solid waste disposal into Sewerage Rain/Flood water still standing in town centre areas	2. Improvement of general hygiene/ public health by cleaning sewerage system 3. Canals should be saved from toxic disposals 4. Job opportunities for skilled staff for proper maintenance 5. Revenue can be generated through charging services for cleaning 6. PPP in service delivery	3. Environmental degradation 4. Funding & policies 5. Removal of encroachment 6. Land grabbers

8.2.4 Need Assessment

Estimated wastewater generation for the period to 2037 is shown below;

Table 8-2: Population, Current Water Supply, and Waste Water & Generation Projected up to Year 2037

Town	Descriptions	2017	2022	2027	2032	2037
Matiari	Water Demand	0.64 mgd	0.68mgd	0.73 mgd	0.78mgd	**0.84mgd**
	Sewerage Flows @70 % of WS (mgd)	**0.45 mgd**	**0.48 mgd**	**0.51 mgd**	**0.55 mgd**	**0.59mgd**

Source: Consultant's estimation

8.2.5 Sindh Sanitation Policy 2017[34]

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.
- The policy shall promote the community led approaches to strengthen the demand for safely managed improved sanitary conditions that emerges from local communities. The multistakeholder 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.

[34] Sindh Water and Sanitation Policy 2017

- 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.

8.2.6 Strategic Development Plan

The aim of Strategic Development plan is Provision of adequate Sewerage and Drainage facilities to the DHQ Town through equitable, efficient and sustainable sanitation services. Lanes may continue using concrete drains and to discharge into sewers through screening chamber. Some of the objectives include:

i. Long Term Plan:

Improving standards of public health through provision of improved services supported up by legal, regulatory and binding framework.

- Wherever existing sewerage systems discharge untreated sewerage 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.
- Construction of Waste Water Treatment Plant:
- Land acquisition of at least 42 acres at this stage for stabilization pond replacing oxidation ditches and swamps.

ii. Short Term Plan:

- Priority for sanitation will be accorded to un-served, under-served areas, and disadvantaged areas.
- An overall sanitation plan will be developed for all urban settlements by city District governments and the TC in coordination with all other agencies involved in sanitation.
- Special focus on need based interventions in sanitation sector.
- Gravity flow systems will 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.

8.2.7 Priority Projects

i. Repair & rehabilitation of primary and secondary drains 71% (285.16 Acres) @ of one million per acre) except core urban area

- **Project Justification**

Almost all the drains in Matiari are in poor condition and most of it is open drains. More than 71% areas of Matiari DHQ town is connected with drainage network. Only 29% have manual cleaning system. Therefore it is proposed to repair & rehabilitate existing drainage scheme for DHQ town on priority basis covering an area of 2,695.3 acres excluding core town area. Repair & Rehabilitation of Primary and Secondary Drains will include the following components;

Total Population of TC	21,195
Present Waste water generation	0.45
Total Urban Area in acres (excluding the Core Area, water bodies, agriculture and vacant area)	401.63
Total served area 71% (285.16 Acres)	285.16 Acres

- Repair of Walls, bed and Top slab of drains, manholes and chambers
- Reconstruction of drains ,chambers and manholes where found completely damage
- Cleaning of pipes, chambers, drains and inlet gratings
- Laying of news pipes after replacement of old damage pipes

- **Project Benefits**

As Matiari have not proper sewage and drainage system so after implementing of this project, the sewage water of Matiari town will easily dispose and help to drain the rain water.

- **Implementing Authority**

Government of Sindh- PHE Department Matiari

- **Estimated Cost: one Million per - 285.16 Million PKR Approx.**

ii. Installation / Construction of new drainage network for remaining 29% (116.47 Acres) @ of three million per acre) except core urban area

- **Project Justification**

According to socio economic survey results approximately 29% of the houses have septic tanks in their houses for storage of sewage. This project will help to proper disposal of sewage water of Matiari Town. According to socio economic survey results 29% (116.47 Acres) of town area is not connected with main drainage network and count as unserved area. Therefore it is proposed to install new drainage and sewerage network for

Total Population of TC	21,195
Total Urban Area in acres (excluding the Core Area, water bodies, agriculture and vacant area)	401.63
Total un-served area 29% (116.47 Acres)	116.47 Acres
Total cost @ Three Million per Acre	350.00

DHQ town on priority basis covering an area of 116.47 acres excluding core town area.

- **Project Benefits**

  As Matiari have not proper sewage and drainage system so after implementing of this project, the sewage water of Matiari town will easily dispose and help to drain the rain water.

- **Implementing Authority -** Government of Sindh- PHE Department Matiari
- **Estimated Cost: 350.00 Million PKR Approx.**

iii. Construction of Waste Water Treatment Plant

- **Project Scope & Justification**

Currently, waste water treatment in Matiari Town is directly disposedoff by pumping stations located near ditches to Rohri Canal without any treatment. Due to unavailabilty of sewage treatment plant, the preference is given to conventional / Natural treatment of waste water through oxidation ponds. Therefore it is proposed to construct Waste Water Treatment Plant for DHQ town on priority basis. Initially, construction of WWTP having capacity of 01 Million Gallon is proposed on priority basis, near Dargah Sakhi Hashim Shah Mutalvi road. WWTP involves the process of pre and secondary treatment of waste water. The following components includes the process;

i. Raw water screening
ii. Grid removal
iii. Oil and gas removal
iv. Aeration Tank
v. Sludge Separation & Treatment
vi. Disposal of Sludge

- **Project Benefits:** This project is expected to improve health conditions considerably. This project has a positive impact over the whole population.

- **Implementing Authority:** Government of Sindh- PHE Department and Matiari TC

- **Estimated Cost: 200.00 Million PKR Approx.**

S. No	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Sewage & Drainage						
1	Repair & rehabilitation of primary and secondary drains 71% (285.16 Acres) acres one million per acre) except core urban area	285.16	-	Non ADP	**Short Term**	-
2	Construction of new drainage network for remaining 29% (**116.47** Acres) except core urban area	350.00	-	Non ADP	**Short Term**	-
3	Construction of Sewage Treatment Plants.	200.00	-	Non ADP	**Short Term**	-

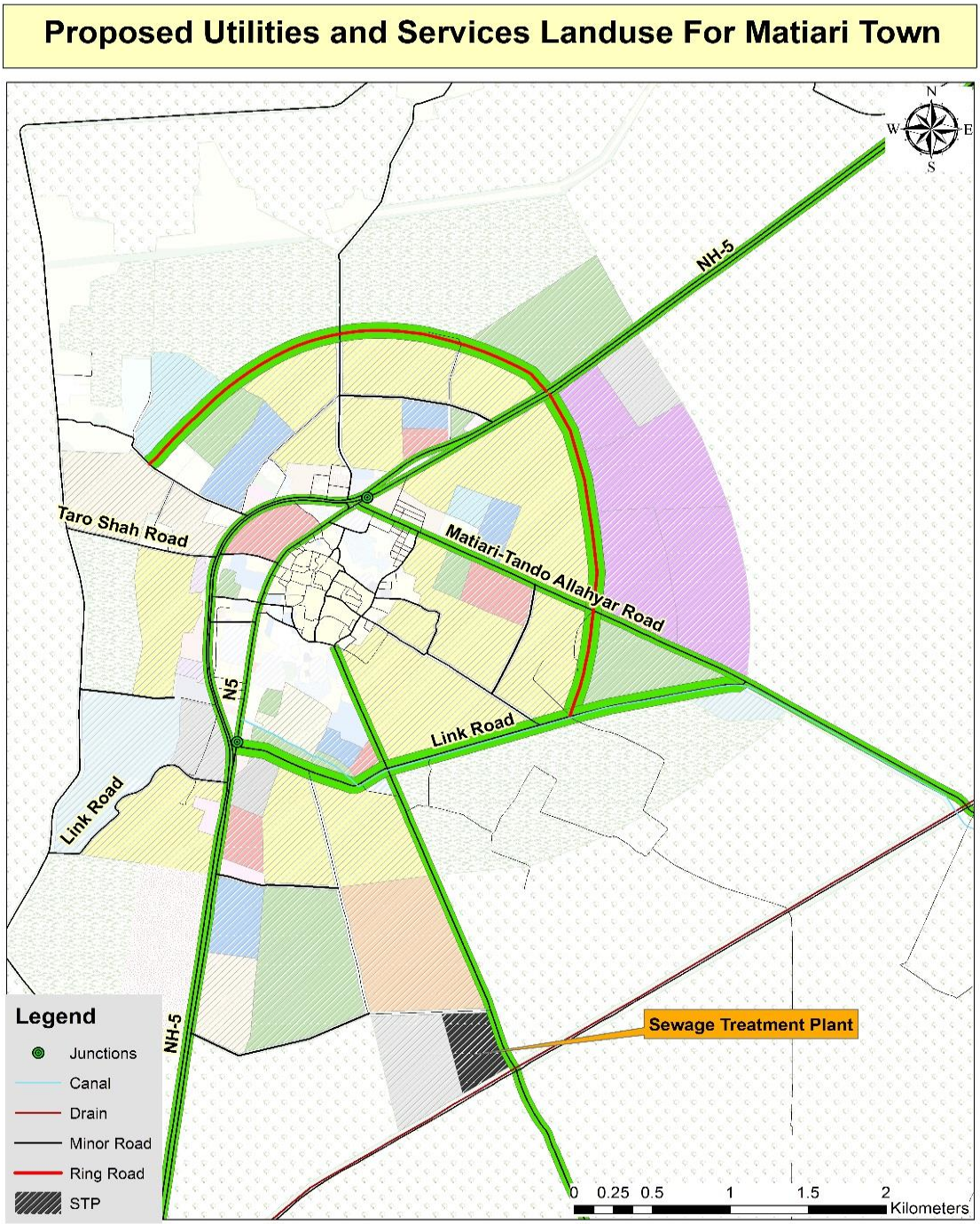


Figure 8:7: Proposed Sewage Treatment Plant

8.2.8 Immediate Action Plan for Core Urban Area

As per the existing condition combine system will remain in core urban area, although preferred to be separate in long run. Lane drainage channels in core urban areas should be covered and main sewers should be laid on all roads more than 8" wide.

Drainage channels in core urban areas should be in the form of underground drainage pipes, however at least covered drains should be used to maximized road and street space. In core urban area gully traps should be developed in all four sides of the chowks or road junctions and they may be connected to underground sewerage system or covered drain system, but it is recommended to divert the surface run off directly for landscaping.

8.2.9 Repair & Rehabilitation of existing Drainage & sewerage network

Interconnections of Open Nallis with Underground Sewers: The primary collection (laterals) is old nallis / open drain system that were connected to newly installed trunk sewers at drop manholes. Often, these sewers get blocked due to street garbage and dirt that causes manholes to overflows. Pumps at the lift station also experience blockage as well.

S. No.	Name	Area (acre)	Per acre cost (PKR) million	Cost (PKR)
Total Core Urban Area : 155.87 acre				
1	**Sewerage System**	**155.87**	**2.0 million Per acre**	**311.11**
2	**Storm Water Drain System**			
			Total Cost (PKR). Million	**311.11**

Note:

- ✓ Rehab of Sewerage system includes all urban core area network system with all related machinery and equipment.
- ✓ Rehab of Storm water drain system includes all the core town area storm drain system through steeps slopes and peak areas with all linking equipment and machinery.

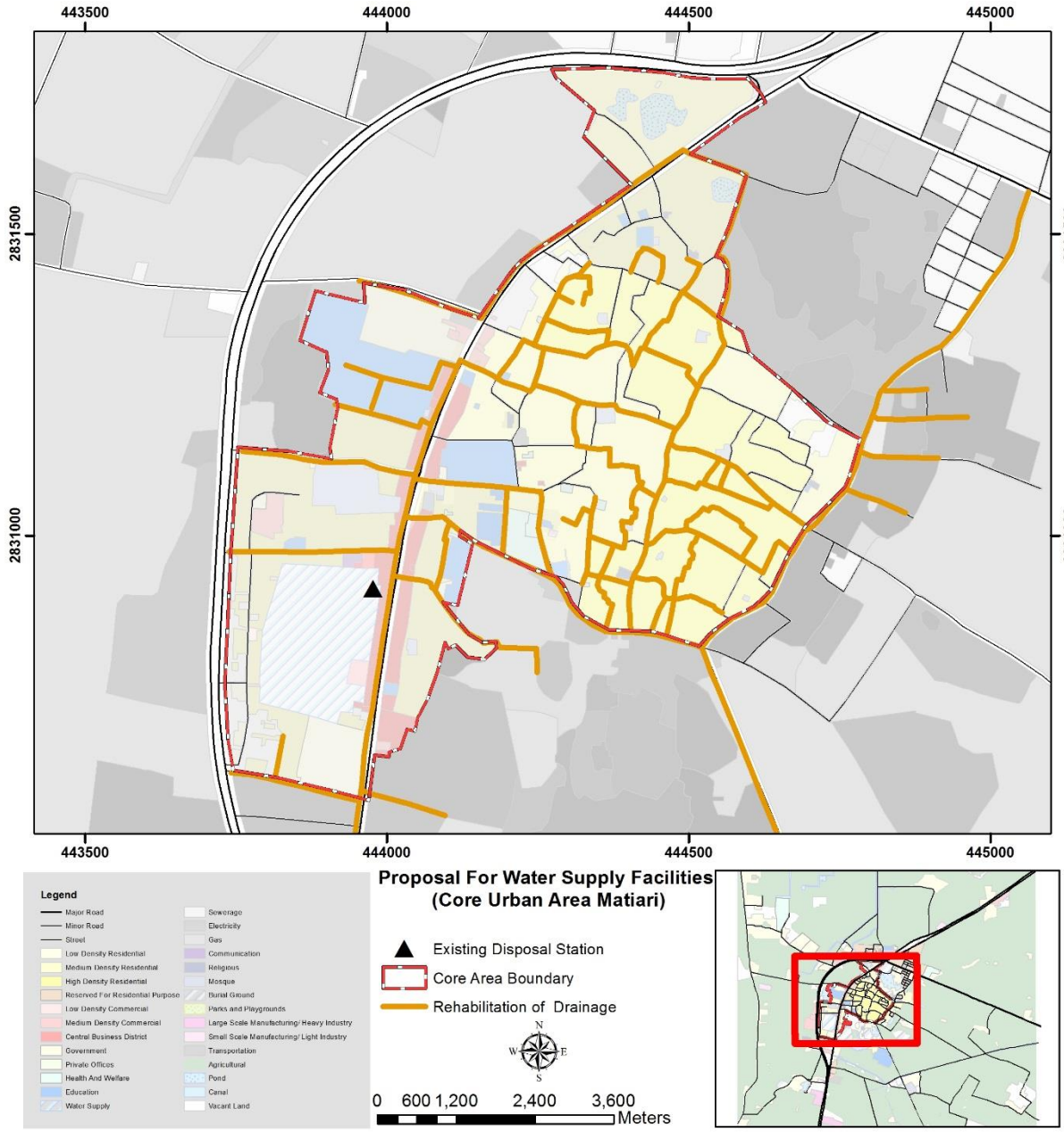


Figure 8:8: Drainage Network Map of Matiari

8.3 Solid Waste Management

8.3.1 Existing Situation

After the passing of Sindh Solid Waste Management Board Act in 2014, Sindh Solid Waste Management Board (SSWMB) has been established which has the responsibility to collect and dispose all kinds of solid waste being generated in Sindh. As indicated, TC is officially responsible for the entire solid waste management of the district under the directives of SSWMB. At present SSWMB has directed the municipal / town committees for identification of land for Garbage Transfer Stations and Landfills so that garbage collection and transfer & transport operations can be handed over to SSWMB for effective management of solid waste. Meanwhile feasibility studies of medical hazardous waste of Hyderabad, Mirpurkhas and Shaheed Benazirabad are in progress. Once the municipal / town committees would be able to allocate proper and adequate land for waste disposal on long-term basis then SSWMB will come into action for effective SWM at primary and secondary level in these District Headquarter Towns.



Figure 8:9: Drain full of Solid Waste

The office location and the premises of the Matiari Town Committee provide a functional office cum workshop station for its waste management fleet. MSW collection vehicles, tractors, trolleys and other equipment are stationed and operates from the administrative office hence remains the focal point of the management and operational activity.

The collection mechanism that exists in Matiari is still primary waste management system. The garbage is collected in open containers / community bins placed in streets or empty spaces designated as throw away places. The waste is collected and transferred/ transported outside limits of town to designate / non-designated dumping sites by means of refuse vehicles and tractor trolleys which are usually inadequate in numbers for handling of MSW by the sanitary / waste collection staff. Total actual numbers of Sweepers /and Cleaning staff is not known. The employed staff in the municipality is also not known.

Hazardous Waste:

There are no special arrangements for the handling, storage and disposal of clinical or hazardous waste except for the breaking of needles and their collection. Hospital waste is internally collected and disposed of by the hospital sweepers No records are kept of where waste is buried as this is at discretion of the sweeper. As there is no control over the disposal of the waste it is highly likely that some is sold to middle dealers and enters the recycling sector.

There is no data available on the hazardous waste generation and its management in Matairi. Whatsoever the waste generated in healthcare facilities (HCF) such as hospitals and laboratories is mingled with the MSW. The estimated quantities of hazardous waste (risk waste) can be estimated from the bedded healthcare facilities.

Table 8-3: Hazardous waste (Healthcare waste) source and estimation in Matiari

S. No.	Healthcare Facilities (HCF) * Matiari	No. of Beds*	HCW @ 1.1 kg/bed/day!
1.	Hospitals Civil/Private/ 0 No.	Nil	-
2.	Taluka Hospital 03 No.	126	138.6
3.	Rural Health Unit 04 No.	31	34.1
4.	TB Clinic 0 No.	Nil	-
5.	Basic Health Unit 21 No.	42	46.2
6.	Mother & Child Health Centre 01 No.	02	2.2
7.	Dispensaries 13 No.	26	28.6
	Total (42)	**227**	**249.7 kg/day**

** Health Profile of Sindh by Districts - 2012, Bureau of Statistics, Govt of Sindh*

! Recent study on HWM, SSWMB unpublished ICEPAK

8.3.2 Issues

Some of the major issues faced by TC are as follows:

- Shortage of machineries and equipment
- Lack of properly organized waste Collection System
- Arrangement of segregation, collection and disposal of infectious hospital waste
- Segregation of Organic waste from Town Solid Waste (MSW) and Treatment
- Safe disposal of hazardeous waste in an environmentally sustainable manner
- Directives for implementation of waste policy framework and execution of its management system.

8.3.3 SWOT Analysis

Solid Waste Management			
Strengths	**Weakness**	**Opportunities**	**Threats**
1. Availability of Town committee.	1. Poor financial and operational management system 2. There is no system to identify toxic wastes produced by various activities. 3. Communities' particularly low income groups are not aware with disposal procedures 4. Many of the households does not have provision of infrastructure for sanitation purpose	1. Appropriate measures should be adopted for collection and re-cycling of SWM 2. SWM recycling will help to generate revenue 3. More landfill sites should be identified for future disposals. 4. Establishing of a primary collection system would add more revenue resources 5. Opportunity for recycling and reuse of solid waste, such as RDF, bio-gas etc 6. PPP in service delivery 7. Recycling by scavengers	1. Improper sanitation 2. Poor public health 3. Threats to plant and animal life Loss of trust building with people in future

8.3.4 Need Assessment

It is recommended to undertake the field study for the determination of waste generation and characterization for Matiari in order to plan and design the solid waste management system. Considering waste generation rate for design purpose as 0.45 kg per capita per day with the current (2017) population of the town committee of Matiari as 21,195 the total Town solid waste load arising in the municipality is approx. 9.5 tons per day, as it is planned for 2037 there will be 12.5 tons per day solid waste management.

Based on National Refrence Manual (NRM): on population of 10, 000, one acre of landfill area is required. So for the population of 21,195 in 2017, landfill area of 2.12 acre is needed and for the projected population in 2037 of **27,879** landfill area of approx. 2.78 acre is required.

8.3.5 Policy Guidelines[35]

Implement integrated solid waste management with 100% coverage in urban areas and

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

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. Atleast 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.

8.3.6 Strategic Development Plan

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

i. Long Term

- Community and Private Sector Involvement in SWM: The active involvement of local communities and the private sector is essential for an effective waste management system. It would be beneficial to start involving local communities and the private sector in waste management, which has been a slow process. This process needs to be accelerated in a well planned manner.

- Public Awareness and Education: It can be brought about in many different ways through the electronic and printed media and street talks, through community organizations such as schools, institutions, and households, using a public-address system, distributing leaflets, for public awareness.
- Implement Waste minimization: It is done through pilot and demonstration projects. These pilot and demonstration projects can be used to raise awareness of basic waste-minimization measures.

ii. Short Term

- The collection and disposing of solid waste is the responsibility of the TC. The mechanism for solid waste management is not available, so therefore a detailed feasibility is proposed to develop an efficient solid waste management in Matiari town.
- The collection system needs to be made more effective and efficient.
- Town Committee has already initiated some work on biomedical-waste management. It should immediately start segregation practice for biomedical waste collection system.
- Encourage On-site Reuse and Recycling: This method will reduce material consumption and the quantity of hazardous waste generated. As a result, material cost and waste treatment cost will be reduced.
- 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.
- Industrial waste disposal should be treated seperately and safely.

8.3.7 Priority Project

i. Feasibility Study for Solid Waste Management Mechanism

➢ **Project Justification**

The collection and disposing of solid waste is the responsibility of the Matiari TC. The mechanism for solid waste management is not available in Matiari so therefore a detailed feasibility is proposed to develop an efficient solid waste management in Matiari town.

➢ **Project Benefits**

This project will help to find feasible solution to provide efficient mechanism of solid waste management and also help to improve the health conditions of the town which are causing un-hygienic due to un-availability of solid waste management in the town.

➢ **Implementing Authority:** Government of Sindh- PHE Department Matiari TC

- **Estimated Cost: 80 Million PKR Approx.** However, a Feasibility study is required for the designing and costing of the project.

S. No.	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Solid Waste						
1.	Feasibility study for construction of Central Composting Plant	20.00	-	Non ADP	**Short Term**	-
2.	Procurement for land acquisation process for Landfill Site (08 acre).	60.00	-		**Short Term**	-

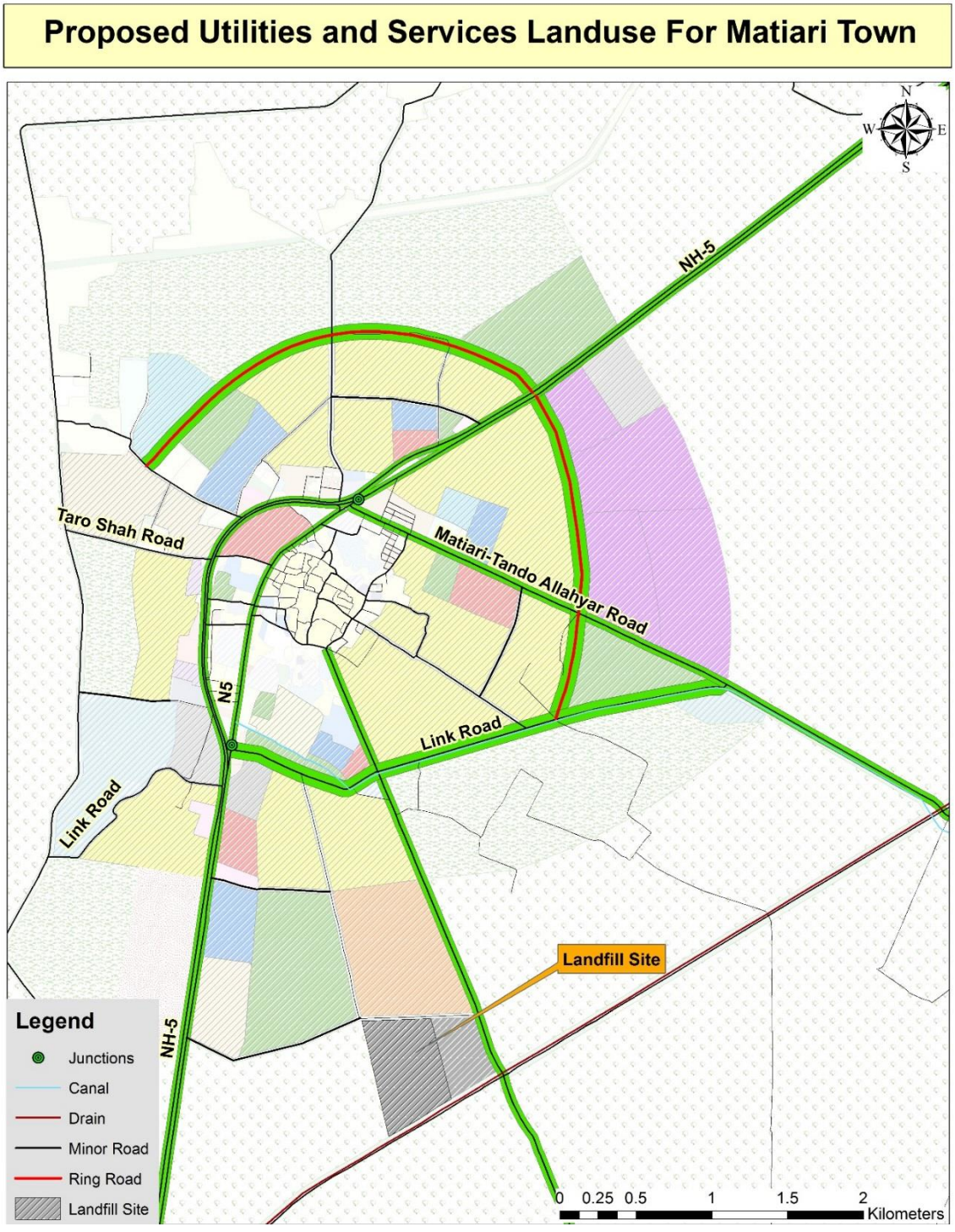


Figure 8:10: Proposed Landfill site for Matiari Town

8.3.8 Immediate Action Plan for Core Urban Area



Heaps of solid waste is evident in the core urban area. It is proposed that primary level collection i.e. door to door collection system should be launched immediately by Town Committee. Waste generated by the market of the core urban area should be picked on daily basis.

Secondary Level Collection (Collection from Preliminary dumping area at ward level to the main Landfill/ dumping site) should also be encouraged. However, it is highly proposed to introduce recycling of reusable items and segregation of solid waste into paper, plastic and glass from household level. These could be achieved from awareness campaingn and installation of segregated bins at mohallah level.

- **Suitable locations for Disposal Points**

  There are number of recognized / established active primary collection points in the town. These are not permanent structures but rather empty corners or vacant places. Besides regularly served designated collection points, every locality has got throw-away sites in the form of depressions, empty areas, cuttings areas etc. These types of non-designated points if come in the collection route are often served by the municipality staff otherwise usually avoided due to shortage of time and resources constraints.

  There had been little if any planning in the location of the landfill sites and there has been no planning for the replacement of existing dumping ground(s). Regarding the dumping grounds, the only information available is about their location outside the town limits. These sites are located at some distance from the town, but now susceptible to be enveloped by increasing urbanization.

MATIARI		SOLID WASTE MANAGEMENT SYSTEM		
CORE TOWN AREA		(Solid Waste Garbage Collection Containers)		
S. No	Name	Containers No.s	Cost / Container	Cost (PKR)
Total Core Urban Area : 155.87 Acre				
1	Placing of Garbage Container at different sites/locations in core town area	65	520,000.00	**33,800,000**
			Total Cost (PKR). Million	**33.80**

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 should kept control on each project for the uplifting of town as per master plans.

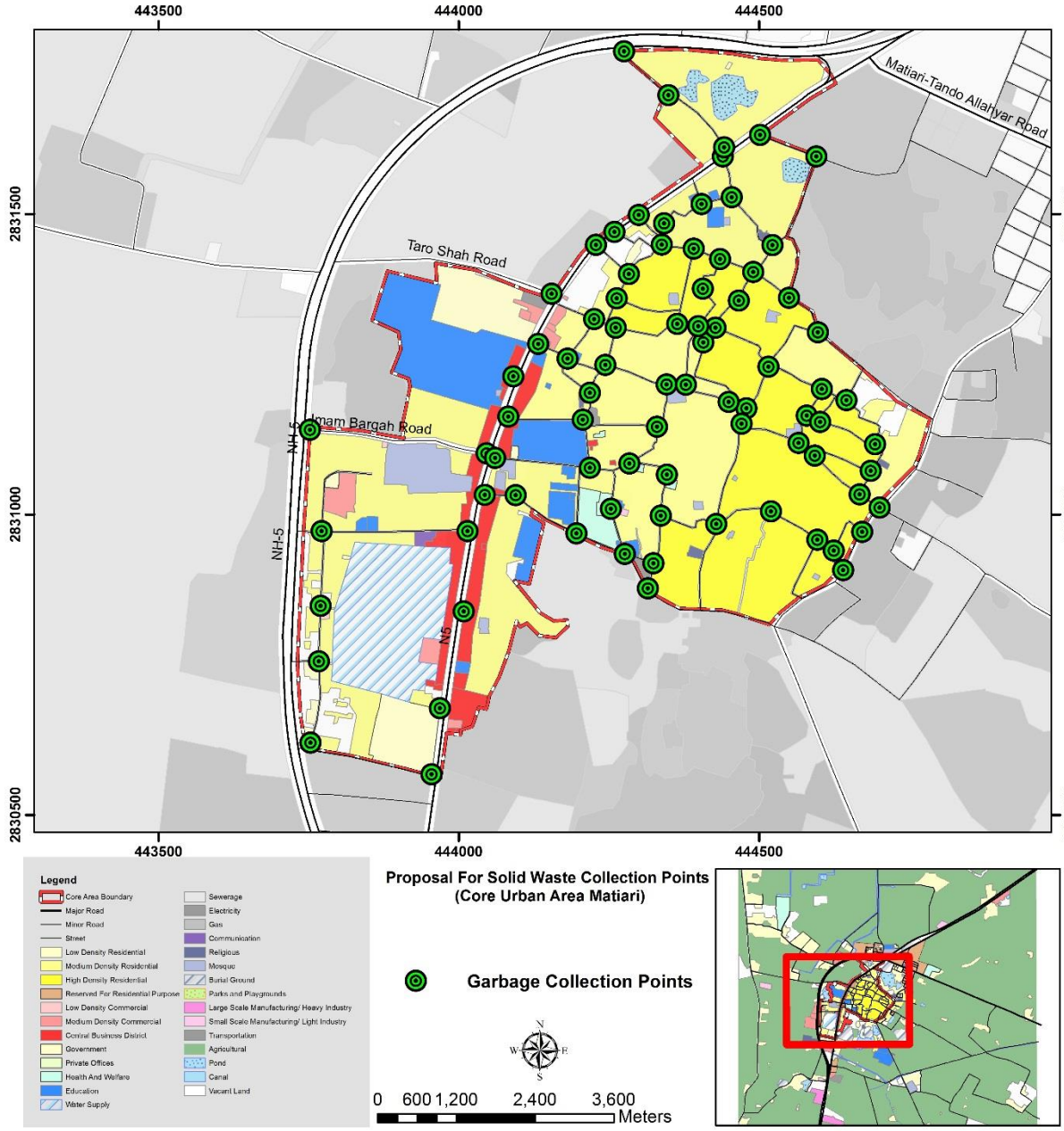


Figure 8:11: Proposed Garbage Collection Points in Core Urban Area

8.4 Firefighting

8.4.1 Existing Situation

Currently there is one fire brigade station situated in Matiari with 4[36] firefighting staff, out of which two are drivers and two are helpers and nonfunctional firefighting vehicles. The Town committee Matiari has no separate budget for firefighting and no vehicle maintenance facility in town.

8.4.2 Need **assessment**

As the current total population of Matiari is 21,195, which will be 27,879 in 2037. 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 are one vehicle is available with Town committee. So there is one fire engine is needed for Matiari Town.

8.4.3 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.

[36] TC office Matiari

9 INFRASTRUCTURE

9.1 Transport and Communication

9.1.1 Existing Situation

- **Airport**

In actual Matiari has direct access to Hyderabad Domestic Airport via N-5 via Sukkur-Hyderabad Road. Travel time from Matiari to Hyderabad is approx.: 40 Km which is 40 minutes. But due to some technical reasons Hyderabad domestic airport is now closed for commercial traffic as of 2013.



Figure 9:1: Hyderabad Airport

- **Railway**

The City is also linked with the national network of Pakistan Railways through Karachi railway line via Karachi-Lahore lane. Tando Adam Junction and Odero Lal station is among the oldest railway stations in Pakistan. This line is the part of first railway line (Karachi-Kotri) for public traffic between Karachi and Lahore. Currently railway traffic is limited due to its operational cost, but long route trains are running on tracks to facilitate the public.



Figure 9:2: Tando Jam Junction

- **Inter City modes of Transportation (Bus and Truck Stand)**

Inter-city buses are very limited and do not operate regularly. There is no proper bus stand but illegal bus and qinqui stands of public transport are evident everywhere. Some bus and truck stands are observed on the periphery of Matiari, which connect Matiari to other Towns. There is one bus terminal construction going on near grid station.



Figure 9:3: Old N-5

Intra City Modes of transportation:
There are no major Bus and Truck stands within Matiari. Unregistered Qingqi and Rickshaws are more in numbers than buses. In percent majority of transport is private vehicle.

9.1.2 Local Road Network

- **Condition of Road**



Figure 9:4: Road Condition

Matiari has significant connectivity with surrounding towns as well as other parts of the country through the regional and national road network. N-5 National Highway is connecting Matiari with Hyderabad and rest of the country. Most of the Private transporters run passenger buses and vans on all the regional and national routes. Matiari has majority good quality roads but needs patch work.

Drainage issues on road side are evident due to which roads are worsening day by day. Absence of street furniture is another issue due to which traffic incidents takes place. Encroachments and unorganized/illegal Qinqui and Rickshaw stands are also evident on the road side which causes on street and off street parking issues.

Street Pattern

The development in project area shows that the present town centre originated along east side of National Highway. Later, city started growing on both sides of National Highway N-5 and as well as on By Pass road of city area. Mostly public projects were established along National Highway N-5 longitudinally. The commercial area of Matiari city is located on the both side of national highway N-5. The internal streets.

Parking/Street Furniture/Street lightning

No separate parking is available except roadside parking .Similarly no street furniture is observed. Street Lightning is available but need to be upgraded and maintained where installed and need extension in other areas as required.

9.1.3 Issues and Problems

- Tertiary and Secondary Roads are in very poor condition
- No formal Bus Terminal
- Traffic Congestion at intersections
- Improper design of roads and intersections,
- Unavailability of Traffic signals and street furniture
- Absence of street lightening and non-uniform right of way
- Encroachments and unorganized/illegal Qinqui and Rickshaw stands are also evident on the road side which causes on street and off street parking issues.
- Lack of Road Safety
- Road side encroachment is evident the in core urban area. Visitors are facing congestion and traffic problems in market due to encroachment and lack of parking spaces
- Drainage issues on road side are evident due to which roads are worsening day by day.

- There is unplanned street network and absence of public transport also poor maintenance of bus bays.

9.1.4 SWOT analysis

LAND USE &TRANSPORTATION			
Land Use Pattern & Transportation			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Mixed land uses (residential, commercial, industrial, administration) 2. Good national / regional connectivity through railway , air and road networks 3. Local public transport provisions by auto-rickshaws 4. Strong network of intra city	1. Unplanned street network 2. Absence of public transport 3. Ribbon type commercial development in residential neighborhoods 4. Poor traffic management. Lack of opportunities for integrated transport provisions 5. Lack of coordination between different transport operating agencies 6. No parking space for rest hours for drivers 7. Haphazard on street parking reduces road capacity 8. Poor design of bus bays 9. Poor maintenance of railway station 10. Poor administration and management control 11. Encroachments around bus bays and railway land sites	1. Promotes compact development 2. Opportunities in the form of wide roads available for mass transit system development 3. Wider road space can be used to facilitate multiple transport activities by implementing road space design standards 4. Proper management can promote public transport services 5. After removal of encroachments adequate space available for traffic signs, lane markings and foot paths 6. If properly administrated and space utilized, could promote smooth flow of traffic on nearby corridors 7. A new transport terminal for goods transport will facilitate timely supply of industrial goods	1. Encroachment 2. On street parking (paid/unpaid) 3. Reduced flow of traffic (low speed) 4. Security issues 5. Economic losses due to transporters strikes 6. Inconvenience due to traffic congestion

9.1.5 Policy Guidelines

- Decrease in private vehicles, especially during peak hours and in CBD areas.
- Decrease in traffic delay.

- Decrease/stability in air and noise pollution.
- Involvement of private sector in transportation infrastructure and services projects.
- Establishment of Mass Transit System.
- Efficient operations and effective regulation of transport services.
- Infrastructure development and up-gradation.
- Integration of public transport services and networks.
- Modernize goods transport and freight facilities.

9.1.6 Sindh Empowerment of 'Persons with Disabilities' Act, 2018 [37]

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;

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.

[37] 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)

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

9.1.7 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

- Create Traffic Engineering Bureaus (TEBs) at divisional level to perform functions as specified in Karachi Division (Traffic Engineering) Act 1985.
- 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.
- Satisfy mobility needs via integration of existing and planned routes, services and Infrastructure.
- Implementation of Axle Load Management.
- Dualization of main arteries.
- Improvement of existing roads geometry

ii. Short Term

- Expansion of railway station
- Improve road design to make safer roads.
- Prevent encroachments on footpaths through litigation.
- Rehabilitation of Farm to Market road network.
- Reduce traffic growth and congestion by achieving a mode shift.

9.1.8 Priority Projects:

i. Repair & Rehabilitation and Improvement of Major, Minor and Streets

➢ **Project Justification**

There is an unplanned & haphazard street network & absence of quality public transportation system in DHQ Town. Major roads & junctions i.e. old National Highway N-5, Tando Allahyar Road, Madarsa Road, Imam Bargah Road, Civil Hospital Road and Ice Factory Road, needs repair rehabilitation with Provision of allied missing facilities (Excluding Core area). However, the overall situation indicates narrow street width, poor pavement conditions, encroachments on footpaths

and road sides, haphazard and illegal parking, open drains, lack of traffic signals and signs, etc. Space along with major roads is available for provision of missing facilities.

- **Implementing Authority:** Works and Service Department government of Sindh, Local Government
- **Estimated Cost: 140.00 Million PKR Approx. (Short Term)**

ii. Installation of Traffic Signals and new Solar Street Lighting on Main Roads

- **Project Justification**

Most of the Streets of Matiari are without street lights in over all the Municipal and all roads and are devoid of this facility. Street Lighting is essential for safe maneuvering of vehicles at night time and enhance sense of security of pedestrians on roads in dark hours. Given the energy crisis in the country, it is recommended to have solar street lights on streets and major roads.

- **Implementing Authority:** Matiari TC, Government of Sindh

- **Estimated Cost: 100 Million PKR Approx.**

List of Priority Projects proposed for transportation

S. No.	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Roads and Communication Network						
1	Repair & Rehabilitation of Major & Minor Urban Roads (Excluding Core Urban Area) (Approx. 21.37 Kms @ rate of 4500 per running meter) 96.20 Million Repair & Rehabilitation of Streets of Urban Roads (Excluding Core Urban Area) (Approx. 17.35Kms @ rate of 2500 per running meter) 43.36 Million • Pedestrian pathways • Designated Parking Spaces • Provision of Footpaths and Street Furniture • Installation of traffic signals & new solar Street Lighting On main roads **Lump sum Amount 100.00/ Million**	240	-	Non ADP	**Short Term**	-

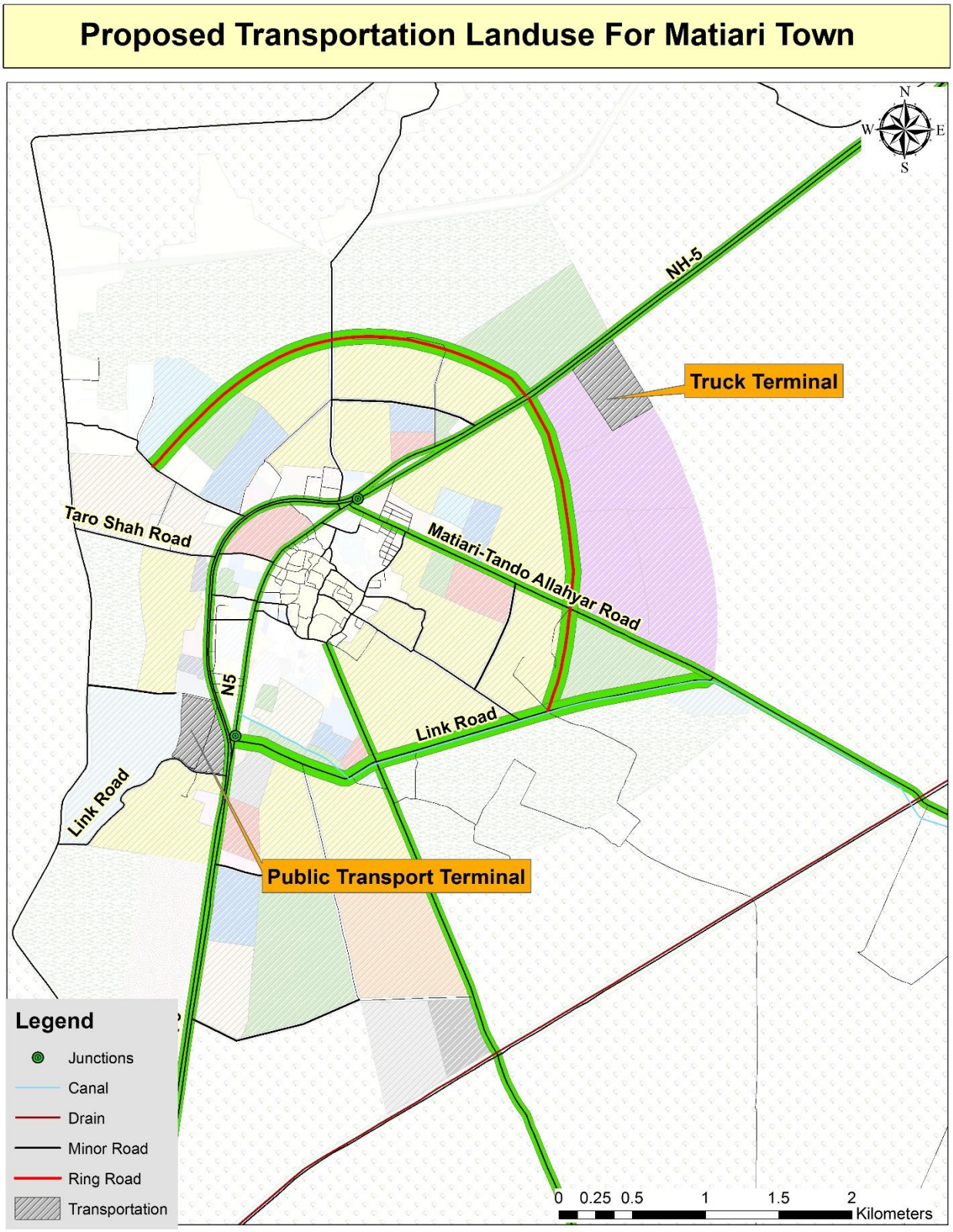


Figure 9:5: Proposed transportation Landuse for Matiari town

9.1.9 Immediate Action Plan

- **Repair and Rehabilitation of Existing Core Urban Roads**

Repair & Rehabilitation of old National Highway N-5, Tando Allahyar Road, Madarsa Road, Imam Bargah Road, Civil Hospital Road and Ice Factory Road, Taxi Stand road and Shahi Bazar Road. The improvement in road pavements with green medians, road markings, signals, pedestrian crossings, will be developed.

The main parameter for rehabilitation of existing roads is to draw a property line, which require very practical approach in such a way that no massive destruction will happen. In this regard community participation will be highly needed to take them on board and to make awareness that this realignment is for the betterment of their area. Thus, the community ownership will make the idea workable, other than this forceful action will not work in long run.



MATIARI - CORE TOWN AREA						REHABILITATION OF ROADS		
S.No	Area / Locality / Address Major Roads	Length (km)	Length (m)	Width (feet)	Width (m)	Area (sq.m)	Cost / sq.m (PKR)	Total Cost (PKR)
1	Rehabilitation of Roads (Madirsa Rd)	0.52	522.691	40.00	12.20	6,374.28	4,500	28.68
2	Rehabilitation of Roads (Link Rd)	0.28	281.327	40.00	12.20	3,430.82	4,500	15.44
3	Dualization/Rehabilitation of Main Road (N5)	1.42	1419.43	41.00	12.50	17,742.83	4,500	79.84
4	Rehabilitation of Roads (Imam Bargah Rd)	0.31	305.426	42.00	12.80	3,910.94	4,500	17.60
5	Rehabilitation of Roads (Civil Hospital Rd)	0.11	111.489	43.00	13.11	1,461.59	4,500	6.58
6	Rehabilitation of Roads (Taxi Stand Rd)	0.55	553.42	44.00	13.41	7,423.93	4,500	33.41
7	Rehabilitation of Roads (Civil Hospital Rd)	0.21	207.694	45.00	13.72	2,849.45	4,500	12.82
8	Rehabilitation of Roads (Ice Factory Rd)	0.14	141.631	46.00	14.02	1,986.29	4,500	8.94
							Total PKR Rs. Million. (A)	203.31
Streets								
1	Repair and Rehabilitation of Streets	8.00	8000	10.00	3.05	24,390.24	2,500	60.98
							Total PKR Rs. Million. (B)	60.98
							Total PKR Rs. Million. (A+B)	264.29

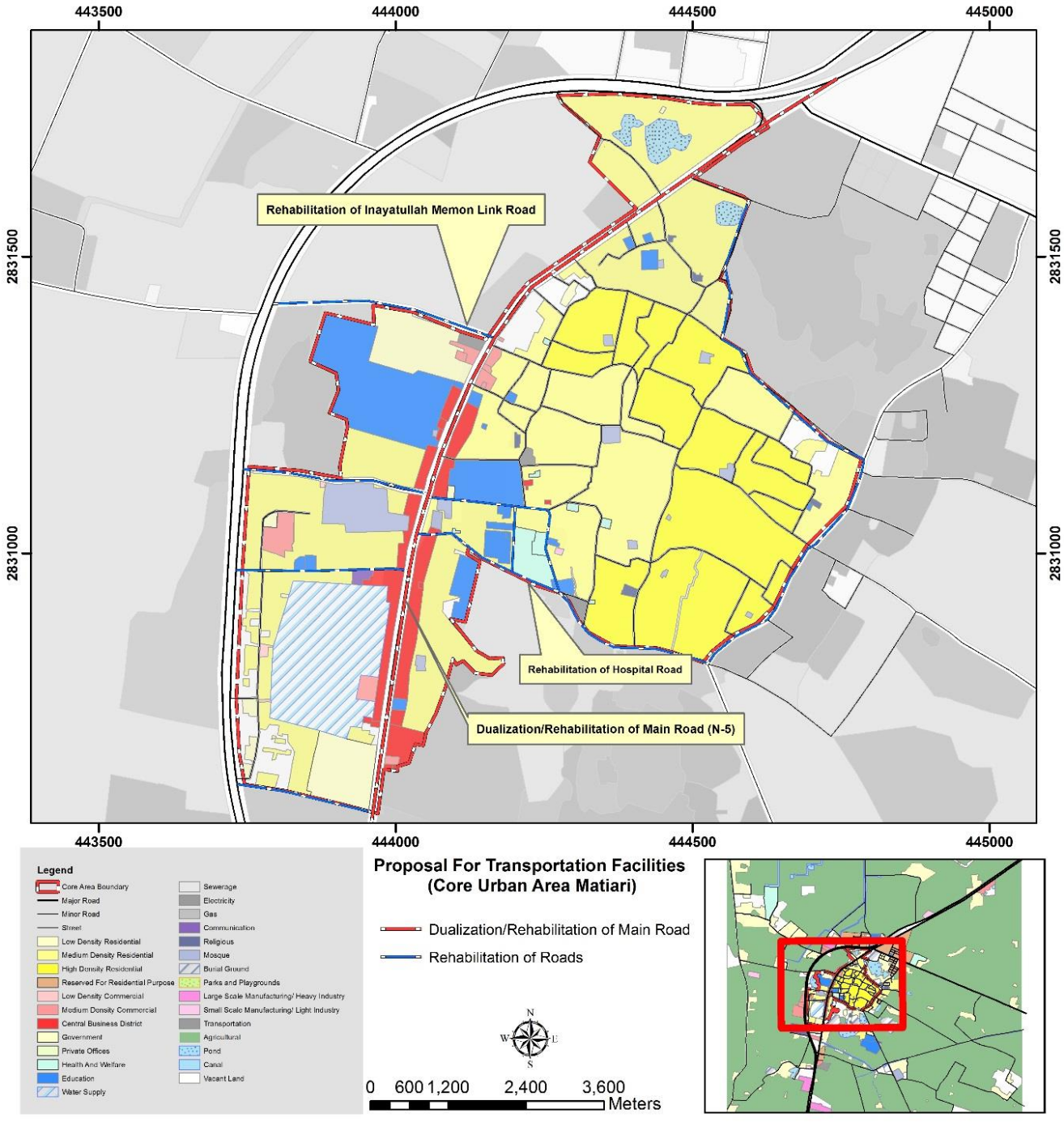


Figure 9:6 Proposal for Transportation Facilitations for Core Urban Area Matiari

- **Monuments**



Repair & Rehabilitation of Existing monuments should take place for the beautification purposes.

- **Pedestrian Movement and Street Furniture**

Pedestrian movement will be encouraged in core urban area by restoring footpaths on both sides of the roads in the city center. All existing encroachments on the footpaths should be removed to allow walkability in the city canter. Additionally some walkways should be designed in the CBD area by applying the pedestrianization policy there.

- **Provision of Footpaths and Street Furniture**



Provision of street furniture in the core urban area also needs immediate attention. Street lights, benches, footpaths restoration, traffic signals, zebra crossings and bus stops with shades should be installed on immediate basis.

Figure 9:7 Model of Walkway in City Centre

- **Immediate action plans for Core Urban Area**

Immediate action plans for Core Urban Area in Matiari require that the right of way of roads should be restored by removing all encroachments along the main Shahi Bazar & Allah Wala Chowk Area.

9.2 Communication

9.2.1 Telephone, Mobile, Internet

The epicenter of growth in mobile phone services Matiari is gradually covering to semi-urban and rural areas localities. Remote areas have started showing growth, led by the expansion in cellular networks, increasing awareness of the usage of voice and data connections and availability of mobile handsets at affordable prices.

The PTCL land line areas cover Matiari and surrounding areas. A significant population uses phones to remain connected with their outstation relatives and friends, who have gone there for education and in search of livelihood.

However, the usage of internet in Matiari is slightly different from that in the urban cities. Most of them use internet to enjoy audio and video songs and to watch movies. Regarding Internet and WiFi the survey showed that only 27 household out of 153 are using the facility. The smart cell phones are shifting the situation and people get easy access to net by different service providers in the area.

9.2.2 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 offer facilities and service station	1. Only a small amount of population is served by PTCL services, station and network 2. Lack of information sharing regarding agricultural activities, public health, veterinary, disaster forecasting etc. 3. 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:

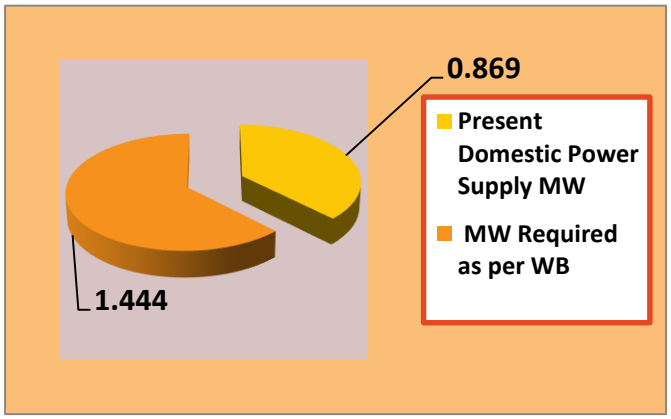
Swift transportation facilities, farmer friendly marketing arrangements and, above all, a well-maintained Communication network are the basic requirements for an efficient and profitable agricultural sector. The

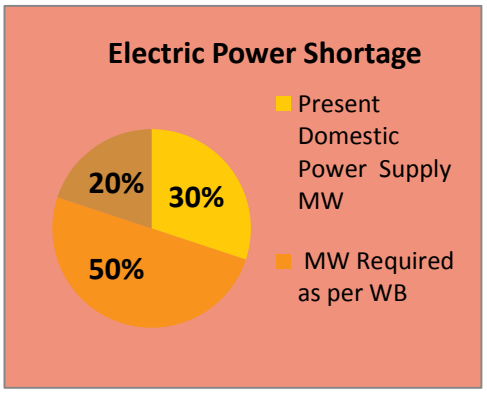
District government needs to improve market and support service infrastructure including farm-to market Roads. This sector will need increased and sustained investments in communication infrastructure in rural areas.

9.3 Energy

9.3.1 Existing Situation

The power supply is through HESCO-WAPDA transmission system. The population of Matiari in 1998 census was 16,336 which have increased to 21,195 in 2017 census at an annual growth rate of 1.38%.
During socio-economic survey, respondents were also asked about Electric power in their house. Most of the respondents replied to the questions asked about electric power. Analysis of the answers revealed that 96% households have HESCO electricity and only 4% have no HESCO power supply.
As the result of survey indicated average power consumption per household in the area about 150 KWH, this takes the total domestic load of 0.869 MW.
The Electric Power consumption (KWH per capita) in Pakistan was reported at 472 in 2014, according to the World Bank collection of development indicator, complied from officially recognized sources. Several non-sovereign entities are also included for informational purposes, with their parent state noted. The per capita data for many countries may be slightly inaccurate as population data may not be for the same year that the consumption data are. This household load projected to 2017 at the rate of 8% annual which comes round 595 KWH.
Thus the calculated total load comes out to be about 1.444 MW; it means there is shortage of about 0.575 MW which is being managed by planned load shedding of different feeder one by one zone wise.





9.3.2 Issues and Problems:

- Pakistan is facing serious energy deficit from last 10 year. Distribution and transmission losses (most probably due to theft), have made Pakistan one of the worse country as far as energy production is concerned.
- There is a big gap between demand and supply resulting in load shedding of electricity. Such a big gap has led to load-shedding of 12-16 hours across the country.
- Pakistan is continuously suffering from power crises as nearly one third of demand for electricity.

- Pakistan has had too much potential to get electricity, but very few power producing plant were installed due to lack of any integrated and proactive planning to fulfil future needs.
- The key to success in the power sector lies in the resolution of these issues.

9.3.3 SWOT Analysis

Power Supply & Distribution			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Almost whole urban area gets coverage of electricity	1. Poor maintenance of electricity supply infrastructure 2. Power shortage due to non-payments of bills 3. Line losses and power theft. 4. Outdated network in old town areas 5. No alternate source of electricity is available in the district	1. By increasing the capacity of grid station will minimize electricity shortage & maximize production 2. Opportunities available for alternative energy production through solar energy and wind power 3. Renewal of outdated network to meet existing and future demand	1. Load shedding. 2. Threat to agriculture and industrial production and overall economy 3. Crime rate. 4. Political will and policies at work 5. Electricity theft

9.3.4 Current Power Supply/Demand

Growth rate 1998-2017 per year 1.38%

The consumption of electricity by households on entire country as well as on urban-rural basis including income of household, family size, number of rooms in the house, region, province and electricity consuming appliances like air-conditioner (AC), refrigerator, freezer, computer, washing machine and air cooler. It was found that expenditure on electricity is income inelastic, increase in family size and the number of rooms raises the expenditure on electricity on household level. Households living in urban areas have more expenditure on electricity as compared to the rural

Year	Population	Yearly Upsurge of Power- Depending on Development & Standard of Living
1998	16,336	MW
2017	21,195	1.444
2020	22,085	1.767
2025	23,651	1.892
2030	25,328	2.027
2035	27,125	2.306
2037	27,879	2.370
Source: Consultant's estimation		

households. Since the presence of electricity-consuming appliances always contributes positively towards the electricity expenditure. The same evidence is empirically proved
here. Air-conditioner and Freezer are the two most powerful contributors. Thus, to control or reduce the demand for electricity, use of air conditioner and freezer must be reduced.
Load is projected further up to year 2037, with average increase from 63W to 85W per person, the increase of load as shown in table.

9.3.5 Strategic Development Plan

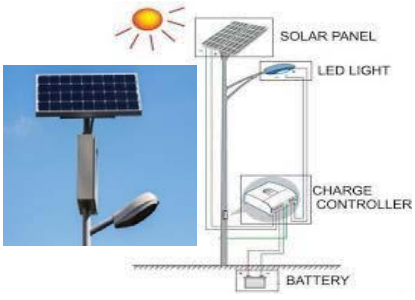
Strategies for Electricity includes

- The effective development of low cost energy production systems can be used
- To offset water scarcity by either deep drilling for freshwater or direct desalinization of brackish water.
- Success in achieving fuel efficiency, adopting new technologies and altering existing fuel-use
- Habits depends largely on women who are the primary users of fuel wood. They must be made aware of the long-term ramifications of adopting these innovations
- Addition of sub stations as per requirement
- Encourage energy efficient building construction
- Up gradation of grid station
- Promote energy efficient appliances and devices
- Feasibility study for alternate energy sources (Solar,biogas etc)

9.3.6 Immediate Action Plan

ABC wires should be used in the core urban area to avoid short circuits and thefts. This will also increase the beauty of the core urban area.

- **Streetlights**



It is proposed to installed streetlight in all over core urban area. It is suggested to use streetlights with LED panel and solar power battery support. This can save energy and light can be lit even during the load shedding hours, but need regular maintenance. Considering Narrow Street and road width, it is recommended to use wall mounted poles in narrow streets, while floor mounted poles on other roads.

- Promote energy efficient appliances and devices
- Replace ordinary street lights with solarized Wall Mounted street lights

PREPARATION OF DEVELOPMENT MASTER PLAN FOR DHQ TOWN - MATIARI				
Core Town Area - Proposed Street Lights				
S.No	**Name**	**Length (km)**	**Length (feet)**	**Cost (PKR)**
1	Proposed Total Length of Street (km) for wall mounted streets lights.	**8.00**	**26,247**	6,561,675.00
Total Cost (PKR). Million				**6,561,675.00**
				6.56

Note:
***** Wall mounted street lights approximately should be placed on distance of *15 to 20* feet apart.
***** Each wall mounted street light cost *(Rs. 5,000/-)*
***** As per total length of Streets for this proposal 1,312*.00 No.s* of wall mounted streets should be placed in core town area.

9.4 Gas Supply

9.4.1 Existing Situation

A maximum of 153 households had responded to the questions asked on availability of Gas. As given in the Table below, 127 houses had the gas available to them, while the gas was not available to 26 houses. Therefore about 83% households have the gas supply by SSGC and 17% were using alternate source of fuel for their daily household needs.

Table 9-1: Availability of Natural Gas

Availability of Natural Gas	No. of Respondents	Percentage
Available	127	83%
Not-available	26	17%
Total	**153**	**100%**
Source: Consultant's Survey, July 2017		

Households not having Natural Gas provided by SSGC are dependent of alternate sources. 26 out of 153 respondents not having gas availability are using following alternate resources which include 73% wood and 27% Gas Cylinder.

Table 9-2: Alternate Source of Gas

S. No.	Alternate Source of Gas	No. of Respondents	Percentage
1.	Wood	19	73%
2.	Gas Cylinder	7	27%
Total		**26**	**100%**
Source: Consultant's Survey, July 2017			

Table 9-3: Type of Fuel used in Kitchen

Other than natural Gas which is 93% and used by the majority of the respondents, 7% are using wood whereas 2% uses other Fuels like LPG, Bio gas and coal as fuel.

The table below shows the monthly average gas consumption as provided by only 23 houses due to lack of awareness regarding gas consumption is Cubic Meters (CMS).s. Unit of gas consumption is Cubic Meters (CMS).

S. No.	Type of Fuel used in Kitchen	No. of Respondents	Percentage
1.	Natural Gas	139	93%
2.	Wood	11	7%
3.	Other	3	2%
Total		**150**	100%

Source: Consultant's Survey, July 2017

9.4.2 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

10 ENVIRONMENT

10.1 Existing Situation

The district lies in 68°14”8’ to 68°14”40’ east longitudes to 25°26”20’ to 26°5”43’ north latitudes. The district is bounded by district Sanghar on the east, district Jamshoro on the west, district Shaheed Benazirabad on the north and district Hyderabad and Tando Allahyar on the south. District Matiari has three talukas Matiari city, Hala and Saeedabad. Matiari city is located at the south of the district adjacent to Hyderabad and Jamshoro.

Geographically, the District Matiari land area is part of Lower Indus Plain, more specifically flood plain of the Indus River system which is a vast alluvial plain that runs along the Indus River. As such the District area consists of flat land that slopes towards the river. Protective embankments or dykes had to be provided in view of the devastating floods of the past which used to submerge at least 20 to 40 km land on either side of the bank. The Hala Reserved Forest area has accordingly been embanked. The average elevation of the district is 50 m above mean sea level.

The topography within two miles of Matiari is essentially flat, with a maximum elevation change of 62 feet and an average elevation above sea level of 83 feet. Within 10 miles is essentially flat (157 feet), while within 50 miles contains only modest variations in elevation (2,316 feet). The area within two miles of Matiari is covered by cropland (93%), within 10 miles by cropland (59%) and bare soil (29%), and within 50 miles by cropland (51%) and bare soil (42%).

- **Forest resource**

PAI forest is situated at a distance of 2 Km from Sakrand town. It surrounded by Deh Marvi and Sakrand in Khyberani Forest is situated close to river Indus near Matiari city, at a distance of about 5 km from National Highway. The forest consists of 25 compartments and the total area of forest is about 3,000 acres. It has been declared a Reserved Forest by the Sindh Forest Department. Like some other forests in Sindh, this forest is also facing challenges like shortage of water, encroachments and illegal logging. Khyberani Forest was also a riverine forest which depended on Indus river water prior to the construction of Sukkur Barrage.

Ten villages are located along the forest boundary. More than 50,000 cattle of these villages solely depend on these forests for grazing. Deforestation and conversion of the forestland into agricultural land is persistent. Influential people now occupy about 2,000 acres. Wildlife habitat is being degraded because of agricultural activities. The wildlife including the endangered hog deer are under threat to be vanished from this habitat.[38]

- **Ecologically Sensitive Areas**

  There are no ecologically protected areas found in District Matiari.

[38] WWF, ECOLOGICAL ASSESSMENT OF FAUNA at Khyberani Forest, District Matiari, Sindh. Baseline Survey, 2010 - 2011

- **Meteorology & Air Quality**

  In Matiari, the summers are sweltering, muggy, arid, and windy; the winters are short, comfortable, and dry; and it is mostly clear year round. Over the course of the year, the temperature typically varies from 11°C to 41°C and is rarely below 8°C or above 44°C.

  Following table shows the annual average temperature and average rainfall data of Matiari. (Weather station nearest to Matiari is located 32km north from Hyderabad Airport, so meteorological data of Hyderabad has been used here

  The results depicted that the air quality parameters SO2, NO2, NO, CO, SPM and PM2.5 are within the prescribed SEQS but limits of PM10 is exceeding the upper limits of SEQS which corresponds to the presence of dust due to dirt roads and agriculture terrain. High levels of SO_2 and NO_2 also show that the vehicular emission contributes the deterioration of air quality. Also the noise readings at few point of time are exceeding the prescribed limits of SEQS for commercial area i.e. 65dBA which also depicts the road traffic congestion.

- **Waterlogged and Salt Affected Area**

  Irrigation is essential for the arid climates of Pakistan for achieving and sustaining food security. However, inappropriate and inefficient irrigation has raised the water table in the Indus Basin Irrigation System. Twin menace of salinity and waterlogging is reducing the productivity of agricultural lands. These two problems co-exist at most of the places; however, sometime problems with excess water occur in the absence of salinity (Kahlown and Azam 2002). Canal irrigation without adequate drainage in arid environments of the IBIS (flat topography, lack of natural drainage, porous soils, and arid climate with higher soil evaporation) certainly leads to rising problems of salinity and waterlogging.

  Some parts of the district (macro environment) are affected from waterlogged due to intensive irrigation, as a result small ponds have formed on land due to high water table. Similarly, areas are also affected by salinity. These Waterlogged and salt affected patches of land areas are unsuitable for crop cultivation. However, vegetation in such areas is limited to salt resistant species such as Tamarixsalina (Tamarisk), Tamarixindica (Tamarisk), Tamarixaphulla (Tamarix) and grasses like Saccharumspontaneum (Sar). Saccharumbenghalenesis. Other species include Vallisnera, Typha (Pun) and some sedges etc. it is estimated that approximately 7% of the project area consists of waterlogged and salt affected wasteland

10.2 SWOT Analysis

Strengths	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 majority of the area is covered with agricultural fields.	1. Loss of agricultural land through land development for housing purpose 2. Water logging 3. Unplanned growth inside town. 4. Lack of utility services	1. Mixed land uses may create activity centres 2. High density will overcome housing shortages	1. Land grabbing 2. Slums 3. Unplanned growth 4. Threat to agricultural land Private sector may increase the cost of services
Land			
1. The plane lands of Matiari are very fertile and productive. 2. Indus River flows alongside the western border of the district	1. Unplanned land uses 2. The lands along the river are formed of silt and sandy loam 3. Limited availability of govt. land for future spatial growth Poor administration by agencies monitoring urban growth of the city	1. If treated through appropriate urban design principals & standards, can be transmitted into mixed land uses and strong activity centres 2. May increase productivity if cultivated at full strength	1. Land shortage for new development 2. Contamination of land in un-irrigated areas 3. Slum formation
Climate			
1. Climate is suitable for crop production 1.	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	Agricultural practices can be changed in accordance with weather condition for maximum production	1. Droughts 2. Heavy rains affects agricultural production

Strengths	Weakness	Opportunity	Threats
Air			
1. Air quality in the rich agricultural belt is good for human health, and also keeps ecological balance in atmosphere 2. Most of the area is air pollution free	1. Inner city air is polluted by high volume of traffic	1. Development planned with respect to air circulation can provide relief to inner city's polluted environment In future the town can be planned as Green City	1. Air pollution 2. Respiratory diseases
Fresh Water Bodies			
1. Strong irrigation network is available 2. Suitable areas present for Inland fisheries 1. Availability of private fish production farms	1. Water contamination due to waste disposal 2. Contamination of standing water bodies created by rain and flood water at open lots is an invitation to malaria and dengue 1. There is no any governmental fish farm	1. Temporary water bodies can be used for fish farming 2. To provide the extension services in private sector 3. To acquire land for fish production in the district 4. Lease of fishing rights, conservation, management and promotion of fisheries	1. Contaminated water is a serious threat for human health 2. Standing water gives birth to diseases 3. Threat to agricultural land 1. Water logging

10.3 Issues and Problems

- Water logging and salinity
- Water Contamination
- Low quality of surface water that is not fit for drinking
- Seismic Risk
- Aging of surface drainage canal system
- Inner city air is polluted by high volume of traffic.

10.4 Policy Guidelines[39]

- Enhancing role of local governments in sustainable management of natural resources

[39] National Forest Policy 2010

- 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.

10.5 Strategic Development Plan

i. Long Term Plan

- Drainage can be improved on many sites and is the first thing to consider once a waterlogging problem has been identified. Options might vary from shallow surface drains (ie. Spoon- and 'W'-drains) to more intensive drainage using wide-spaced furrows, to the intensive drainage form of raised beds
- 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

ii. Short Term Plan

- Ensuring environmental sustainability
- Need of Permits to discharge waste and pollutants into the environment;
- Restoration and maintenance to preserve ecological cycles, functions and services of environment
- Increase the productivity of rangelands
- Provide recreational facilities for public by improving forest parks, wild life sanctuary
- Rehabilitate degraded ecosystems and create environmental awareness
- Develop and implement policies that integrate the objectives of conservation and development to reduce pressure and protect environmental values and conserve biodiversity
- Fostering public-private partnerships
- 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

11 DISASTER RISK MANAGEMENT

11.1 Existing Situation

District Matiari is bounded by district Sanghar on the east, district Jamshoro on the west, district Shaheed Benazirabad on the north and district Hyderabad and Tando Allahyar on the south. District Matiari has 3 talukas Matiari city, Hala and Saeedabad. Matiari city is located at the south of the district adjacent to Hyderabad and Jamshoro. Geographically, the District Matiari land area is part of Lower Indus Plain, more specifically flood plain of the Indus River system which is a vast alluvial plain that runs along the Indus River. As such the District area consists of flat land that slopes towards the river. Protective embankments or dykes had to be provided in view of the devastating floods of the past which used to submerge at least 20 to 40 km land on either side of the bank. The Hala Reserved Forest area has accordingly been embanked. The average elevation of the district is 50 m above mean sea level.

The topography within 2 miles of Matiari is essentially flat, with a maximum elevation change of 62 feet and an average elevation above sea level of 83 feet. Within 10 miles is essentially flat (157 feet). Within 50 miles contains only modest variations in elevation (2,316 feet).

The area within 2 miles of Matiari is covered by cropland (93%), within 10 miles by cropland (59%) and bare soil (29%), and within 50 miles by cropland (51%) and bare soil (42%).

11.1.1 Disasters in district Matiari

i. Floods / Rains.

District Matiari is one of those districts of Sindh who was hit by 2010, 2011 and 2012 rains and floods the relative severity of floods was ranked as High in district Matiari. River Indus, after receiving water from 5 of its tributary rivers, causes floods in the northern and southern parts of Sindh province. The upper region of Sindh Province comprises of the districts of Jacobabad, Shikarpur, Kashmore, Larkana and Kamber Shahdadkot on the right bank of River Indus and Ghotki, Sukkur, Khairpur, Naushahro Feroze and Shaheed Benazirabad districts on the left bank of River Indus. These districts on the right and left banks of River Indus are prone to severe threat when River Indus is in high flood.

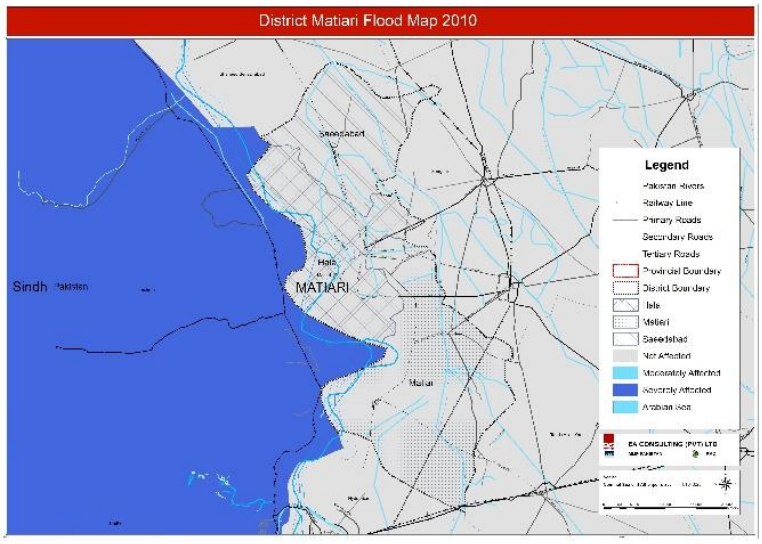


Figure 11:1: Flood Map of District Matiari 2010

Rain/Floods brought great misery to the Sindh province. Only in Matiari, flood 2012 affected 2,590 people and damaged 785 houses in the district. This flood caused 3 casualties and 2 injuries. Areas of district Matiari affected in 2011 flood: Misri Khoso, Ibrahim Khoso, Pir Bux Khoso, Allah Bux Khoso, Gazi Bux Khoso, Gul Mohd Ghambhir, Mari Mohd Khan, Bhanoat, Allah Bux Bilal and Tara Chand Bagri. In flood 2010, 45,600 persons were affected in district Matiari and 1,511 houses were affected.

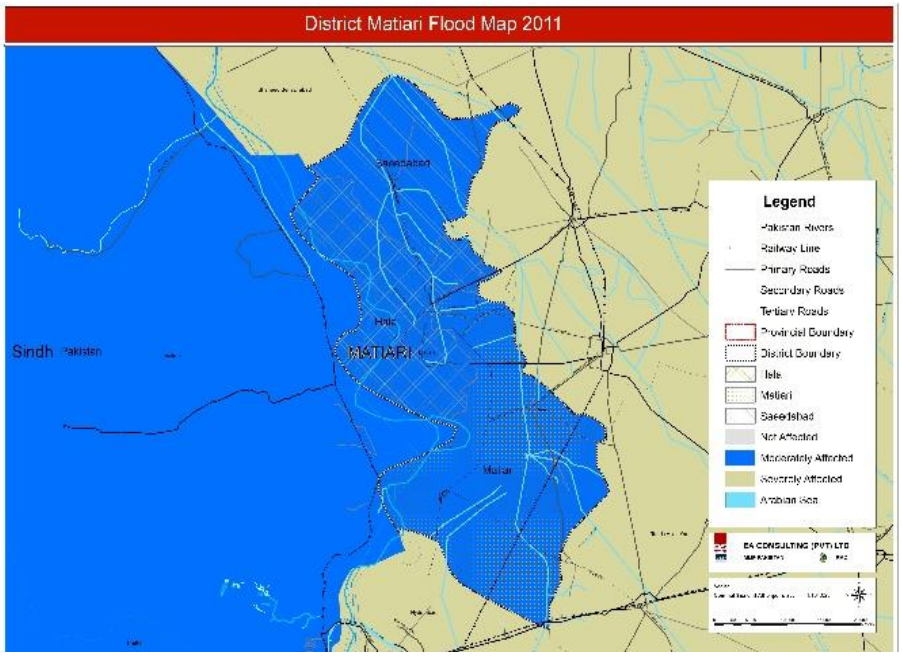


Figure 11:2: Flood Map of District Matiari 2011

As mentioned above, district Matiari was severely hit by the floods/rains in 2010, 2011 and 2012 rains/floods. The PDMA Sindh figures for 2011 are 45,600 whereas the DCO reported the number to be 54,449. The inundated area of the district was more than 45,000 acres.[40] The district falls under the category of medium risk districts, as declared by PDMA Sindh.[41] But in 2011 rains/floods, the extent of damage was not moderate at all as assessments showed that 415 villages/settlements of 19 union councils in all the 3 talukas were affected.

A population of 109,629 persons was affected and there were 25 casualties and 28 injuries. In total, 32,803 houses were damaged. Geographically, 44.2% of the district was inundated and 55 percent of the sown area was affected due to these rains/floods.

Along with the demographic loss due to floods 2010/2011 and 2012, the loss to agriculture sector exacerbated the sources of livelihood for the people of this district. The crop area affected in 2012 was 1,983 acres, while in flood 2010 it was 63,500 acres. District Matiari is on the borderline of food insecurity. Floods of 2011 and 2012 worsened the existing situation of the population. Thus the indicators of food security i.e. availability, access, utilization and stability showed dismal situation in this district.

[40] Pakistan Floods 2010- District Profile Matiari 2010, UNOCHA
[41] Flood 2010, Disaster Management Apparatus in Sindh, PDMA Sindh

Table 11-1: Crop losses and damages summary 2011

Crop Loss and Area Damaged Due to Floods 2011			
Major Crops	**Sown Area (Acre)**	**Area Damaged (Acre)**	**%**
Cotton	99,690	64,799	65%
Rice	850	94	11%
Sugarcane	28,538	3,139	11%
Other	3,882	3,882	57%
Total Area Sown	**152,960**		
Total Area Damaged	**83,737**		

Source: District Profile Matiari PESA

District Matiari is agro-based and majority of the households are engaged in agriculture farming and livestock rearing activities and still others in non-agriculture activities/casual labour. Among these three types of the households, empirical studies have shown that poverty is relatively higher in the non-agriculture households, followed by livestock households and small farmers. It has been shown in the previous section that many individuals in 2012 flood lost their homes (725) and their crops (1,983 acres), while in 2011 32,803 were lost. The Crop area affected in 2011 Flood was 171,076 Acers and 301 heads of livestock died. Due to the lack of an industrial base, the sources of income of households, situated in this severely affected district, are less diversified, with their heavy dependence on agriculture, livestock and casual labour. The deplorable social indicators i.e., large household size, poor literacy level, higher mortality rate, poor infrastructure with poor access to education and health facilities show a higher level of poverty and deprivation in this district.

Table 11-2: Losses and Damages due to Floods 2010, 2011 and 2012

Attribute	2010	2011	2012
Total households	---	119,440	---
Affected households	7,862	18,902	97,198
Total UCs	19	19	--
UC Affected	2	19	16
Total Revenue Villages	---	N/A	
Villages/ Settlements Affected	31	415	130
Total Houses Affected	1,511	32,803	725
Total Population	---	675,182	2,590
Affected Population	45,600	109,629	---
Death	1	25	3
Injuries	--	28	2
Male	n/a	n/a	n/a
Female	n/a	n/a	n/a
Total Area (acres)	--	364,123	----
Total Affected Area	63,500	160,970	--

Crop Area Affected	63,500	171,076	---

Source: District Profile Matiari PESA

ii. EARTHQUAKES

The Seismic zoning map of Pakistan (2015) places Matiari in Zone 2A and 2B which corresponds to 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 in the coastal zone, for operational basis earthquakes (OBE) pertaining to damage due to moderate level earthquakes.

iii. droughts

In routine, within a normal year, between 15 to 20 percent of poor families migrate towards areas of province Sindh which have barrages such as Badin, Sanghar, Mirpurkhas, Hyderabad, Tando Allahyar and Tando Mohammad Khan to work as the seasonal labor and other livelihood opportunities. Due to droughts, approximately 25 to 35 percent population of region migrated to work in friendly environments.[42]

For example, in 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.

iv. Seismicity

According to the seismic zone map of Pakistan, the Matiari district is situated at zone where moderate to severe damage can occur.

Accordingly a seismic risk factor of 0.1 needs to be incorporated in the design for constructions and installations in the coastal zone, for operational basis earthquakes (OBE) pertaining to damage due to moderate level earthquakes.

v. Hot Wind Twisters

Matiari district frequently accommodates hot wind and dust storm twisters during peak summer season starting from May and ending till mid of August every year. However the rich agricultural belt that surrounds the district provides natural protection against such small scale twisters and hot wind whirls. The hot wind twisters cause loss to agriculture normally occurring in the month of May every year. However protective measures found are limited in terms of effectiveness for corps protection.

[42] https://www.dawn.com/news/1132994, published on sept 19,2014.

vi. Fire

- **Accidental Fires**
  No such event of large scale accidental fire has been noticed/ identified within the history of the district.

- **Minor Fire Accidents -2017**
  No such event of minor scale accidental fire has been noticed/ identified within the history of the district

vii. Impacts of Floods

As established in the previous section, district Matiari was on the borderline of food insecurity. Floods of 2011 and 2012 worsened the existing situation of the population. Thus the indicators of food security i.e. availability, access, utilization and stability showed dismal situation in this district.

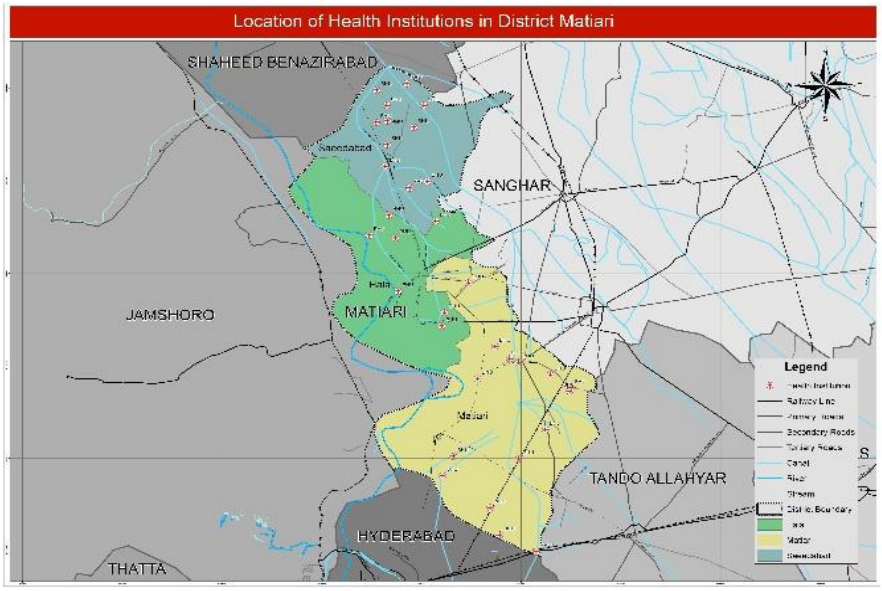


Figure 11:3: Health Institutions in District Matiari

District Matiari is agro-based and majority of the households are engaged in agriculture farming and livestock rearing activities and still others in non-agriculture activities/casual labour. Among these three types of the households, empirical studies have shown that poverty is relatively higher in the non-agriculture households, followed by livestock households and small farmers.

It has been shown in the previous section that many individuals in 2012 flood lost their homes (725) and their crops (1,983 acres), while in 2011 32,803 were lost. The Crop area affected in 2011 flood was 171,076 Acers and 301 heads of livestock died. Due to the lack of an industrial base, the sources of income of households, situated in this severely affected district, are less diversified, with their heavy dependence on agriculture, livestock and casual labour. The deplorable social indicators i.e., large household size, poor literacy level, higher mortality rate, poor infrastructure with poor access to education and health facilities show a higher level of poverty and deprivation in this district.

viii. Health

Severe floods can not only cause destruction to heath care infrastructure but also affect health indicators of the affected population.

The Floods in 2010 and heavy rains in 2011 and 2012 resulted in damage to the public health infrastructure in Sindh Province. The 2011 floods affected all the talukas of district Matiari. According to the Socio Economic Development Association's (SEDA) Needs Assessment Report of Floods 2011, there was no health facility available for the displaced families. The nearest government hospitals were lacking medicines and staff. Patients were complaining of various diseases, such as fever, diarrhea, etc. However, there was no report of major trauma victims. During the assessment, health care was expressed as a priority problem to be addressed. The displaced people had lost all their essentials items required to maintain their hygiene. Health and Hygiene kits were identified as a primary need for the IDP.

UNDP/OCHA reported[43] that in Matiari district there is a need of DTC, as due to seasonal changes more cases of diarrheal diseases were reported. It was also identified that there is a need to support district health department to improve the routine immunization. In this regard a campaign was launched for improvement of routine immunization.

ix. Education

Due to the floods/rains of 2011, 54 school facilities were damaged. Out of the affected education facilities, 12 were fully destroyed and 41 were partially damaged. One school was occupied by the internally displaced persons (IDPs). Also, heavy rains affected the school going children. Due to the damages to schools, houses and roads; education of 4,320 students was affected (Girls: 1,858, Boys: 2,462). Teachers numbering 144 were also affected.

x. Livestock

Beside loss to natural resources, crops, agricultural lands and human life and activities, livestock's life is always endangered by droughts. Thus, alternate arrangements for emergency response facilities like nutritious fodder, vaccines and livestock sanctuaries must be established to prevent the migration or demise of livestock during droughts. The responsibility to implement such measures falls upon the Livestock Department. As the fodder depletes, livestock are fed on dry grass, leading to a host of digestive problems such as diarrhea, toxemia and metabolic disorders; compromising their immune systems and affecting milk production. This adds to the woes of livestock owners, whose total income generation dependency is upon production of milk produced by cattle, for the benefit of their families and affordability.

As weak and diseased livestock migrate with their owners to barrage areas, a trend of collapse in livestock prices has also noticed, with a healthy goat that sold at full price, once weakened by drought, normally worth only 35% of its original price.

[43] UNDP/OCHA Pakistan Floods 2011- Matiari District profile

xi. Public Safety

Public safety is the priorities principal of any governance whether it is Federal, Provincial, Divisional or District.
To spread terror in residents, terrorists mainly focused / target crowded places e.g. educational institutions, stadium, shopping centres, malls, religious centres, institutional setups like press club etc., which are less protected in Sindh especially. Terrorist activities can be performed in any shape but mainly on crowded places.

a) Crowded Places

Crowded places will remain an attractive target for terrorists, who have demonstrated that they are likely to target places which are easily accessible, regularly available and which offer the prospect for an impact beyond the loss of life alone (for example serious disruption, or a particular economic/political impact).

b) Responsibilities of National / Provincial / Local Government

Police and Local Administration Government have the primary responsibility for preventing, preparing for, responding to, and recovering from terrorist attacks in their jurisdiction.

The protection and resilience of crowded places—particularly those at an elevated security risk—is a key focus of National / Provincial Police / Local Government Administration. While the owners and operators of crowded places remain responsible for implementing protective security measures, National / Provincial Police / Local Government Administration acknowledge that responsibility for building and sustaining resilience to terrorism is shared between government, owners and operators, and communities.

National / Provincial Police / Local Government Administration are responsible for providing threat information to owners and operators of crowded places. This includes material developed by National / Provincial Police / Local Government Administration, Law Enforcement Agencies (LEA) etc. Police provide specific information on the local threat context to help owners and operators develop protective security measures.

Police are also responsible for running and administering Crowded Places Forums. These Forums are the primary means of collective engagement between police and local owners and operators of crowded places, including businesses and local councils. Members of the Crowded Places Forum can share information, guidance, and lessons learned relevant to their local circumstances.

c) Responsibilities of Stakeholders

Implementation of protective security measures and reducing the vulnerability of crowded places to terrorist attack was not just a job for the Government (Federal / Provincial / Division / District) and the police alone. To be most effective, this work requires engagement from a range of local partners, including local authorities and businesses, in order to identify vulnerable sites and prioritize work to reduce those vulnerabilities.

d) Identification of Land uses for Potential Terrorists Attack

Consultant identified different land uses in Matiari which are potential crowd pulling places.

Table 11-3: Potential Terrorists Threat

S. No	Landuse	Terrorist Threat
1	Education	Secondary Schools/College/ University
2	Health	BHU/Hospitals/Medical Collages
3	Commercial	CBD/Mandi/Shopping Mall
4	Religious	Eid Gah / Shrines/Minority Religious Places/Imam Barghas
5	Government Offices	District Court/DCO Office/SSP Office/District Jail/Police Head Quarter/LEA
6	Recreational	Tourism Places
7	Transportation	Bus Stop/Railway Station/Airport

e) Existing Situation

Concerned authorities have not come up with any plan for terrorist's activities / attack to reduce potential threats, incident management, crisis management, business / life continuity and recovery phases.

f) Possible Terrorist Intensity Places of DHQ Town Matiari

Consultants identified some possible terrorist Intensity places of DHQ Town Matiari on the basis of Crowd and most visiting places by the residents of DHQ Town Matiari, the places are classified according to the given the above table:

g) Proposed Strategy to Counter Potential Threat Measures

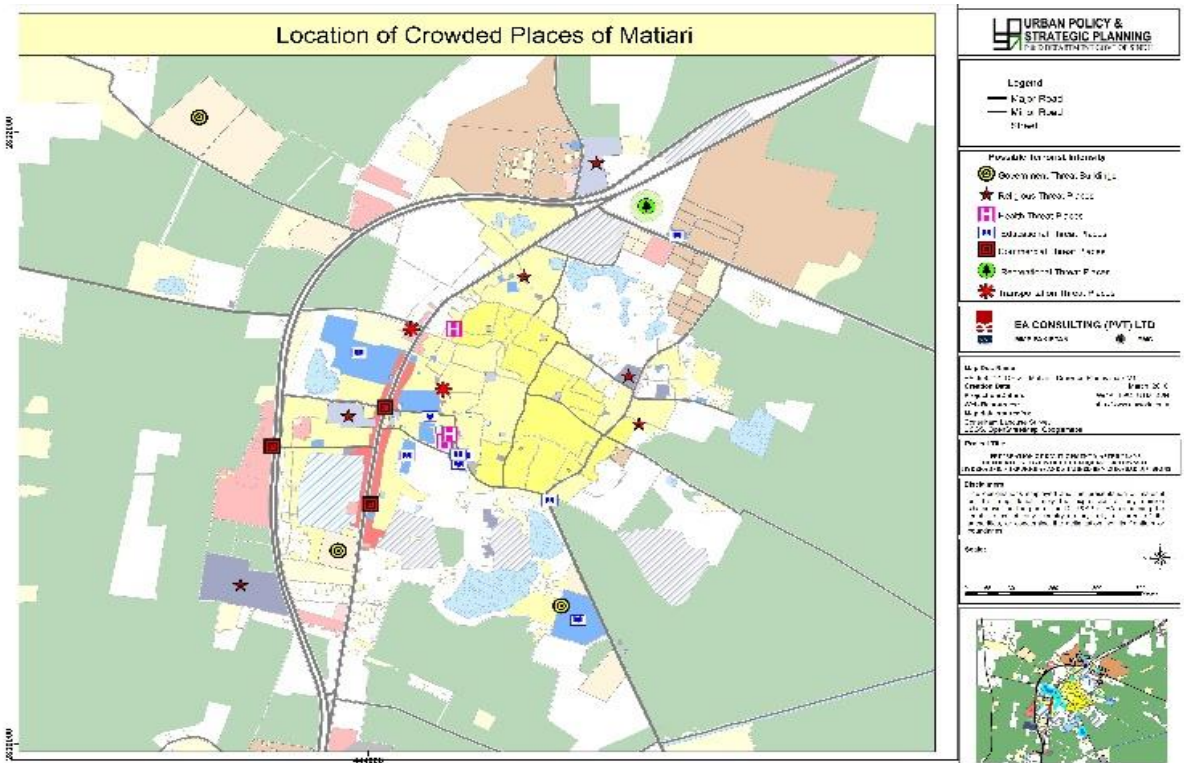


Figure 11:4: Crowded Places of DHQ Town Matiari

Proposed Strategy for Protecting Crowded places from Terrorism is based on strong, trusted partnerships between all levels of government and those responsible for crowded places. It aims to make crowded places as resilient as possible to terrorist attacks while preserving our use and enjoyment of these places. A nationally consistent approach will help achieve this objective in an effective and efficient manner.

The Strategy involves four core elements which provide a structure for building a consistent national approach to protecting crowded places that can be applied flexibly.

- **Building Stronger Partnerships**
- **Enabling Better Information Sharing and Guidance**
- **Implementing Effective Protection Security**
- **Increasing Resilience**

h) Building Stronger Partnerships

Protecting crowded places from terrorism is not just a job for governments, it is a responsibility shared by the private sector and the community. The success of this Strategy rests on sustainable and strong partnerships between all governments and owners and operators of crowded places, including businesses and local governments.

Trusted relationships between governments and owners and operators of crowded places are fundamental to the effective implementation of this Strategy. The Crowded Places Partnership sets out a range of

mechanisms to support this engagement, but none of these replace the ability for all police and intelligence agencies to engage directly with owners and operators when required.

i) Enabling Better Information Sharing and Guidance

Protecting crowded places from terrorism in an evolving threat environment requires trusted and routine information sharing and guidance between all governments, industry sectors, business, and communities. It is a key responsibility of government to ensure those who own and operate crowded places have access to high quality threat information.
The flow of information between governments and those responsible for crowded places is not one-way. Owners and operators should be willing to share information, advice, and lessons they have learned with governments and their peers. Building a strong and inclusive security culture is a responsibility shared by all.

j) Implementing Effective Protection Security

Implementing protective security measures can be a complex process which, if done incorrectly, can be costly and ineffective. Owners and operators have a responsibility to undertake a risk assessment and/or vulnerability analysis of their crowded place, implement the appropriate mitigations, monitor them for effectiveness (including through audits), and review them at appropriate junctures.

- **Guidance**

Before owners and operators make decisions about protective security measures they must first understand how attractive their location may be for a terrorist to attack.
Crowded places encompass a significant range of different locations, venues and businesses. They differ substantially in size and have different levels of risk to manage.

- **Layered Security**

The goal of layered security is to reduce the likelihood of a successful terrorist attack on a crowded place by building multiple layers of redundancy into a site's security architecture.
Layered security describes the practice of securing a site by applying multiple layers of complementary protective security measures.

The following represents some examples of protective security measures that can be used within each layer. Some security measure can strengthen multiple layers. For example, the effective use of security officers can help to delay, detect, deter, respond to, and recover from an attack.

Deterring a potential terrorist attack can involve the presence of obvious physical and electronic target hardening measures, including:

- Fencing indicating demarcation;
- Perimeter security lighting;
- Warning signs and notices;
- High visibility security patrols;
- CCTV cameras;
- Perimeter vehicle security barriers.

Detecting a potential terrorist attack can occur through visual detection and alert systems, including:

- CCTV cameras;
- Electronic intruder detection systems;

- Reporting of suspicious behaviour by security officers, staff, or members of the public;
- Vehicle screening and searching;
- Canine explosive trace detection;
- Screening—x-ray machines, metal detectors, explosive trace detection, and bag inspections.

Delaying a potential terrorist attack can occur through physical counter-measures and other approaches including:

- Security fences;
- Environmental barriers including water features, natural topography, and vegetation;
- Vehicle security barriers and measures to slow the speed of vehicles;
- Pedestrian and vehicle access control points;
- Trained staff interventions;
- Rapid security officer response.

Responding to a potential terrorist attack requires a timely and coordinated security response throughout a crowded place's area of control. Important elements of response include:

- Security staff who can respond quickly and possess the requisite training, competence and equipment to deal with or limit the impact of threats to the location;
- Reliable emergency communication systems throughout the location;
- Comprehensive security plans that are understood by all staff and security personnel, regularly exercised, and compatible with local emergency services plans.

Cost and Proportionality

Security measures can be resource intensive, costly and, if not correctly managed and communicated, can alienate staff and the public and significantly disrupt the day-to-day operations of a crowded place. This is why expert specialist advice is essential and why careful consideration and planning is required before implementing any protective security measures. The following principles should underpin all decision-making:

- It is not possible to protect everything, so owners and operators must **prioritise** the highest risk areas of a crowded place;
- All protective security measures should be **proportionate** to the level and type of threat;
- Security is more **cost effective** when incorporated into the design phase of a crowded place.

Reputation

The success of governments and businesses rests on building and maintaining a good professional reputation. Reputation is prone to serious and permanent damage if owners and operators of crowded places give a less than robust, responsible professional priority to protecting people against attack. Being security minded and better prepared could not only deter an attack, it reassures customers and staff that those responsible for crowded places are taking security issues seriously.

Recovery

Recovery from a terrorist attack is the process of rebuilding, restoring and rehabilitating affected individuals, communities, and physical assets. This process usually begins once an incident has been resolved, continues until disruptions have been rectified, demands on services have returned to normal levels, and the needs of those affected have been met.

k) Increasing Resilience

Even the most the most robust and thorough protective security plan may not stop a terrorist attack on a crowded place from occurring or succeeding. But what well-considered and tested protective security does is reduce both the likelihood of a terrorist attack occurring and the consequences of such an attack.
Resilient crowded places can do more to prevent a terrorist attack, can reduce the damage caused by an attack, and can recover more quickly after an attack has occurred. Building a strong security culture is central to developing resilience to terrorism and other types of criminal activity.
Other elements of building an effective security culture can include:

- Ensuring that security is a permanent feature of executive decision making and agendas;
- Requiring senior management to demonstrate personal commitment to and compliance with security values and standards;
- Understanding commercial, reputational and legal risk that could result from inadequate protective security measures being in place to prevent or mitigate a terrorist attack;
- Providing staff with clear, succinct and jargon-free guidance about security standards and procedures;
- Promoting good security practice to both staff and visitors by making use of internal communication systems, posters, message boards and newsletters;
- Adopting effective and lawful staff screening processes during recruitment;
- Providing staff training in security practices;
- Exercising all staff in security scenarios;
- Self-initiated security penetration and breach testing;
- Sharing information with staff about security breaches;

Encouraging and rewarding staff for identifying and reporting security vulnerabilities and

11.2 Issues and Problems

- Low levels of risk awareness and knowledge.
- Development not “risk conscious” and DRR not yet effectively integrated.
- Insufficient DRR capacity at all levels of society.
- The involvement of the private sector in DRR is as of yet negligible.
- Riverine Flood
- Food Security Problem

11.3 Policy Guidelines[44]

- Provide training and awareness courses to district, Town and local authority personals dealing with management of hazard prone areas
- Develop public awareness materials (e.g. posters, brochures, booklets, videos).
- Update media about its role in disaster risk management process and how awareness through media can be broadcasted to local community

[44] National Disaster Risk Reduction Policy 2013

- 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.
- DRM plans and initiatives need to be based upon assessments that identify the nature and degree of vulnerability or risk (including the identification of particularly vulnerable groups), that allow prioritizing problems or geographical areas on a rational basis and that inform the design of appropriate and technically sound DRM interventions.
- DRM initiatives need to build upon existing community organizations and relevant coping mechanisms to be sustainable.
- Clearly defined division of roles and responsibilities between different layers of government.

11.4 Strategic Development

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:

- Develop coordination mechanism with PMD for ascertaining flood discharge.
- Develop mechanism for regulation of water discharge into canals, distributaries and drains before onset of monsoon season.
- Develop monitoring mechanism for inspection of embankments, weak parts of drains, IPs (inspection parts) and NIPs (Non-Inspection Parts) of all irrigation channels.
- Provide necessary medical facilities at relief camps.
- Close coordination and communication with DDMA.
- Depending on the calamity, the D.H.O will declare emergency at all medical points/health facilities.

- Detail of medical/paramedical staff at all points requiring medical health cover during any disaster.

11.5 Priority Projects

- There is a need to set criteria for the identification and declaration of "disaster affected" areas. Disaster declarations may temporarily restrict individual rights (such as property rights or mobility).
- DRM strategies and initiatives need to be based upon clear assessments of disaster risks i.e. a quantitative and qualitative understanding of the underlying causes and vulnerabilities, geographical distribution of vulnerability and hazards , the probability of hazard occurrence and predicted losses.
- Vigilance of canals / drains round the clock.
- Closure of canals at the heads as soon as possible in case of any breach or heavy downpour, etc.
- Ensure smooth flow of water, plugging up of breaches, if any, in the shortest possible time.
- Prompt dewatering of stagnant water from affected and low lying areas of the district.
- The Executive Engineers, HESCO Division shall ensure uninterrupted supply of electricity particularly to Town services such as pumping stations for draining out rain water from the low lying and slum areas. Shall make arrangements for immediate removal/repair of fallen live wires to avoid any untoward incident of electrocution
- Arrange and provide adequate stock of medicines and medical supplies including Anti-Snake Venoms (ASVs) and Anti-Rabbi Venoms (ARVs), blood plasma, Saline Water, and other medical fluids for victims.
- Arrange medical teams for providing medical cover to the IDPs settled in any relief camp.
- Fumigate the affected areas and areas at risks of spread of any of epidemic disease.
- Ensure that all ambulances are in working order and road worthy conditions.
- Ensure vacant possession of all schools buildings at the time of emergency for setting up relief camps.
- Ensure sanitation and cleanliness as well as clean drinking water facilities wherever possible at all school buildings declared as relief camps through by binding down their concerned Headmasters.

11.6 Long Term Plan

- There is a need to have clear arrangements that allow the system to switch into emergency mode and mobilize necessary resources in a timely and effective manner.
- There is need to clarify mutual roles and responsibilities (horizontal and vertical) and coordination arrangements in an updated, multi-hazard national response plan that is based upon current legislation.
- The DSM, PPHI shall also be responsible for providing medical cover to the IDPs in the catchment area of BHUs assigned to them particularly, and will perform their due role in supplementing the overall medical cover provided by the District Health Department.

- National risk assessment would identify highly vulnerable districts and be complemented by higher resolution work at local level to diagnose the underlying causes of risk, explore concrete risk reduction options and inform development planning and prioritization exercises and/ or disaster preparedness planning.
- DRR needs to address and involve local level actors in high-risk communities to be effective and produce sustainable results.
- There is need to clarify mutual roles and responsibilities (horizontal and vertical) and coordination arrangements in an updated, multi-hazard national response plan that is based upon current legislation.

12 CLIMATE CHANGE EMERGENCY CONTINGENCY PLAN

- **District Level Plan**
  Matiari district is prone to river flooding, floods caused by heavy rainfall and epidemics.

- **Broad `Contours of the Plan**
  - Early warning of approaching weather system will be provided by Pakistan Meteorological Department (PMD) and communicated to the District Disaster Management Authority (DDMA). DDMA is expected to translate weather forecast and flood warnings into usable early warning for vulnerable communities and ensure its timely dissemination to all concerned.
  - In case, there is continuous rise in major canal water level the people residing near major canals will be evacuated to safer places.
  - Threatened population will be evacuated by DDMA.
  - DDMA would be responsible for provision of search and rescue, medical and emergency responses.
  - Camps will be established at pre-selected sites by DDMA.
  - DDMA would be responsible for effective and transparent relief distribution including relief provided by Provincial Disaster Management Authority (PDMA), National Disaster Management Authority (NDMA) and other Humanitarian Agencies.
  - All stakeholders would take necessary actions to facilitate early recovery and rehabilitation of affected population.
  - In case the district falls short of meeting the humanitarian needs, PDMA will assist by making available the required stocks. In case when disaster exceeds capacities of the provincial government, NDMA will be requested to make available the additional stocks from national reserves, prepositioned across the country.
  - When required, Armed Forces may be requested for assistance by PDMA Sindh at any stage, particularly for rescue, evacuation and emergency relief phases. Thus, the DDMA will have to submit the request to PDMA for assistance of armed forces in aid of civil administration.
  - Special requirements of Aviation / Naval support by any agency will be coordinated by PDMA.
  - Resources of Government Departments and Agencies such as, Pakistan Red Crescent Society and domestic philanthropy may be requisitioned, if the intensity of the situation so entails for an effective response.

- **Early Warning**

12.1 Pakistan Meteorological Department

- Pakistan Meteorological Department (PMD) has a broad mandate of supporting agro-based economic activities, air and maritime traffic safety, disaster mitigation efforts and disseminating weather forecast to numerous end users. PMD will ensure the following during monsoon season:

- Inform public on the weather forecast and issue warning in case of potential threat like Rainfall.
- Collect rain data on a regular basis, consolidate and share it with all concerned.
- Disseminate flood information to the NDMA/PDMA on a daily basis during flood season.
- Share weather forecasts and early warning information with NDMA, F/G/S PDMAs, and the media on a regular basis in the monsoon period.
- Coordinate with FFC, WAPDA, PCIW, FFD, and SUPARCO in the Monsoon period to generate flood warning where wanted.

I. Flood Forecasting Division (FFD)

- FFD is an affiliated organization of PMD. It disseminates flood early warning and river flow updates to relevant National, Provincial and District Governments and National Response Agencies, especially in the context of Monsoon Season.

II. Pakistan Space and Upper Atmosphere Research Commission (SUPARCO)

- SUPARCO deploys its satellite imagery capacities for disaster impact mitigation and for early warning of disaster occurrence and trends monitoring. SUPARCO will play the following role during monsoon season:
- Provide remote sensing and satellite maps before and during disasters in order to show their impact.
- Provide remote sensing and satellite maps for hazard risk zones to enable relevant agencies to take measures for minimizing damage to population and property.
- Assist post-disaster damage assessment.

III. District Disaster Management Authority (DDMA) Response

- DDMAs shall activate District Emergency Operation Centers (DEOCs)
- In the event of a disaster, organize emergency response through the District Emergency Operation Center (DEOC)
- Setup early warning mechanisms and dissemination of proper information to public, prepare district level response, plans and guidelines, establish stockpiles of relief and rescue material; provide information to PDMA on different aspects of Disaster Management.
- Inform/update PDMA regarding the overall situation.
- Organize evacuation on priority basis.
- Conduct initial and subsequent assessment of disaster affected areas and determine the extent of loss and damage.
- Collect information on damage status and promptly plan for the resources requirement for relief operation and share it with the PDMA.
- Provide food, drinking water, medical supplies and NFIs to the affected population

- Preferably, set up tent cities / relief camps on open land and provide relief to the affectees in camps.
- Coordinate with PDMAs to deploy resources for emergency response.
- Mobilize community volunteer groups and civil defense for emergency operations.
- Forward timely situation reports (SITREP) on daily basis to PDMA for its timely dissemination to concerned quarters.
- Ensure registration of all relocated population in the camps and overall affected population on gender-segregated basis.
- Prioritize vulnerable segments of society in their relief operations.
- Facilitate early return of relocated population and help in restoring their livelihoods.

12.2 Health Department

I. Pre-Disaster

- Provide specific information required regarding precautions for epidemics
- Establish a health mobile team in district & town headquarter hospital
- Setup an Information Center to collect and share information amongst relevant stakeholders.
- Collaboration with relevant organizations/partner NGOs.
- Stocking of life saving drugs and vaccines.

II. During Disaster

- Providing emergency treatment to the affected
- Provision of First-aid & water testing kits, chloramines and anti-snake venom serum & other emergency support
- Deployment of mobile medical teams & health staff
- Collaboration with all relevant stakeholders

III. Post Disaster

- Establishment of medical camps, vaccination, ensuring safe food & water in camps
- Conduct impact assessment on health, intervene to stop outbreak of diseases
- Rehabilitation of health infrastructure

12.3 Education Department

I. Pre-Disaster

- Providing the necessary information, training to teachers & students regarding disasters with tips to save their families & themselves during disaster.
- In collaboration with Civil Defense and Boy Scouts / Girl Guides Association and gear up the volunteer's force.
- Educate students about Healthcare Precautions

II. During Disaster

- Mobilize the human resources for intervention during disaster
- Arrangement for evacuees to setup relief & temporary shelter camps
- Deployment of volunteers for camp management & emergency support

III. Post-Disaster

- Assessment of damages & needs of affected educational institutes
- Rehabilitation of affected educational institutes
- Continuing education of children at camps and helping them to recover from shock by providing toys etc.

12.4 Agriculture Department

I. Pre-Disaster

- Assessment of high risk prone areas and estimation of possible damage
- Create community Seed Bank at UC level
- Regular surveillance of Irrigation water supplies
- Close coordination with Meteorological Department & other stakeholders for weather information.
- Testing, functioning and pre-positioning the available machinery.

II. During Disaster

- Immediate mass awareness and update of situation
- Arrangements for relief & temporary shelter camps in canal rest houses
- Vigilance for protection of agriculture crops.
- Immediate activation of machinery and equipment.

III. Post-Disaster

- Assessment of damages & needs of affected crop area and submit to DDMA

- Assistance in repair & rehabilitation of Irrigation Systems.
- Timely compensation to affected farmers
- Mass awareness campaigns regarding epidemics & diseases to crops
- Inform the affected population regarding the land use and crop management on damaged/devastated areas.

12.5 Livestock and Fisheries Department

I. Pre-Disaster

- Estimation of possible damage
- Mass awareness regarding precautions
- Close coordination with agriculture, irrigation, meteorological department and other stakeholders.
- Vaccination of livestock.
- Stocking of fodder and vaccines.

II. During Disaster

- Update local communities of ongoing situation.
- Provide livestock vaccination
- Arrangements for relief and transportation of livestock.
- Provision of fodder for livestock in affected area.

III. Post-Disaster

- Assessment and submission of damages and need of affected livestock to DDMA
- Timely compensation to affected livestock owners
- Mass awareness campaign regarding epidemics & diseases to livestock

12.6 Planning and Development Department

I. Pre-Disaster

- Gathering statistical data regarding possible damages and recovery needs from all relevant departments
- Plan and identify potential resources
- Facilitation to other department in planning

II. Post-Disaster

- Gathering statistical data regarding actual damaged and recovery needs from all relevant departments
- Plan and Identify potential resources

- Facilitate other departments in planning and execution of rehabilitation in cost effective manner
- Coordinate with all line departments

12.7 Revenue Department

I. Pre-Disaster

- Assessment of high risk prone areas and estimation of possible damage and needs for recovery.
- Arrangement of financial resources.
- Identification of high grounds for establishment of tent cities.

II. During Disaster

- Establish relief distribution centers/camps and accept relief donation/relief support
- Timely release of funds to DDMA.

III. Post-Disaster

- Assessment of damages to industrial/business, crops and livestock and settlement of applicable taxes accordingly.
- Support DDMA in conduct of authentic damage assessment and compensation need.

12.8 Police Department

I. Pre-Disaster

- Information dissemination through "15 helpline service" to local residents
- Deploying and giving security cover to government agencies, which are working/preparing for the monsoon season in areas where law and order is not good.

II. During Disaster

- Providing easy access and security to rescue and relief teams.
- Maintain law and order and divert traffic on alternative safe routes as and when necessary.
- Maintaining law and order and provide security to relief stockpiles and camps.

III. Post-Disaster

- Ensure security to workers of NGOs/INGOs
- Provide security in unsafe areas
- Facilitating institutions/NGOs/INGOs, which focus on rehabilitation activities

12.9 Civil Defense

I. Pre-Disaster

- Information sharing regarding technical and personnel expertise with DDMA.
- Conduct training for volunteers in first aid & other activities

- Effectively train & mobilize volunteers and initiate mass awareness regarding necessary first aid rescue activities

II. During Disaster

- Deployment of volunteers at the disposal of DDMA for Rescue, Evacuation and initiated basic first aid.
- Communicate to DEOC any additional resources required for performing rescue and evacuation activities
- Taking precautionary measures to stop fire incidents in camps and perform firefighting in emergency.
- Management of relief camps where required.

III. Post-Disaster

- Identify gaps and make plan to overcome weaknesses
- Assisting District Administration and other Line Departments in Rehabilitation works

12.10 Civil Society And Private Sector Response45

The response of civil society organizations and the private sector to floods should be rapid and extensive. Local NGOs, will work extensively with the Government to provide emergency relief support provisions which include ration packs, water purification kits and tablets, shelter items (including tents, blankets and mosquito nets), sanitation kits and hygiene supplies, doctors and medical supplies, mobile and basic health care units especially for women and children. A particular focus will be placed on healthcare services to avoid the spread of water- borne infections and other disease and to provide basic health care services. Media on their part will cover the event extensively and play a significant role in raising awareness and mobilizing local and international resources for the disaster. Individuals and organizations from the private sector, both from Pakistan and the global community will contribute significantly to the flood relief effort alongside the government and donor community.

12.11 Scouts

I. Pre-Disaster

- Nominate the scouts, which can be trained to handle flood emergencies
- Training will be imparted in the scouts regarding boat handling and first response to the affected during the emergency.

II. During Disaster

- Trained scouts will be deployed/placed at the disposal of Deputy Commissioner

[45] Government of Sindh Rehabilitation Department Provincial Disaster Management Authority, 2012. Sindh Provincial Monsoon/Floods Contingency Plan, Karachi: Government of Sindh

- The scouts will perform the duties as per training and will report to respective Deputy Commissioner

III. Post-Disaster

- The trained scouts would continue to impart the training in other scouts and volunteers in the district.

12.12 Standard Operating Procedures (Sops)

- The Deputy Commissioner shall keep close liaison with all departments like Local Government, Health, Agriculture, Civil Defense, Irrigation, Works & Services, Education & Literacy, Police & other Law Enforcement Agencies. Meetings in this regard are to be held on regular basis with concerned departments and minutes are to be shared with DDMA.
- If there is likelihood of heavy rains, flood emergency would be declared in the District and all government functionaries and NGO's would be kept on high alert.
- Control rooms would be established at District and Taluka level in the offices of the Deputy Commissioner, Assistant Commissioner, Qanoongo (Revenue) and all other line departments during the emergency. These control rooms shall function round the clock.
- The Executive Engineer Irrigation will establish round the clock control room in his/her office for making liaison with all concerned & activate contingency plan of the department. They shall identify the vulnerable points of the irrigation canals and intimate DDMA. Executive Engineer will be in touch with DDMA and the Meteorological Department and inform the concerned agencies about any development emergency. He/She will make special arrangements for watching and patrolling of vulnerable points.
- Immediate arrangements for necessary machinery, sand bags and other material to be used for strengthening of embankments of canals and plugging breach shall be ensured and availability of communication network must be made at all vulnerable points.
- The Executive Engineer Irrigation shall ensure regular, timely and proper de-silting of all canals, distributaries, drains, sub-drains and submit a certificate to his/her higher authorities with an information copy to DDMA.
- The Deputy Commissioner shall ensure activation of Central District Control Room and already established control rooms at each Qanoongo (Revenue) Offices round the clock, under the supervision of Assistant Commissioner concerned. They shall also ensure preparedness at proposed relief camps and ensure immediate evacuation of people residing in low-lying areas to safer place / relief camps, if required. He/She shall also make immediate arrangements for the availability of sufficient quantity of relief material like food, blankets, tents, plastic sheets etc.
- The Deputy Commissioner shall constitute Supervisory Committee for relief works at district level.

- The Deputy Commissioner must further ensure that special attention is given to disabled people, women and children and extra ordinary measures are taken for such purpose.
- The Deputy Commissioner shall nominate the Assistant Commissioner as focal person to coordinate with the Taluka and Town level local council for drainage of accumulated rainwater.
- The Assistant Commissioner shall be focal person in Taluka for the entire operations of rescue and relief. He/She must ensure the respective arrangements for tractor trolleys and labor in coordination with Civil Defence, Boy Scouts Association and Police Department if needed and mobilize the village staff in the pre-and-post emergency work. He/She shall also ensure proper distribution of relief material among the actual needy persons.
- The Executive Engineer Irrigation Department shall ensure availability of bulldozers, excavators and earthmoving machines in sufficient quantity and in proper working condition in case of emergency.
- The Director Agriculture shall arrange for protection of standing crops from damages and diseases that may be caused from the stagnant rainwater in the fields. He/She shall manage required machinery from mechanical wing and must have the inventory of such machinery and equipment.
- The Deputy District Officer Livestock and his/her staff shall ensure safety of livestock from flood diseases and losses and Veterinary Officer shall ensure regular and timely vaccination of cattle in the district. They shall make all necessary arrangements for fodder for the livestock to be shifted from marooned areas.
- The Deputy Controller, Civil Defense should ensure the enrolment of volunteers as early as possible in order to avoid any chaotic situation during emergency. He/She will continuously remain updated of weather forecast reports and with meteorological departments and will arrange for warnings in emergency through sirens, loudspeakers and media at Taluka and town level. He/She shall ensure presence of the volunteers and scouts for rain relief and rescue activities in case of any emergency.
- The Deputy Director Food shall ensure availability of sufficient stock of wheat and other grains and shall coordinate with Deputy Commissioner for supply of food grains from local food grain dealers in case of need. He/She will also ensure that no stocks of government wheat, placed at depots, are damaged due to water accumulation, fire or rioting.
- The Divisional Engineer Telephone should ensure full function ability of telephones all over the district and provide assistance to all departments on demand at the time of need.
- Continuous supply of gas and proper safety of gas lines in the district must be ensured. Immediate repair work should be performed in case of any damage to the gas lines.
- The Deputy Commissioner shall ensure mobilization of the NGO's and business community in the rescue and relief activities in case of emergency and shall depute volunteers on different emergency tasks.

- The Regional Director Information shall keep close liaison with all control rooms of the district to provide correct and exact information to media regarding emergency. He/She shall also arrange briefings about the latest situation in case of emergency.
- The Red Crescent Society and other welfare associations and NGO's of the district shall provide food packets and other required material to the affected persons in relief camps in case of emergency.
- Proper arrangement for lifting of trees fallen due to heavy rain and gusty winds from the main roads shall be made by the Executive Engineer Provincial Highways department.
- The in charge Utility Store Corporation shall ensure the availability of sufficient stock of edible items in case of need.
- The Revenue Department shall also conduct the survey of any loss of life, houses, cattle, standing crops and other infrastructure after the disaster. In the event of the highest degree of emergency, Pakistan Army may be requested to help the district administration in rescue and relief operations.

12.13 Implementation and Monitoring

12.13.1 Indicators

I. Quantitative Indicators

OECD (2002) defines an indicator as a ''quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor.'' Quantitative indicators are numerical representations of complex phenomenon. Quantitative indicators can be useful in determining the level of achievement at all stages of a resilience project and can even be used to measure the strength of resilience characteristics, though this is better attained by using qualitative indicators[46].

II. Qualitative Indicators

Qualitative indicators evaluate the quality of a plan using subjective data (relying on people instead of instruments). Many qualitative indicators use a 1-5 scoring system, however, this is not the only way; Sovacool (2012) points out that indicators could ''rely on a simple scoring technique of 'positive,' 'negative,' or 'neutral,' as in a given metric can worsen, improve, or stay the same over time.'

[46] Brown, C., Shaker, R. R. & Das, R., 2018. A review of approaches for monitoring and evaluation of urban climate resilience initiatives. Environment, Development and Sustainability, 20(1), pp. 23-40

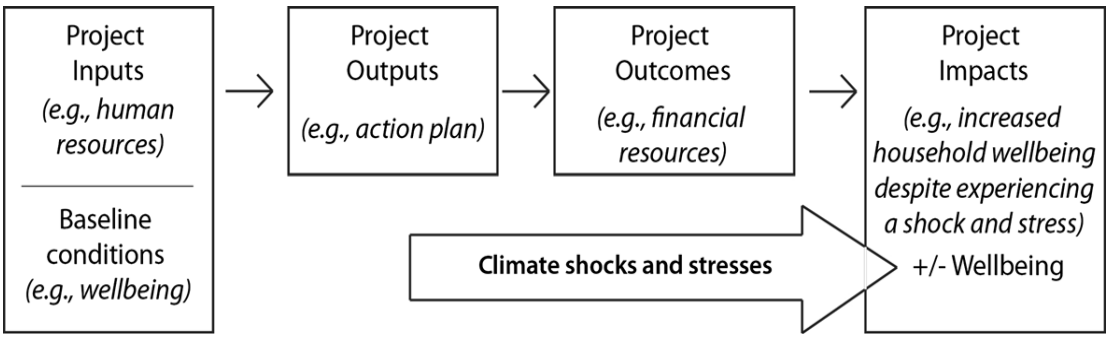


Figure 12:1: Four phases of a resilience initiative, and the timing of baseline and post-shock measurements of wellbeing (Brown, et al., 2018)

These qualitative values can be used to create baselines and/or to indicate that a particular resilience impact/outcome has been achieved. The challenge with a qualitative indicator that uses a scale from 1-5 is that the scale should be created based on criteria that is fair and well informed.

III. Process Indicators

There are many processes that underlie resilience planning and action, and process indicators outline the extent to which these processes have been undertaken. Moser and Boykoff (2013) write that given the challenges (e.g., attribution) in adaptation and resilience measurement, ‘‘tracking and evaluating the adaptation process—with all of its individual components (e.g., assessment, planning, stakeholder engagement, decision-making, implementation, institutionalization, monitoring, and social learning)—becomes at least as important as the questions of success in outcomes’’.

An example of a process indicator is the level of participatory involvement in resilience decision making. If one’s definition of resilience encompasses participatory involvement, then the extent to which this has been applied can be used as a process indicator. This can be assessed qualitatively (on a scale of 1-5) or quantitatively (number of stakeholder types represented).

IV. Impact Indicators

Determining the impact of resilience initiatives is a bit difficult, as these impacts are often difficult to interpret or understand and can often not be measured until after a disaster, or at least until the slower onset effects of climate change have started to occur (e.g. sea level rise). One approach could be to assess the process and outcome indicators and inferring from the results that climate change resilience has been reasonably ensured.

Wellbeing and financial losses after a disaster are the two most important climate resilience indicators that can help to assess the success of climate change resilience initiatives. By evaluating these indicators, evaluators can gain an insight to the effect of climate change resilience initiatives on the community. By assessing these two indicators, a city can determine whether it has the adaptive capacity to remain resilient in the face of shocks and stresses resulting from climate change.

V. Identified Indicators[47]

Collection of Data to Perform Vulnerability Assessments to Floods

- Number of exposure and socio-economic datasets on current exposure to floods at district level.
- Geographic coverage of all datasets (% of all exposed areas).
- Number of reports detailing data collection and summarizing information.
- Number of policy and technical documents based on datasets and modeling scenarios.

Building Technical Capacity to Generate Vulnerability Assessments to Floods

- Number of technical staff trained to acquire competence in computer modelling techniques and able to perform Vulnerability Analysis (VA).
- Average staff performance on end-of-training comprehension tests.
- Proportion of ministries using datasets to generate vulnerability analysis or proportion of sectors covered by analysis at district level.
- Number of policy and technical documents incorporating results from VA's.
- Proportion of government investment/program documents using results from VA's as a priority-setting or screening tool.

Institutional Framework and Mechanisms to Support Adaptation and Adaptive Capacity

- Number of laws and regulations created or amended to clarify land and carbon property rights.
- Existence of a dispute resolution mechanism.
- Number of materials (presentations, briefs, papers) developed for legal literacy programs.
- Number of people participating in legal literacy programs.
- Number of individuals and community groups participating in Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (REDD+) financed projects.
- Average number of days and money spent in REDD+ project preparation.
- Total value of REDD+ projects and value per participant.
- Percentage reduction in production variability from forest-based activities and/or farm production at the forest margins.
- Number of early warning and health hazards dissemination outlets, by type of outlet (e.g. radio, newspaper, and website), geographic coverage, and level of disaggregation of system information (e.g. district-specific).

[47] McCarthy, N., Winters, P., Linares, A. M. & Essam, T., 2012. Indicators to Assess the Effectiveness of Climate Change Projects, Washington DC: The Inter-American Development Bank

- Percentage languages used in dissemination materials of total number of languages spoken in district.
- Number of extension materials containing climate change-relevant materials.
- Percentage change in government budget allocations towards climate change information dissemination.
- Percentage reduction in property damage.
- Percentage reduction in mortality and in disease prevalence for diseases related to weather patterns (e.g. malaria, dengue).

Investment in Projects that Directly Support Adaptation and Improve Adaptive Capacity

- Percentage increase in the number of seed varieties developed, documented and made available in the market.
- Documentation of seed varieties and their characteristics.
- Documentation of procedures and partnerships created to transfer seeds either directly to farmers or to market traders.
- Percentage increase in number of seed varieties available in rural markets.
- Number of climate resistant seed varieties available in the market and percentage increase in use of climate resilient seed varieties.
- Percentage crop yield improvement in years of climate extremes.
- Percentage greater performance in average crop yields.
- Percentage decrease in proportion of rural and urban populations malnourished.
- Number of energy facilities built or retrofitted to withstand greater range of climate shocks.
- Percentage of total capacity built or retrofitted by type of facility and by "threat" level identified in vulnerability analysis.
- Percentage decrease in monetary damages to energy facilities due to climate extremes (adjusted for degree, or extent, of climate shock).
- Percentage decrease in customers losing access to energy due to climate shock-induced power failures.

12.13.2 Responsibility of Plan Implementation

Table 12-1: Authorities Responsible for Implementation		
S#	**Department**	**Designation**
1	**Administration**	District Commissioner
		Assistant District Commissioner-I
		Assistant District Commissioner-II
2	**Irrigation**	District Irrigation Officer
3	**Agriculture**	District Agriculture Officer
4	**Health**	District Health Officer
5	**Education**	District Education Officer
6	**Social Welfare**	District Officer
7	**Livestock**	District Officer

Monitoring and Evaluation[48]

There are three ways to monitor and evaluate climate change adaptation and resilience:

- Measuring against project objectives
- Measuring against baselines
- Measuring against emerging understanding of good adaptation measures

a) Measuring against Baselines

Baseline comparisons can be used to monitor and evaluate the effectiveness of climate resilience initiatives. During this process, an initial measurement is taken (e.g., number of civic organization per 10,000 people). This measurement is then taken at different stages of the project to measure the effectiveness of strategies used to improve that particular indicator. This approach could be applied to resilience characteristics (e.g. flexibility). In order to do this, a more qualitative assessment (subjective scoring from 1 to 5) could be employed to create a baseline value.

b) Measuring against Definitions

Relatively straightforward definitions exist for climate adaptation, but in the context of resilience – with its emphasis on system level interaction and inherent qualities – this approach can prove to be much more difficult. How you define resilience is a key determinant in how the monitoring and evaluation approach

[48] Brown, C., Shaker, R. R. & Das, R., 2018. A review of approaches for monitoring and evaluation of urban climate resilience initiatives. Environment, Development and Sustainability, 20(1), pp. 23-40

will be adopted. For example, if resilience is defined as a decrease in post-disaster recovery time, specific indicators will be evaluated which would not be useful when concerned with the resilience characteristics with cities.

c) Measuring against Project Objectives

As mentioned above, the objectives of a resilience program differ depending on the way resilience is defined and also at which phase of the project the assessment is being made. Alexander et al. (2016) define process as the ''inputs, throughput and outputs of the decision-making process,'' outcomes as ''the implementation of the outputs from the decision-making process'' and impact as ''the resulting effect of the decision-making process and outcome''. Similarly, Spearman and McGray (2011) use the following sequence: inputs, initiatives, outputs, outcomes, and impacts. Monitoring and evaluation can take place at each of these temporal locations (i.e., process, outcome, impact). Many people also advocate that monitoring and evaluation be carried out throughout the duration of the project rather than just at the beginning and the end of the project.

d) Key Principles of Monitoring, Evaluation and Reporting System[49]

i. Use of Mixed Methods

The monitoring and reporting system combines quantitative and qualitative methods to collect and analyze data, and generate knowledge and lessons in implementing the plan.

ii. Ownership

District focal points for each sector (mentioned in the table above) are responsible for collecting, aggregating and submitting their reports annually to the District Administrative Unit.

iii. Stakeholder Engagement

Empowering stakeholders and ensuring their active contribution to the monitoring and reporting process is a key feature of the monitoring and evaluation system. The monitoring and reporting system is rooted in the desire to maintain a programmatic approach in the implementation of the investment plans through projects and programs. It aims to engage the stakeholder groups, including government institutions at national, sub-national and local levels, as well as civil society, local communities and the private sector, in discussing progress with the implementation of the monitoring plan. The monitoring and reporting process will also be used to share lessons learned and discuss the challenges encountered with a view to identify feasible solutions.

iv. Learning by Doing

Monitoring and reporting is an iterative learning process. It is expected that the quality of monitoring will improve over time as the authorities gain experience.

[49] Williams, A., 2016. Options for Results Monitoring and Evaluation for Resilience-Building Operations, Washington DC: World Bank Group

13 URBAN LAND MANAGEMENT

13.1 Introduction

Urban areas throughout the developing world are experiencing a problem in the supply of adequate and affordable serviced land to meet the housing needs of their rapidly expanding urban populations. As a result, low income groups who are mostly denied access to land due to shortfall in supply are forced to either seek for residential land through illegal means or to crowd into existing low income settlements, creating slum conditions. In Sindh, the shortfall in land supply arises not from the lack of virgin land but partly from the lack of resources, capacity to service the lands and land ownership by landlords and make them ripe for development and also partly from the use of ineffective and inappropriate land and landuse policies and practices.

"Land management" is defined as an activity on the ground, using appropriate technologies in the respective land use systems. It is known by different names in different parts of the world; basically all are land management tools. In Pakistan land management is not being practiced till yet because of non-absence of policies / framework. Strong land owner opposition to forcible land acquisition, combined with extremely limited fiscal capacity has left the urban local bodies (ULBs) with very few options to develop well-planned and serviced urban land. Land pooling and reconstitution (LPR) is a tool that addresses both these issues by allowing the land owners to share the gain in the land value post provision of infrastructure and services. In lieu, the land owners pay betterment charges and contribute a part of their land to fund the infrastructure and services.

13.2 Goals

As most of towns in Sindh strive to become centers of global production, trade and development, they are increasingly concerned with improving their attractiveness for foreign direct investment and employment generation. For example, towns must have efficient spatial structures, adequate infrastructure and urban services, affordable housing and healthy environments. Effective urban land management is required to promote urban regeneration and development of new industrial and commercial districts, investments to upgrade and expand critical infrastructure systems, programs to enhance and protect the environment, and initiatives to upgrade social overhead capital (housing, education, healthcare).

13.3 Objectives

To implement these initiatives for Matiari, there is a need to develop urban land management strategies to provide land for industrial and commercial development, to facilitate the formation of public-private partnerships, and to finance the provision of infrastructure and social overhead capital investments. Unfortunately, in many cities around the world such strategies do not exist and foreign investment is either stifled or, if it does take place, causes significant adverse side effects.

Cities and towns are crucial to the economic well-being of Sindh. For this, it is imperative that its cities and towns are transformed and pressures of new growth are dealt with so that they are more liveable, efficient,

and environmentally sustainable. Only then will the rapid pace of economic growth that Sindh is undergoing be sustained and the targets of environmental sustainability achieved. To manage the transformation of Sindh's cities and towns and effectively manage new growth requires effective urban planning protocols, processes, and institutions underpinned by effective legislation. To effectively manage the new growth implies that the agricultural land at the periphery of the cities and towns or smaller settlements that are not yet "urban" is transformed to be made suitable for urban or non-agricultural uses. This essentially means that the irregular landholdings and plots will have to be given regular shapes; they must be ordered; each plot must be given access; infrastructure services such as water supply and drainage must be provided; land must be appropriated for providing roads, parks, social amenities, and low-income housing, development controls must be prescribed to result in a good quality-built form and levy development or betterment charges to offset the cost of developing the physical and social infrastructure. But most importantly, all of this must happen in a timely and such manner that it is acceptable to the "landowners" to avoid conflict in the growth management process.

13.4 Urban Land Management in Matiari

Due to absence of provincial policy / framework for utilizing Urban Land especially in District headquarter towns, planners / development authorities have not carefully assessed the land use and transportation impacts of foreign investment. Due to non-existence / less effectiveness of Development authority mechanism, schemes / projects in private sector faces low exposure due to non-availability of basic facilities and monitoring mechanism by approval authority. As a result traffic congestion and infrastructure problems with the water supply and sewerage treatment are mounting.

Getting access to land for factories and commercial facilities is problematic, particularly in agricultural rich fertile land. Decades of inefficient allocation of land for industrial uses have literally blighted / dis-courage agricultural activities in the region. Unfortunately, a lack of clarity over land rights, corruption and bureaucratic inertia are impeding redevelopment. To compound matters, land use plans in many transition economy towns have not been planner to reflect the new land use requirements necessary to support post-industrial development.

To effectively exploit the benefits of inward investment flows and to ensure that social and environmental goals are met, the public sector needs to take the lead in planning and formulating urban land management strategies to promote sustainable urban economic development.

13.5 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.

13.6 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, 1894 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 1894. 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%).

D. City Survey

City survey is very important to manage land records for city. City survey will help to resolve present hassle in property transactions besides impeding planning & development. It will also help to resolve several issues i.e. Verification of ownership & Land grabbing issues respectively. Therefore it is suggested to conduct city survey & deal as separate project for Matiari.

13.7 SWOT Analysis and Need Assessment

Strength	Weakness	Weakness	Threats
GOVERNANCE			
Planning Actors			
1. Politicians 2. Existence of Local government 3. Public Health Engineering Department	1. Lack of co-ordination among departments. 2. Weak technical support of government departments. 3. Weak financial base of departments. 4. Absence of development authority. 5. Shortage of technical staff, town planners, urban designer and policy makers at SMC, Regional Office of SBCA) 6. Overlapping of administrative functions 7. Need based ad-hoc planning system (day-to-day basis)	1. Strengthen the institutions, responsible for planning and execution 2. Immediate preparation of overall urban development strategy 3. Detailed land use zoning plan 4. Sectoral development plans 5. Detailed subject plans to regulate with density development. 6. Enhancing the role of local government on sustainable basis.	1. Inaccurate funding in development projects. 2. Wastage of local resources 3. Infrastructure development of poor quality, non-standard infrastructure. 4. Failure to provide technical support on issues required innovation. 5. May give birth to unwilling political interference and hidden interests based on nepotism and discrimination.
Coordination of Public Agencies / Department			

Strength	Weakness	Weakness	Threats
1. Town Committee / Taluka Municipal Administration 2. Politicians in charge 3. Participation of Sindh Building Control Authority (SBCA)	1. Weak co-ordination mechanism. 2. Lack of information sharing between line departments.	1. Preparation of local co-ordination standard procedures through policy frameworks. 2. Organizing events to make strong coordination between different departments.	1. Week coordination may give birth to poor governance. 2. Political interference
Local Council			
1. Availability of Town Committee.	1. Not actively pursuing the stated objectives.	1. With awareness and training of councilors the local councils can be more effective. 2. Workshops and meetings can enhance the coordination as well as clear the vision about development perspectives.	1. Confusion and chaos in the local development affairs at present until local bodies are established.
Financial Resources			
1. Institution and system are in place. 2. Regular provincial grants available for development project. 3. Programme based medium-term donors funding.	1. The council does not affectively generate funds. 2. Less efforts offer by local councils for revenue generation through available local resources. 3. High dependency on provincial grant. 4. Lacking capacity in collection and financial management. 5. Very low capacity for capital investment in development projects.	1. Self-sustainable financial system needs to be effectively introduced. 2. Development of self-reliance and suitable financial model. 3. Resource generation through PPP. 4. Exploitation of local potentials for resource generation. 5. To curb mismanagement and corruption.	1. Poor maintenance of infrastructure relating utility services. 2. Political pressure and financial leakages. 3. Lacking M&E and implementation of strict accountability measures during audits.

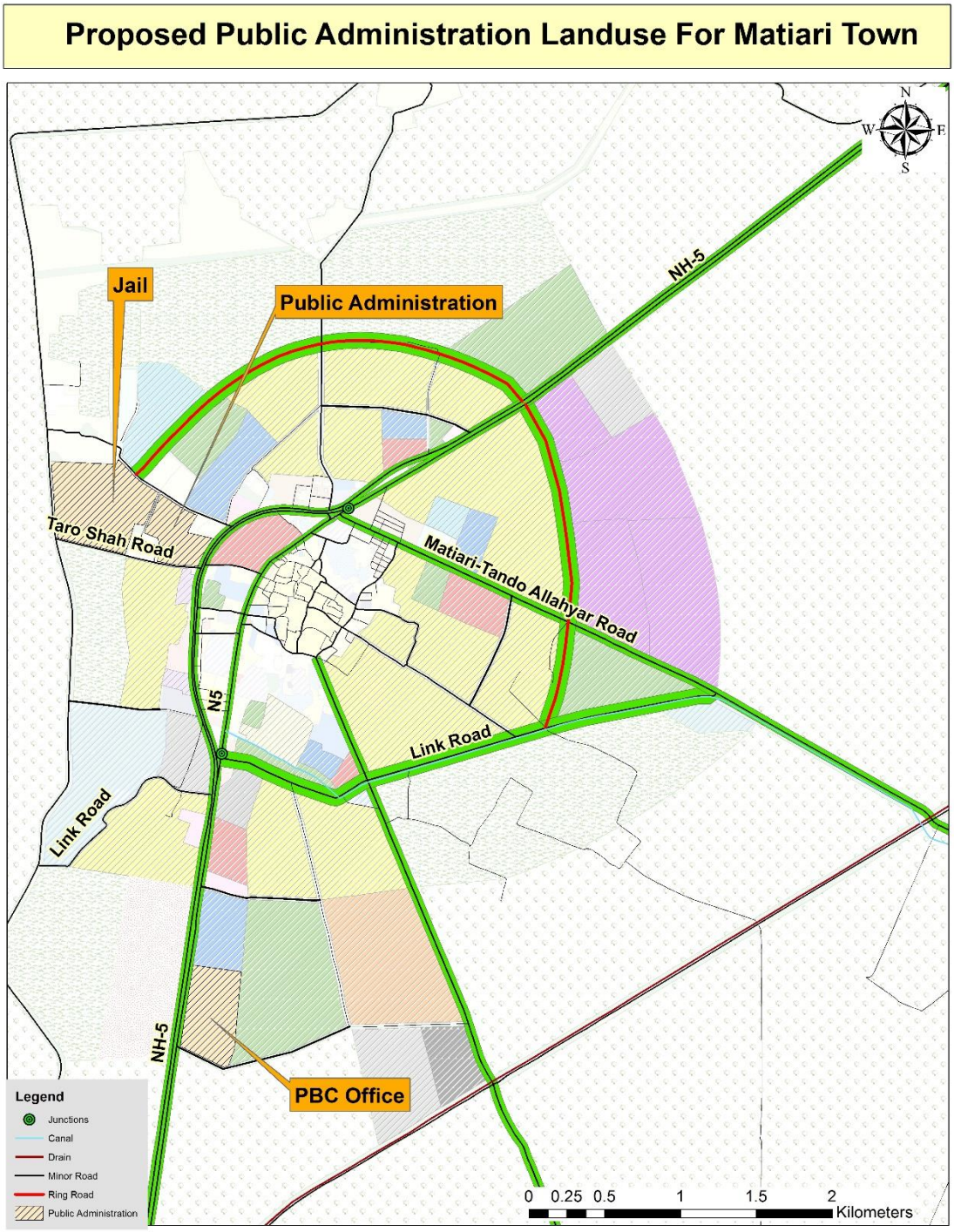


Figure 13-1: Future Administrative Proposal of Matiari

14 IMPLEMENTATION STRATEGY

This part of the report aims to provide an implementation framework for various development proposals recommended in 'Strategic Development Plan' to drive future growth of Matiari DHQ town up to 2037, under the present governance framework of Government of Sindh.

14.1 Process of Implementation

The implementation of development plan is basically the process of prioritizing, phasing, coordinating, budgeting, scheduling, monitoring and making adjustments. There are number of management systems and charting procedures available to help a city manager to control this process. Issues that must be addressed in this regard are:

- Determine priorities within and among the sub plans
- Determine the phasing or sequence of activities among the sub plans.
- Address timeframes and budget availability
- Creating master schedule of activities with a progressive cost table so that the program can be appropriately expanded or contracted to meet implementation contingencies and budget fluctuations.
- Assign the various activities to be undertaken by qualified managers.
- Establish a timely monitoring and report system to keep the city officials and the public informed of progress and activities.

14.2 Implementation Agency

The office of the Deputy Commissioner and in case of Local Bodies/Local Government, the Chairman of district council and Mayor of metropolitan city will be the key implementation agency to execute Strategic Development Plan Matiari 2037.

The Government of Sindh would take responsibility of implementing various development proposals by utilizing its maximum resources and by engaging various public offices of government of Sindh, established in Matiari. The concerned agency must ensure that the overall process must go after following themes of implementation process.

a) ***The overreaching theme of the implementation of Strategic Development Plan Matiari is:***

- Consultation with stakeholders during implementation at all levels.
- Decentralize decision making to the greatest extent possible.
- Promote transparency and accountability of decision making and implementation enforcement.
- Rationalize impacts where necessary;
- Ensure compensation to affected communities

- Enhance the quality of infrastructure provisions, promote utility services opportunities, and focus facilitating poor segments of society.

b) ***The principals that implementation process will follow:***

- The overall implementation process to be carried out in coordination with Town Planning and Urban Development Standards (Frameworks) in which redevelopment will be phased to prioritization;
- The implementation process will be based on updated planning codes and regulations;
- Special consideration will be paid to implement planning standards relating to disaster (Drought) preparedness in all development proposals/projects;
- Facilitate communities, government machinery, and other organizations of community to participate in overall implementation process;
- Educate stakeholders for technical assistance;
- Be comprehensive, coherent, and coordinate to avoid errors through continuous monitoring and evaluation
- Arrange supple of financial resources

14.3 Legal Frameworks

Local governance agencies dealing with any development proposal must ensure that all development related activities and their approval consent should be carried out in accordance with urban planning statutory frameworks of government of Pakistan operational at all government level levels. This includes all legal frameworks substantiated through the relevant articles of constitution of Pakistan and the primary act (LAA 1984) governing land acquisition and compensation.

a) ***National Level Policy Frameworks***

The constitution of the Islamic Republic of Pakistan passed on the 10th April 1973 and as modified thereafter, is the supreme law of Pakistan Government. This constitution provides legal cover to all laws and acts, particularly those embedded in chapter-3 pertaining with land acquisition, development and compensation.

b) ***State level Statutory Frameworks pertaining to planning and development Control***

On 14th Feb 2011, the government of Sindh notified the extension of the jurisdiction of Karachi Building Control Authority to the whole of Sindh. The five Regions of Sindh Building Control Authority notified by the Government of Sindh are: **Karachi, Hyderabad, Mirpurkhas, Sukkur & Larkana,** having the Head Quarter **Karachi. Thus, any development activity within juridical boundary of these districts must be carried out in accordance with the primary planning instrument ' *Sindh Town Planning and Building Control Regulation'*.**

c) ***Local Planning Instruments***

There is variety of regulations dealing with Town services offences and penalties (Fines) in case of violation have been constituted in Schedule-VI (Section 139) 'Offences under the Act' Part-1 of Local Government Act-2013 (Third Amendment 2016) of Sindh Government.

In this regulation, various well defined public activity management and control regulations dealing with Public Health Safety, Land use Planning, Development Control, Encroachments, preparedness of safety measures from Natural & manmade disaster, quality of Drinking water, Solid Waste & Waste Water generating though multiple activities, Preservation of Heritage Sites, Open Space management and associated penalties, in case of violation, have been defined in detail.

d) ***Other relevant planning and design standard instruments***

There are varieties of other documents that support assessment of development proposals prior to implementation. e.g. 'National Reference Manual' - Ministry of Housing and works, Environment and Public Affair Division, etc.

If regularization requirements of any of development proposal is beyond the capacity of regularity frameworks mentioned above, the concerned agency dealing with development/implementation process in Matiari may develop their own regulatory frameworks/ building codec's to regularize the status of development with consent of local/provincial government authorities, if necessary.

14.4 Institutional Enhancement

While implementing the Strategic Development Plan "SDP', the respective Provincial and District Government may seek technical assistance from all the line department i.e. DUP&SP, Local Development Authority, Town Corporation, secretariat of Commissioner and Deputy Commissioner.

The *'Project Implementation and Management Unit*' will mainly consist of urban planners supported by other technical staff; architects, project managers, engineers, finance officers and any other technical staff expert in their relevant fields.

The *'Project Implementation and Management Unit'* shall supervise and coordinate respective urban developers involved in development activities, conduct monitory audits, preparer evaluation and impact reports and will report to the head of respective governance agency.

Development authorities will be responsible for implementing new approved town planning and building codes with the assistance of office of head of respective governance agency. The office of district coordinator will be responsible for the overall coordination and monitoring and will provide support for development/redevelopment activity from federal to district level.

The district Project Implementation and Management Unit would also facilitate the office of district coordinator/ deputy commission for all development/ implementation related (a) needs identification (b)

revision of annual plans (c) coordination (d) financial management and (e) monitoring of all development activities assigned to developers or government departments.

14.5 Implementation Schedule

Strategy:	**Programs/ Policies**
Balanced Urban Growth	**1. <u>Land Use Zoning</u>** Total built up area of the city in 2004 was approximately 4.20 sq. km and reached up to 4.76 sq. km in 2016 (source Google Earth). The city extended in North -south along N-5 road. Town's spatial growth during last 12 years is 31 % increase in built up area. The city grew mainly in north-south and partially east-west directions. The administrative complex and offices are situated along N-5 Road. District headquarter town can be divided into two tracts with the help of "Google Earth and Satellite Imagery "one is eastern part and other one is western.. **2. <u>Development Control</u>** High prices of houses and developed land The informal housing sector lacks provision of utility services like gas supply, clean water and drainage facilities. Required Amendment in Zoning Bye laws Restrict the provision of utility services for approved planned areas Matiari development isn't in particular form due to absence of development authority. The infrastructure in town is continuously under pressure due to un-planned development. **3. <u>Transportation</u>** The district is well-connected with other districts through good quality roads Contribution in positive regional and local economic development **<u>Roads</u>**

	Need Dualization & Rehabilitation of Existing Roads.
Responsibilities to Plan: Detailed Urban Design Strategy Development Assessment Impact of property Assessment Environmental Impact Study (EIA,IEE)	**Implementation Responsibilities:** Public Sector/ Private developers
Concerned Agencies: P & D Department Government of Sindh/ District Government/ Line Departments of local Government /Private Developers	**Time of Implementation:** Short Term (1 year to 5 Years) Long Term (5 years to 20 Years)

Strategy: **Future Transport Sector Development & Improvement**	**Programs/ Policies** **<u>(A)Traffic Management Program</u>** • Parking restrictions / Charged parking system • Control traffic movement specially cargo Qingqis and Pick-ups • Manage unidirectional traffic flow. • Enforcement of traffic rules • Improved road infrastructure and street furniture • Implementation of traffic bylaws **<u>(C) Congestion Reduction in Core Urban /CBD Area</u>** • Designated stands for qingqi / rickshaws • Specified spaces for charged parking system • Alternate route for loading and unloading vehicles • Unidirectional traffic flow pattern • Removal of encroachments from major distributors • Development of infrastructure for pedestrian movement in old precinct.
Responsibilities to Plan • Enforcement of encroachment and road space improvement byelaws • Traffic corridors detailed study	**Implementation Responsibilities** International Development and Fund Supporting Agencies/Public Sector/ Private developers

• Encroachment Removal & Relocation Study • On Street & Off Street Parking Feasibility Study • Beautification plan	
Concerned Agencies Provincial Works & Services Department Government of Sindh./ District Highways Department/ Local Town Government/District Government/ Private Developers Line Departments of local Government.	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (5 years to 20 Years)
Strategy: **Water Supply System Improvement**	**Programs/ Policies** • In the long term, piped water supply system for 100% population by 2037 • Installation of localize network in the planned housing schemes first and gradually cover the whole population in five year plans. • Reuse of treated effluent • Implementation of Tariff System for utilities through Water Metering (first for water usage above marginal consumption then in long run for all users). • Construction / Rehabilitation Of Water Supply Network • Improvement of Water Intake Works
Responsibilities to Plan • Need Assessment/Demand & Supply Study • Separate Master Plan for water supply and infrastructure development plan	**Implementation Responsibilities** Public Sector/ Private developers
Concerned Agencies Provincial / Local Government/ Public Health Engineering Department	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (above 5 years)

Strategy: **Drainage & Sewerage System Improvement**	**Programs/ Policies** • Improvement and reconstruction of existing Combined system of sewerage and drainage (Phase-wise approach of replacing open drains with covered sewers of PE pipes). • Provision of wastewater treatment plant.
Responsibilities to Plan • Need Assessment/Demand & Supply Study • New Master Plan for Drainage & Sewerage services improvement.	**Implementation Responsibilities** Public sector / Private developers
Concerned Agencies Provincial / Local Government/ Public Health Engineering Department Town Committee (TC)	**Time of Implementation** Short Term (1 year to 5 Years)

Strategy: **Solid Waste Disposal System Improvement**	**Programs/ Policies** • Immediate designation of walled Landfill *Site* with special attention for hospital waste disposal. • Collection and disposal of solid waste through specialized waste management companies.
Responsibilities to Plan • Disposal Generation Assessment Study • New Master Plan for Solid Waste Disposal System improvement.	**Implementation Responsibilities** Public / Private Sector
Concerned Agencies Provincial / Local Government/ Public Health Engineering Department Town Committee (TC)/ Sindh Solid Waste Management Company SSWMB	**Time of Implementation** Short Term (1 year to 5 Years)

Strategy: **Improving Efficiency of Town Committee's (TC)** • Town Committee	**Programs/ Policies** • Acquire the required additional sanitary workers as per requirement. • Make Town Committee self sufficient • Strengthening Town Committee's Financial Capacity • In long term introduce 4R Solid Waste Management System (reduce-reuse-recycle-reject)
Responsibilities to Plan • Town Committee's Progress Assessment Study	**Implementation Responsibilities** Public / Private Sector
Concerned Agencies Provincial / Local Government/ Public Health Engineering Department Town Committee (TC)	**Time of Implementation** Short Term (1 year to 5 Years)

Strategy: **Improving Fire Fighting Capacity**	**Programs/ Policies** • 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.
Responsibilities to Plan Assessment on Municipality's firefighting potential	**Implementation Responsibilities** Public Sector
Concerned Agencies Matiari Town Committee.	**Time of Implementation** Short Term (1 year to 5 Years)

Strategy: **Energy (Gas, Electric Power, Energy Generation through Alternate Resources)**	**Programs/ Policies** • Development of alternative energy resources such as wind, solar and bio-gas etc. • To Improve existing infrastructure of WAPDA • Solar street lights project • Energy generation through solar panel system for residential and commercial purpose. • Installation of Gas Network for entire DHQ Town.
Responsibilities to Plan • Demand and Assessment of various energy resources. • Feasibility study for solar Park • Rehabilitation of solarized street lights.	**Implementation Responsibilities** Public/ Public Private Partnerships
Concerned Agencies • SSGC-Sui Southern Gas Company • WAPDA • Developers	**Time of Implementation** Short Term (1 year to 5 Years)

Strategy: **Health Sector** Improve access to healthcare facilities & minimize the long journeys to access basic medical facilities	**Programs/ Policies** • Check and balance to accomplished existing health care projects. • Addition of 1,826 beds to achieve the target of 2 beds per 1000 district population • Hiring of 1,203 doctors and paramedical staff to cater future population. • Installation of incinerators.
Responsibilities to Plan • Health reforms	**Implementation Responsibilities** Public Sector and Welfare Agencies

Concerned Agencies	**Time of Implementation**
State Government/District Health Department. Provincial and District Health Department	Short Term (1 year to 5 Years) Long Term (above 5 year)

Strategy: **Education Sector Strategy**	**Programs/ Policies** • Short term plan provision of 482 classrooms at school and college level. • Repairing of school existing buildings with furniture • Training of teaching staff • 9307 additional classrooms (school and colleges) by 2037
Responsibilities to Plan • Education Infrastructure Improvement Mater Plan	**Implementation Responsibilities** Public Sector
Concerned Agencies Provincial Government/District Education Department.	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (more than 5 years)

Strategy: **Improving Recreation Sector**	**Programs/ Policies** • Repairing of existing recreational facilities and completion of under construction work. • Introduce financial mechanism i.e. facility use charges, to generate revenue to make them self-sustaining. • Special arrangement for security, parking and alternate route during religious and cultural activities in the city.

	• Rehabilitation and construction of family parks and playground • Construction of Gymkhana • Construction of auditorium • Conservation and Preservation Of Heritage Sites .
Responsibilities to Plan • Provisions of New Recreation sites	**Implementation Responsibilities** Public Sector
Concerned Agencies Provincial Government / Culture, Tourism & Antiquities Department/ Government of Sindh/ District / Local Government / TC	**Time of Implementation** Short Term (1 year to 2 Years) Long Term (More than 5 years)

Strategy: **Disaster Risk Management**	**Programs/ Policies** • Engage all stakeholders of entire district in overall disaster rehabilitation process. • Recognize the commitment of stakeholders and the need for collaboration across all levels of government, community, industry, commerce, and government owned corporations, private and volunteer organizations and local communities within all aspects of disaster management. • Aligned job responsibilities of key stakeholders with job descriptions mentioned in principal guidelines proposed in *Pakistan National Disaster Risk Management Act 2010*, *National Disaster Risk Management Guidelines* and *Disaster Risk Management Plan, Sindh.* • Ensure establishment of straight relationships, trust, teamwork, consultative decision-making and shared responsibilities among stakeholders. • Develop disaster risk assessment system through statistical information, risk maps, emerging hazards information and their affects. • Adopt measures of sustainability of local communities by utilizing local resources available to avoid post disaster

	cataclysms (dearth, theft, spread of epidemic diseases, etc). • Promote economic sustainability after disasters.
Responsibilities to Plan • Identification of Disaster Prone Areas and Early warning and shelter homes • Development of Community Training and Drill Organization Manual and SOP. • Development Local stakeholders Roles and Responsibility SOP.	**Implementation Responsibilities** Public Sector and National /International Welfare agencies
Concerned Agencies NDMA/PDMA/ P & D department Gos/ SUPARCO/ Provincial Irrigation Department Gos/ Line departments of local government/District Disaster Management Authority.	**Time of Implementation** Short Term (1 year to 5 Years)

Strategy **Economic Development Plan**	**Programs/ Policies** • Rehabilitation of Infrastructure in existing Small Industrial Estate (roads, street lights, parking for loading/unloading goods vehicles, etc.) • Increase strategic storage through construction of cold storage / Godowns for agro products to cater drought situation. • Provide good incentives near peripheries for shifting / re-location of whole sale markets from the inner city to reduce congestion. • Encourage Local Private Investors by giving them subsidies. • Consider changing trends of crop production through periodically revise Economic Policy Framework (feasible studies for economic potentials)

	• Ensure measures for security / risk recovery plan for economic zone. • Market and logistics should also be added to enhance trade and commerce. • Livestock and dairy sector needs to encourage and facilitated. • Centralize wholesale markets to create connectivity with regional markets. • Drought measures
Responsibilities to Plan Feasible studies for economic potentials	**Implementation Responsibilities** Public /private developers
Concerned Agencies Provincial Government/District Government/Local Government/Matiari Chamber of Commerce and Industries	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (5 years to 20 Years)

Annexure – A

Sustainable Development Goals Acceleration Plan

Sustainable Development Goals (SDGs) Acceleration Plan
Matiari DHQ Town

Sustainable Development Goals:

The Agenda 2030 comprises of Sustainable Development Goals (SDGs) which are a call for action by all countries – poor, rich and middle-income – to promote prosperity while protecting the planet. They recognize that ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, health, social protection, housing and job opportunities, while tackling climate change and environmental protection.

The 17 goals of SDGs provide a direction for targeting human prosperity and have a global scope – applying on both developed and developing countries. SDGs have come into action since the beginning of 2016 and will continue as the leading global development agenda until 2030. The SDGs targets are defined as aspirational, with each government setting its own national/subnational targets while considering its circumstances and priorities. In consultation with stakeholders, governments are also to decide how to incorporate SDGs in its planning processes, policies and strategies, and to recognize the link between sustainable development and other relevant ongoing processes in the economic, social and environmental fields[1].

Pakistan signed the international agreement on the 2030 agenda in September 2015 during the United Nations General Assembly (UNGA) Session for sustainable development, committing to achieve the 17 SDGs between 2016 and 2030. In February 2016, under a unanimous resolution, the National Assembly of Pakistan endorsed SDGs as Pakistan's national development agenda. The country has thereafter made rapid progress in adopting and formally launching the 17 SDGs.

SDGs in Sindh:

In line with the National Initiative on SDGs, Government of Sindh (GoS) has also made focused 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 GoS 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 the SDGs. Under the project, the SDGs Support Unit Sindh has been established in Planning & Development Department, Government of Sindh with effect from May 2017. The Unit contributes towards accelerating progress on SDGs in the province by working through following four approaches:

[1]United Nations Development Group, Reference Guide to UN Country Teams -Mainstreaming the 2030 Agenda for Sustainable Development, March 2017 Update

Policies and Plans Mainstreaming SDGs in local development plans and strategies clearly delineating the resource requirements.	Data Reporting Strengthening coordination, reporting and monitoring mechanisms for SDGs	Financing Financing flows increasingly aligned with 2030 Agenda	Innovation Supporting integrated and innovative approaches to accelerate progress on SDGs on priority areas.

GoS has also taken the crucial step towards mainstreaming and localizing SDGs in the province by approving prioritization of SDGs in the immediate, medium and long-term for the province. The prioritization has been done by considering severity of development issues and challenges, resource availability, and Sindh's economic and social endowments, value for money, and magnitude of impacts, in line with Sindh 2025 vision and other policies and strategies.

Sindh's SDGs Priorities

Ranking of Priorities	Goal #	Sustainable Development Goals (SDGs)	Immediate Priorities	Intermediate Priorities (Up-to 2025)	Long-term Priorities (Up-to 2030)
1	Goal 4:	Quality Education			
2	Goal 3:	Good Health and Well Being			
3	Goal 6:	Clean water and Sanitation			
4	Goal 7:	Affordable and Clean Energy			
5	Goal 2:	No Hunger			
6	Goal 8:	Decent work and Economic Growth			
7	Goal 9:	Industry, Innovation and Infrastructure			
8	Goal 16:	Peace and Justice			
9	Goal 11:	Sustainable cities and communities			
10	Goal 1:	No Poverty			
11	Goal 12:	Sustainable Consumption and Production			
12	Goal 10:	Reduce Inequalities			
13	Goal 5:	Gender Equality			
14	Goal 17:	Partnership development			
15	Goal 13:	Climate Change			
16	Goal 14:	Life Below Water			
17	Goal 15:	Life on Land			

The above table indicates that the SDG Goal # 4, 3, 6,7,2 and 8 are on the Immediate priority, whereas Goal # 1,9,16,11,12 and 10 are on Intermediate priority i.e. upto year 2025. The remaining goals which are Goal # 5, 17, 13, 14, and 15 will be on the Long term priority i.e upto year (2030).

Urban Development Planning and the SDGs:

Today's common urban development challenges like affordable housing, provision of basic services, municipal functions, controlling crime, poverty, disease and the exhaustion of natural resources do not respect regional borders or limits between the built and the non-built domains. Therefore, the scope of urbanization should always include the livable environment while also considering the regional dimension. In this connection, the rigorous consultation and analysis being done by GoS to prepare Development Master Plan of 14 DHQ Towns of Sindh, it is being realized with even more significance that sustainable development cannot be achieved without significantly transforming the way we plan, build and manage our urban spaces. The rapid growth of cities resulting in rising population and increasing migration that has led to a boom in urban areas and slums, is becoming a more significant challenge for urban areas.

Under the contract of the preparation of development Master Plan of 14 DHQ towns, SDG Acceleration plan was not part of the approved TORs but keeping in view the Sindh government's initiatives to mainstream SDGs targets in provincial planning (taking Islamkot as a model SDG Taluka) the Directorate and Consultant after due consultative process felt the need to include brief SDG Acceleration Plan as part of Development Master Plans. Accordingly in consultation with SDG unit Sindh, SDG 11 was selected for SDG Acceleration Plan for 14 DHQ towns since is pertinent to urban planning and development.

SDG 11 – *Sustainable Cities and Communities* sets the basis for urban-planning techniques and policies for the future. For a tangible acceleration towards achievement of SDG 11, simultaneous interventions will need to be executed directly through urban-planning interventions. While this involves investments in public transport, housing, creating green public spaces and improved urban planning and management in participatory and inclusive ways, an in-depth review of SDG 11 targets reveals a much stronger interlinkage with other SDGs such as poverty, health, education, clean energy, provision of basic services (social services as well as urban municipal services), etc. thereby generating a holistic societal impact, which is of prime importance in the context of Agenda 2030.

Using the key mechanism for periodic updating of the Development Master Plan after every five years, the SDGs Acceleration Plan also proposes embedding SDGs agenda targets against projects and schemes designed at local level and assesses the available and potential financing flows in context of future opportunities. Therefore, the targets and indicators of

SDG 11 – Sustainable Cities & Communities is being reviewed against the Master Plan, along with identification of supportive plans, policies and interventions.

The SDGs Acceleration Plan table below explicitly underlays the outline for how the Master plan of the town addresses the targets and indicators under SDG 11 – Sustainable Cities & Communities. The plan also takes note of the local social and economic data to identify services provision gaps at the local level, as well as key challenges at district level.

SDG Acceleration Action Plan - Matiari DHQ Town

SDG Goal 11 : Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable				
	11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums	11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing	[2]25% of the urban town population lives in katcha houses	- Increase in proportion of small size plots (Plot size will be depend on land value) could be made for low income groups in all new housing schemes. - Affordable housing program for low income group in different phases up to 2037, through one window operation (including technical guidance, easy loan provisions, legal procedures)	Sindh Katchi Abadis, Squatter Settlements & Slums Policy - The process of regularization and up-gradation of the pre-1985 katchi abadis shall continue as per current policy. However, katchi abadis, which are hazardous by virtue of being close to railways tracks or located under high tension power lines, or are on or close to the riverbeds, or on lands needed for operational /security purposes, need to be relocated at appropriate places by LOAs. - Formation of new katchi abadis shall not be allowed and shall be discouraged by exercising strict development controls in all urban areas. - Formation of Resettlement Plans - Resettlement plans shall be prepared by the concerned Land Owning Agencies (LOAs) in consultation with

[2] Data provided by Sindh Kacthi Abadis Authority, December 2019. Katchi abadi is defined as by Katchi abadi authority

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
					affected communities for shifting of katchi abadis dwellers who fall within hazardous or security/operational zones. These plans shall primarily be on a self-financing basis. - The internal infrastructure and services shall be provided on incremental basis depending on the needs and priorities of the residents to make them affordable and cost effective. Trunk infrastructure and services shall be provided by public sector organizations and the cost shall be met from Government exchequer
	11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in	11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities	67% people have access to public transport.[3]	- 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.	Sindh empowerment of Persons with Disabilities' Act, 2018[4] 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

[3] Socio Economic Survey 2017
[4] https://depd.sindh.gov.pk/sindh-empowerment-of-persons-with-disabilities-act-2018

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	vulnerable situations, women, children, persons with disabilities and older persons			- Reduce traffic growth and congestion by achieving a mode shift. - Enhance institutional efficiency to improve service delivery. - Dualization of main arteries - Improve road design to make safer roads. - Prevent encroachments on footpaths through litigation. 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 regulation	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.

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	11.3.1 Ratio of land consumption rate to population growth rate 11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically	Baseline will be established at the start of implementation of Master plan. Vision formulation exercise through multiple consultative workshops were conducted to establish a shared and common vision for the development of Matiari DHQ town in the future.	o The total extent of the area included in the overall proposed Matiari Master Plan is 5,000 acres approx. for a population of 27,879 by 2037	Sindh Colonization of Government Lands Act 1912 and Disposal of Government Lands Rules, 2005.[5] National Housing Policy 2001[6]
	11.4 Strengthen efforts to protect and safeguard the world's	11.4.1 Total expenditure (public and private) per capita spent on the	Baseline will be established at the start of	• Protection of historical places and cultural heritage	Heritage act for policies 2012[7]

[5] http://sindhlaws.gov.pk/setup/publications_SindhCode/PUB-16-000113.pdf
[6] http://mohw.gov.pk/mohw/userfiles1/file/National%20Housing%20Policy.pdf
[7] https://antiquities.sindhculture.gov.pk/index.php/about-us/acts/343-heritage-act-1994

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	cultural and natural heritage	preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)	implementation of Master Plan. Shrine of Shah Abdul Latif Bhittai Cultural Museum, Bhitshah Hala Monuments (Mirs Tombs), Matiari		(2) An agreement under this section may provide for the following matters or 'for such of them as it may be found expedient to include in the agreement--- (a) the maintenance and custody of the protected heritage and the duties of any person who may be employed to watch it; (b) the restriction of the owner's right to destroy, remove, alter or deface the protected heritage; (c) the facilities of access to the public or to any portion of the public and to persons deputed by the Committee to inspect or maintain the protected heritage; (d) the notice to be given to Government in case the land on which the protected heritage is situated is offered for sale by the owner, and the right to reserve by Government to purchase such heritage, or any specified portion of such heritage, at its market value; (e) the payment of any expenses incurred by the owner or Government in connection with the preservation of the protected heritage; and (f) any matter connected with the preservation of the protected heritage which is a subject of agreement between the owner and Government.

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	11.5.1 Number of deaths, missing persons and persons affected by disaster per 100,000 population	Sindh Data [8] No of deaths (1988-2013) = 241 No of People effected (1988-2013) =24,096,173 Deaths per 100,000 population = 0.2491 Affected people per 100,000 population = 241	• The DSM, PPHI shall also be responsible for providing medical cover to the IDPs in the catchment area of BHUs assigned to them particularly, and will perform their due role in supplementing the overall medical cover provided by the District Health Department. • National risk assessment would identify highly vulnerable districts and be complemented by higher resolution work at local level to diagnose the underlying causes of risk, explore concrete risk reduction options and inform development planning and prioritization exercises and/ or disaster preparedness planning. • Arrange medical teams for providing medical cover to the IDPs settled in any relief camp. • Fumigate the affected areas and areas at risks of spread of any of epidemic disease.	National Disaster Risk Reduction Policy 2013[9]

[8] PDMA (2017)
[9] http://www.pdma.gos.pk/new/resources/Sindhidrr-policy.pdf

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
				• Ensure that all ambulances are in working order and road worthy conditions. • Ensure vacant possession of all schools buildings at the time of emergency for setting up relief camps. • Ensure sanitation and cleanliness as well as clean drinking water facilities wherever possible at all school buildings declared as relief camps through by binding down their concerned Headmasters. • The creation of an integrated multi-hazard damage loss data-base is therefore a prerequisite for systematic vulnerability and risk monitoring	
	11.6 By 2030, reduce the adverse per capita environmental impact of cities,	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of	[10]Present Total solid waste generation in Matiari DHQ town is 9.5 tons per day. Regular collection	- The collection and disposing of solid waste is the responsibility of the TC. - The collection system needs to be made more effective and efficient. - Town Municipal Committees has already initiated some work on	THE SINDH SOLID WASTE MANAGEMENT BOARD ACT, 2014 [11]

[10] Town Committee Matiari
[11] http://www.pas.gov.pk/uploads/acts/Sindh%20Act%20No.IV%20of%202014.pdf

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	including by paying special attention to air quality and municipal and other waste management	total urban solid waste generated, by cities	by municipal is about 50-60%	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. - Industrial waste disposal should be treated seperately and safely	
	11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in	11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and	Only 0.35% (2 acres) out of total 5,57 (2.5 Sq KM[12])acres park area is available in Matiari	• Establishment of Sports Complex along with old SRTC bus stand • Existing open spaces in core urban area should be restored and maintained. New open spaces should be identified and created.	Adopt-a-park policy 2019 (PPP unit, Finance dept. GoS) is still in progress

[12] Based on Landuse Calculations

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	particular for women and children, older persons and persons with disabilities	persons with disabilities		• Development and preservation of cultural heritage • Cater the problem of Shortage of water facility to maintain green spaces, green belts and trees plantation. • Availability of sports infrastructure. • Provision of infrastructure to accommodate visitors into cultural events	
	11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning	11.a.1 Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city	Through inclusive and participatory development of SDP and collaborative implementation, the target for development plan integration is achieved	• 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. • Discourage direct link roads with bypass • The Consultant suggest that the Master Planning should be reviewed every five years to estimate the land use and area requirement according	• Preparation of Development master plans of DHQ towns by Govt of Sindh • Poverty Reduction Strategy for Sindh approved by cabinet 2018 The key conceptual underpinnings of this strategy are:[13] • The policy is focused on creation/facilitation of rural hubs: • Using principles of agglomeration to support and drive growth • Focusing on those interventions that will have a catalytic effect

[13] Poverty Reduction Strategy for Sindh

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
				to the growth rate and economic investment	• Consolidation of services, for improved service deliver and better impact. The combined effect aims to provide improved facilities, services and opportunities for households in the surrounding cluster of villages served by the hub
	11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and	11.b.1 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030a 11.b.2 Number of countries with national and local disaster risk	Provincial policies and strategies in placed	National risk assessment would identify highly vulnerable districts and be complemented by higher resolution work at local level to diagnose the underlying causes of risk, explore concrete risk reduction options and inform development planning and prioritization exercises and/ or disaster preparedness planning. • Arrange medical teams for providing medical cover to the IDPs settled in any relief camp. • Fumigate the affected areas and areas at risks of spread of any of epidemic disease. • Ensure that all ambulances are in working order and road worthy conditions.	National Disaster Risk Reduction Policy 2013[14]

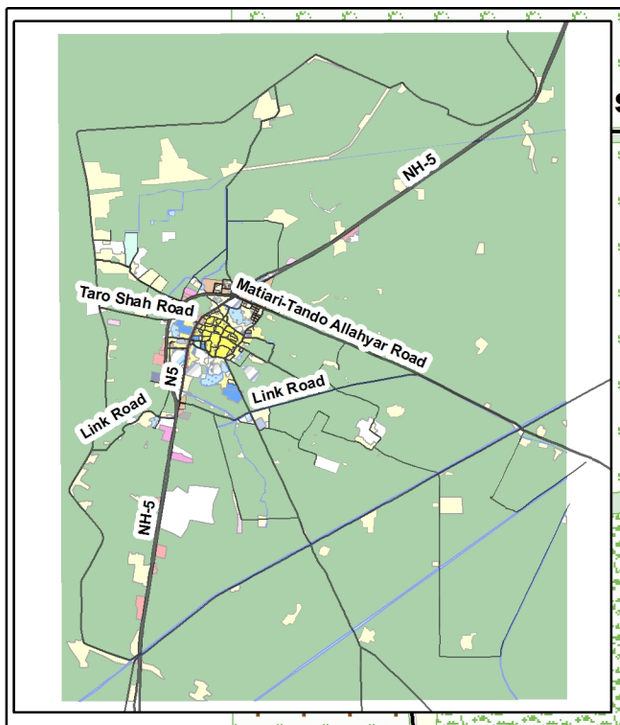
[14] http://www.pdma.gos.pk/new/resources/Sindhidrr-policy.pdf

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels	reduction strategies		• Ensure vacant possession of all schools buildings at the time of emergency for setting up relief camps.	

Annexure – B

Atlas

Proposed Master Plan For Matiari



N
W
E
S

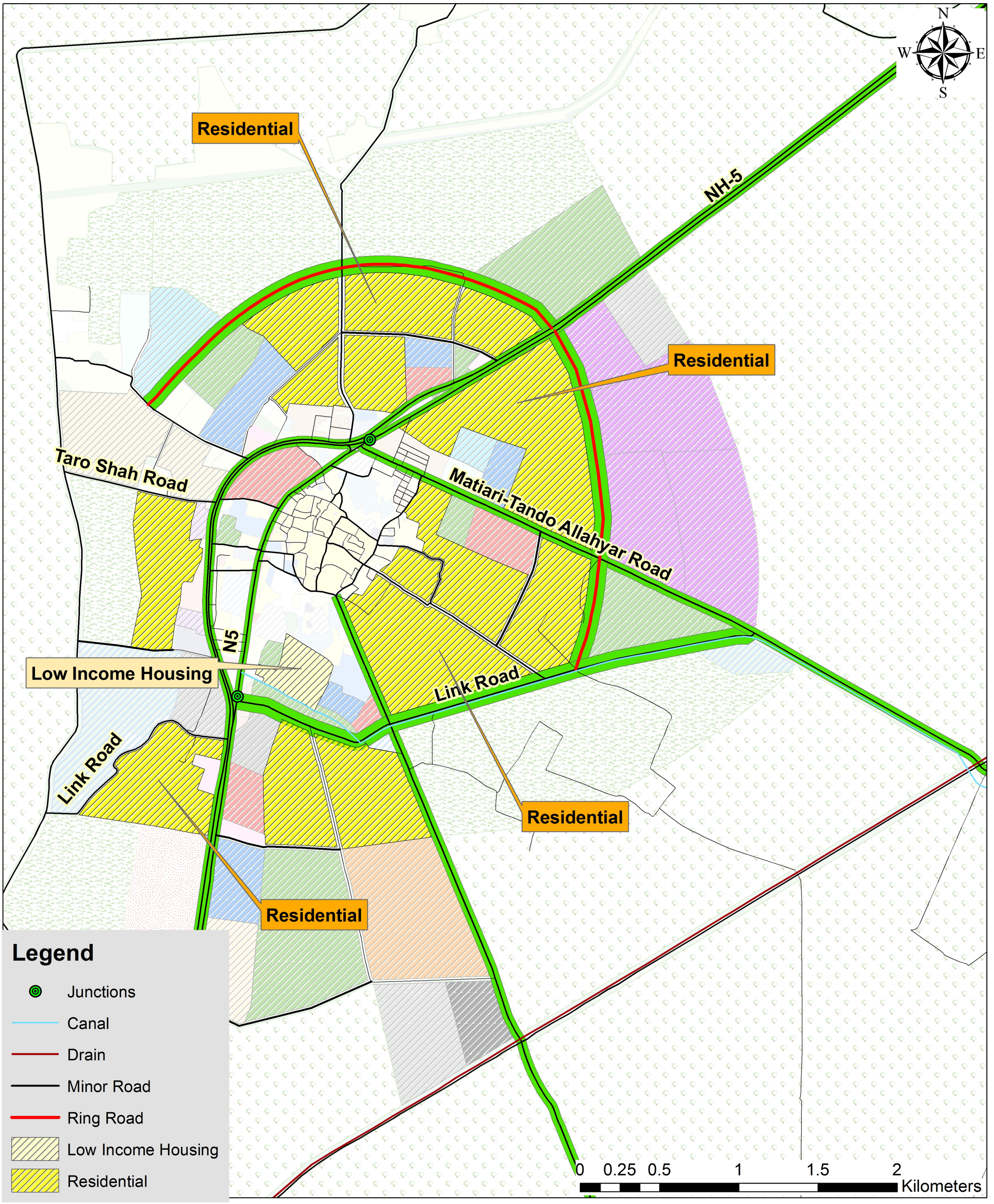
Agricultural Reserved
Amusement Park
NH-5
Truck Terminal
Extension of DHQ
Trade and Commerce
Sports Complex
Agriculture Fields
Educational Zone
Warehouses
Jail
Extention of Health Facilities
Public Adminstration
Main CBD
Matiari-Tando Allahyar Road
Cottage Industries
Religious
Recreational
Industrial Area
Commercial
N5
Extension For Dargah
Grand Park
Link Road
Residential
New WS
Low Income Housing
Graveyard
Public Transport Terminal
Extension of Technical College
Green Area
Gird Station
Extesion of WS
Agriculture Reserved
Link Road
Educational
Cattle Park
Emergency Reserved
Festival Ground
PBC office
STP
Land Fill Site
NH-5

Legend

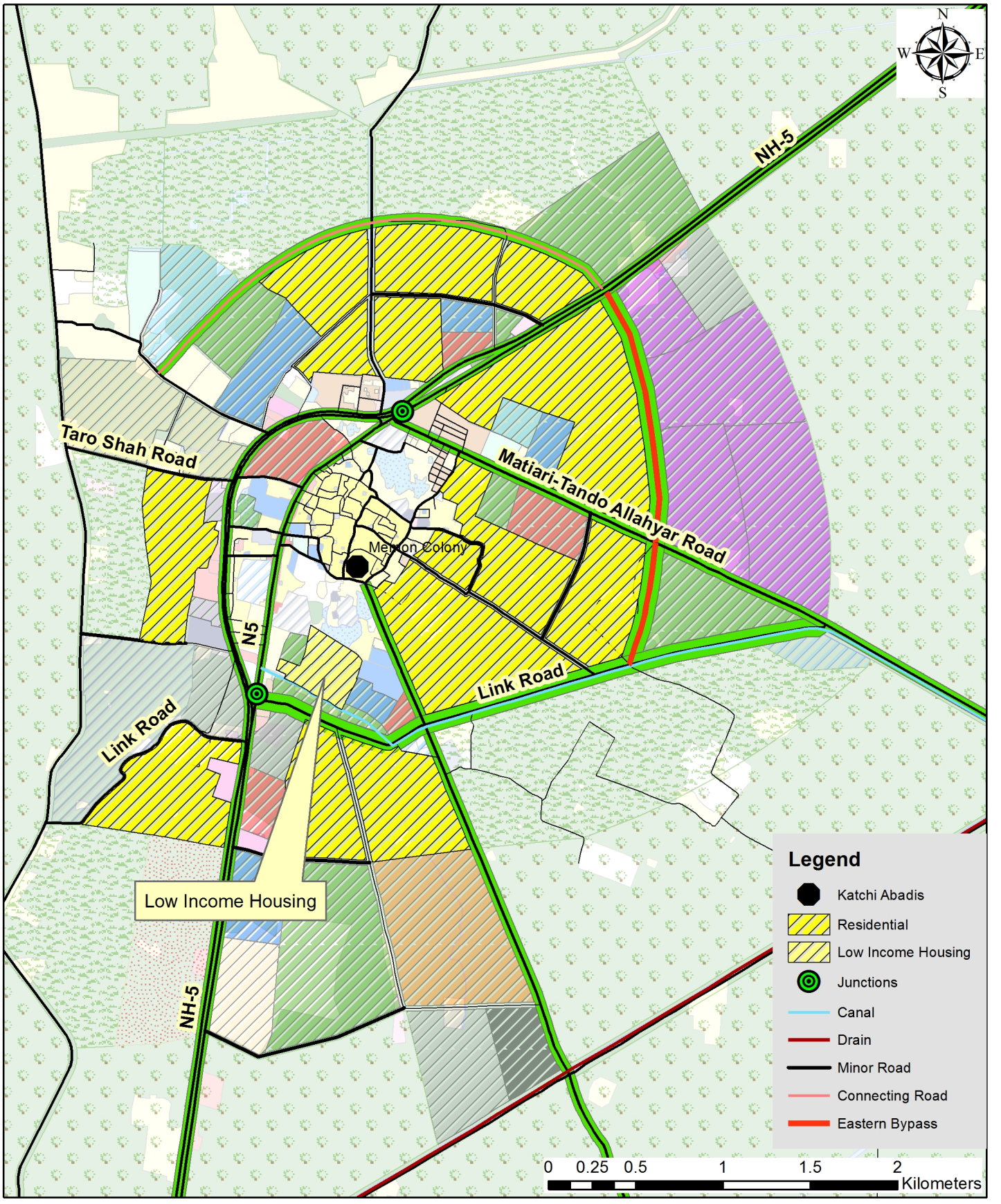
- Junctions
- Canal
- Drain
- Minor Road
- Ring Road
- Agricultural Fields
- Agricultural Reserved
- Commercial
- Economic
- Educational
- Emergency Reserved
- Gird Station
- Graveyard
- Health
- Landfill Site
- Livestock
- Low Income Housing
- Public Administration
- Recreational
- Religious
- Residential
- STP
- Transportation
- Water Supply

0 0.25 0.5 1 1.5 2 Kilometers

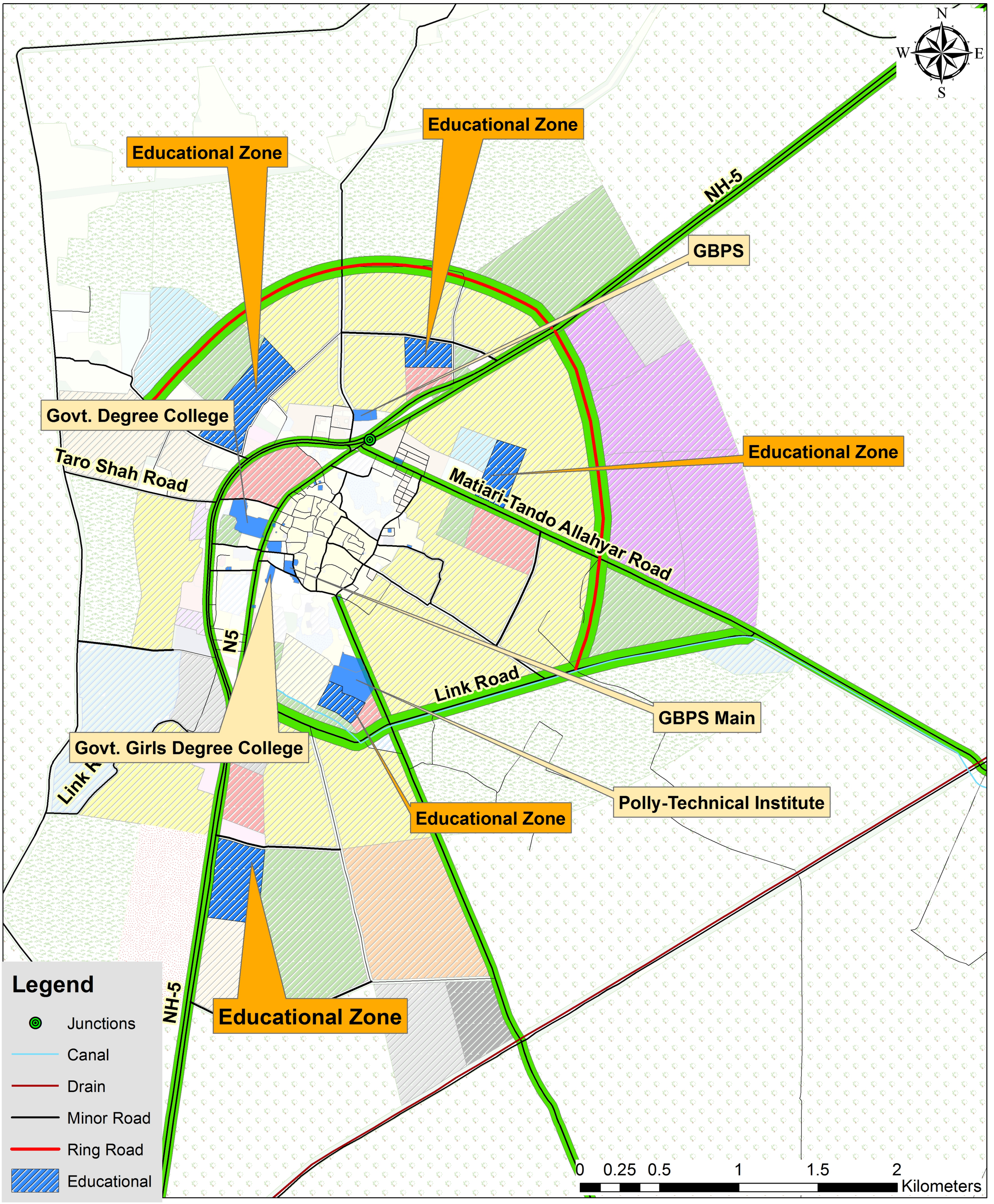
Proposed Residential Landuse For Matiari Town



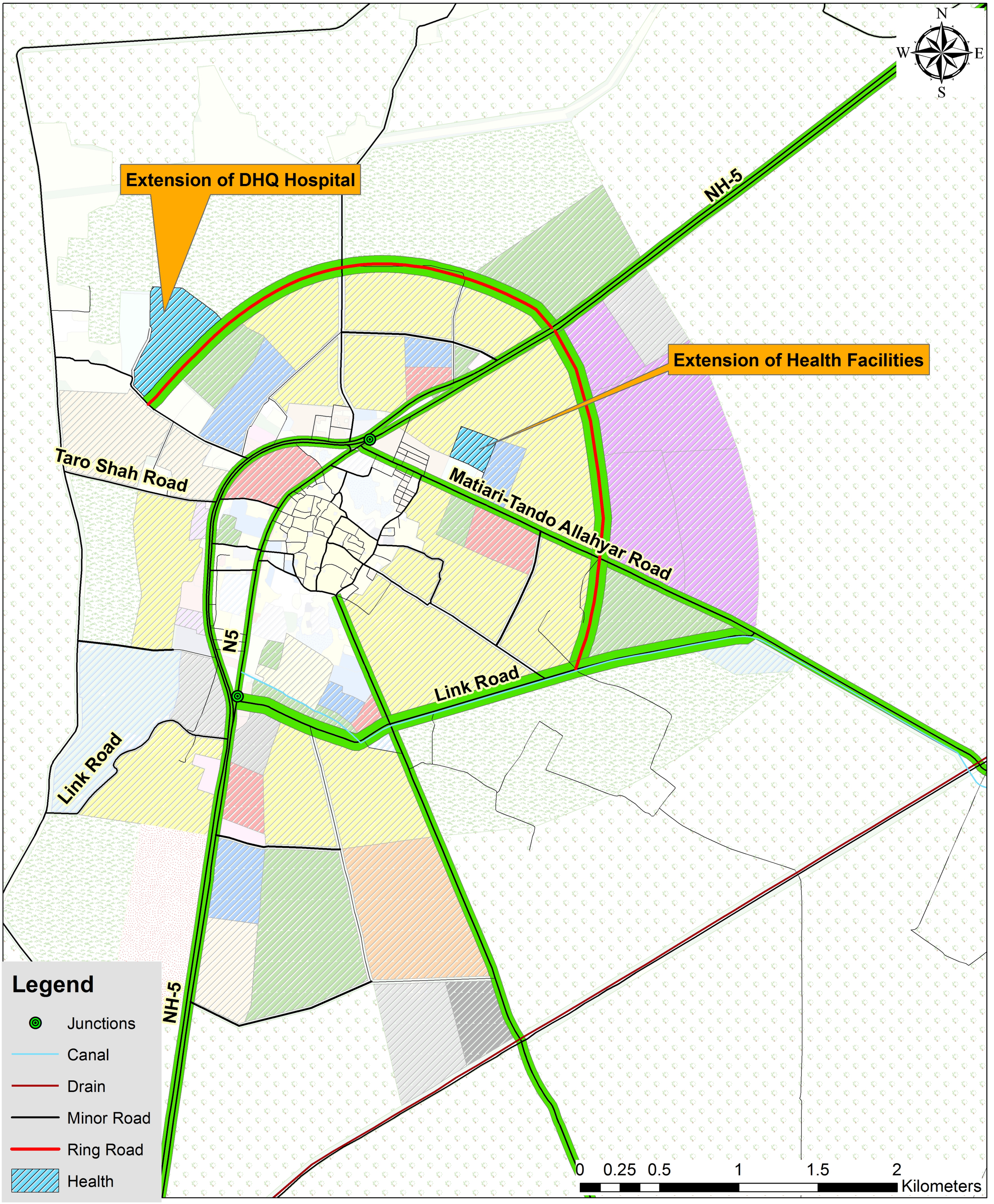
Proposed Residential Plan for Matiari



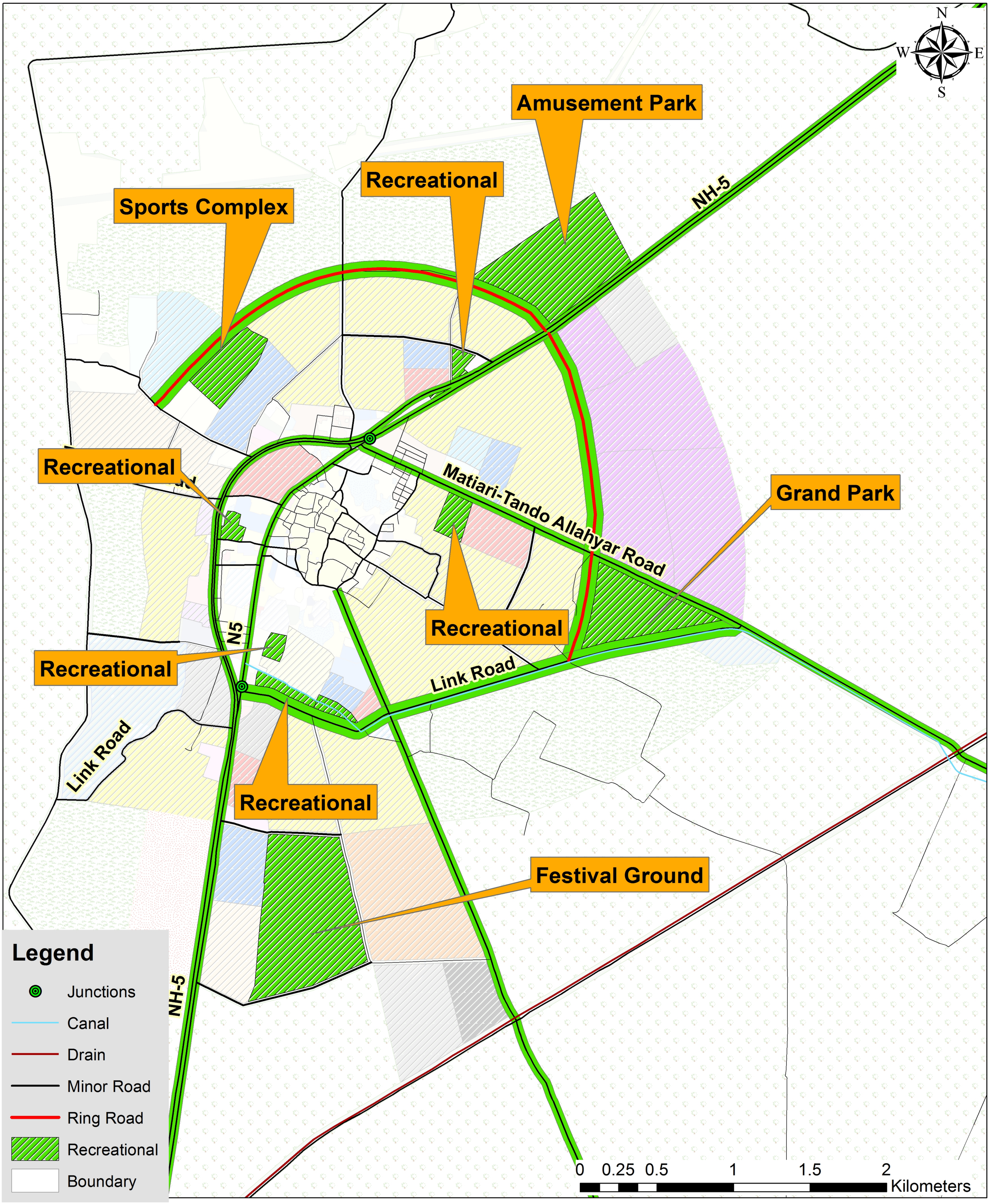
Proposed Educational Landuse For Matiari Town



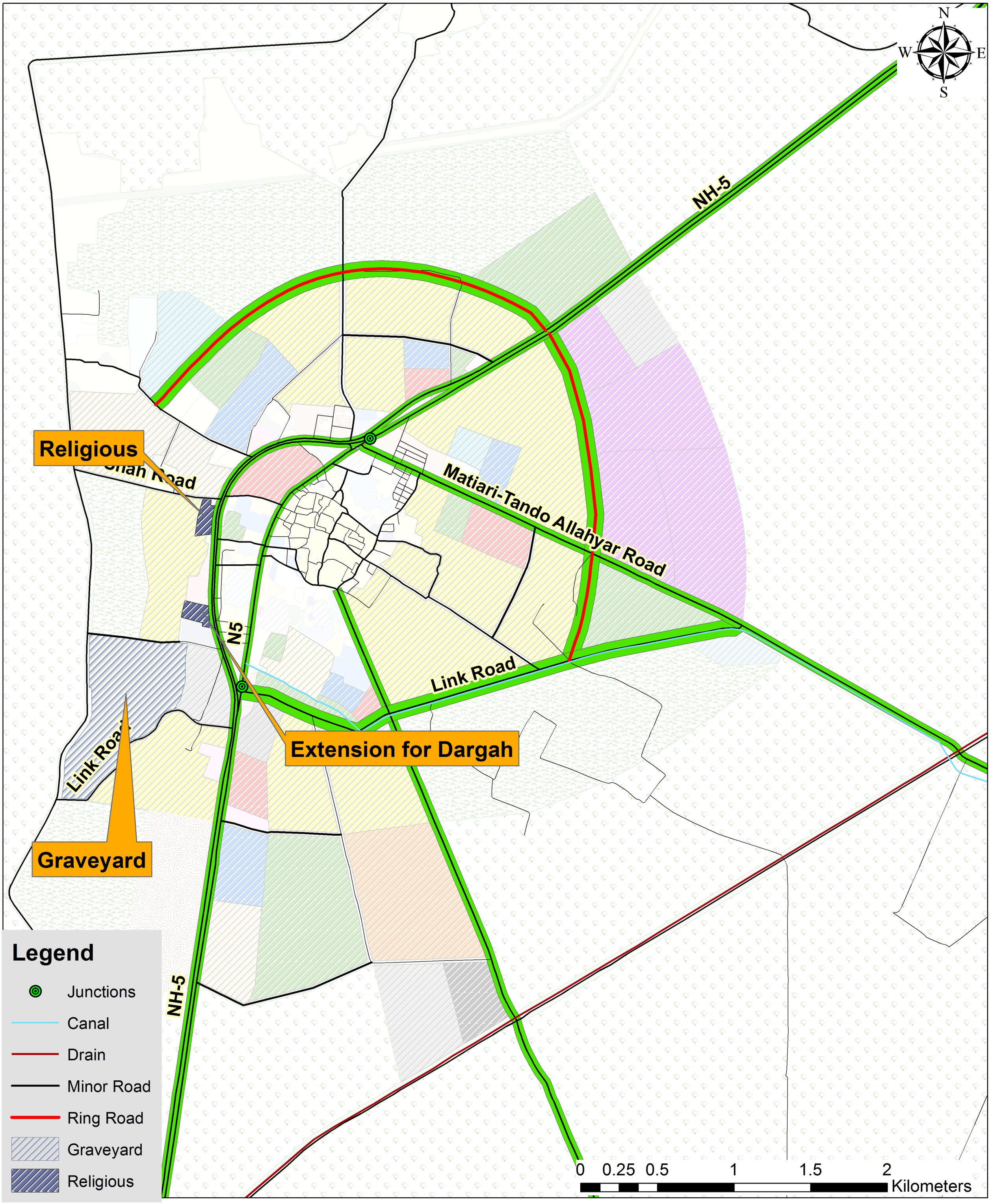
Proposed Health Landuse For Matiari Town



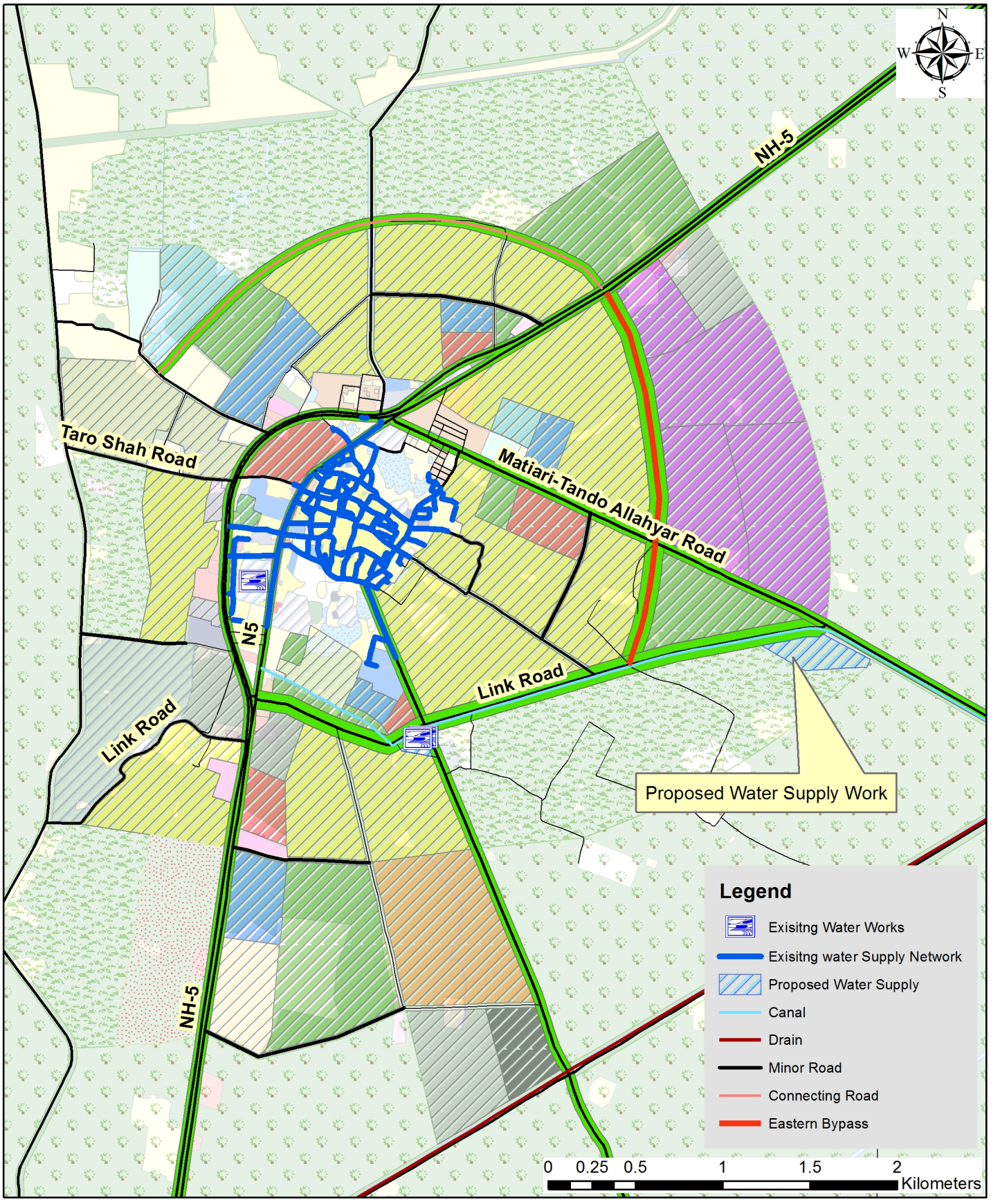
Proposed Recreational Landuse For Matiari Town



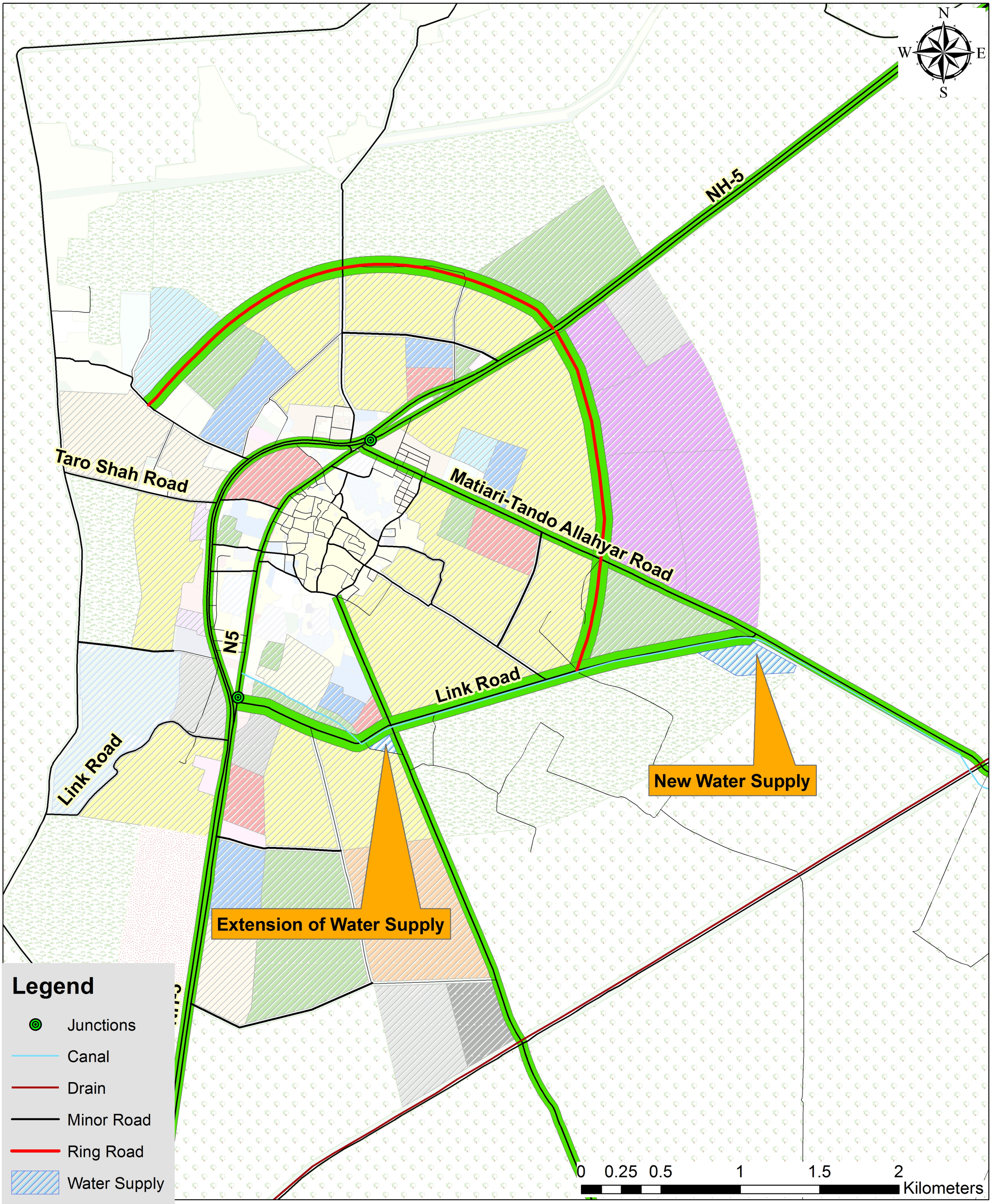
Proposed Religious Landuse For Matiari Town



Proposed Utilities and Servies Landuse Plan for Matiari



Proposed Utilities and Services Landuse For Matiari Town



Proposed Utilities and Services Landuse For Matiari Town

N
W
E
S

NH-5

Taro Shah Road

Matiari-Tando Allahyar Road

N5

Link Road

Link Road

NH-5

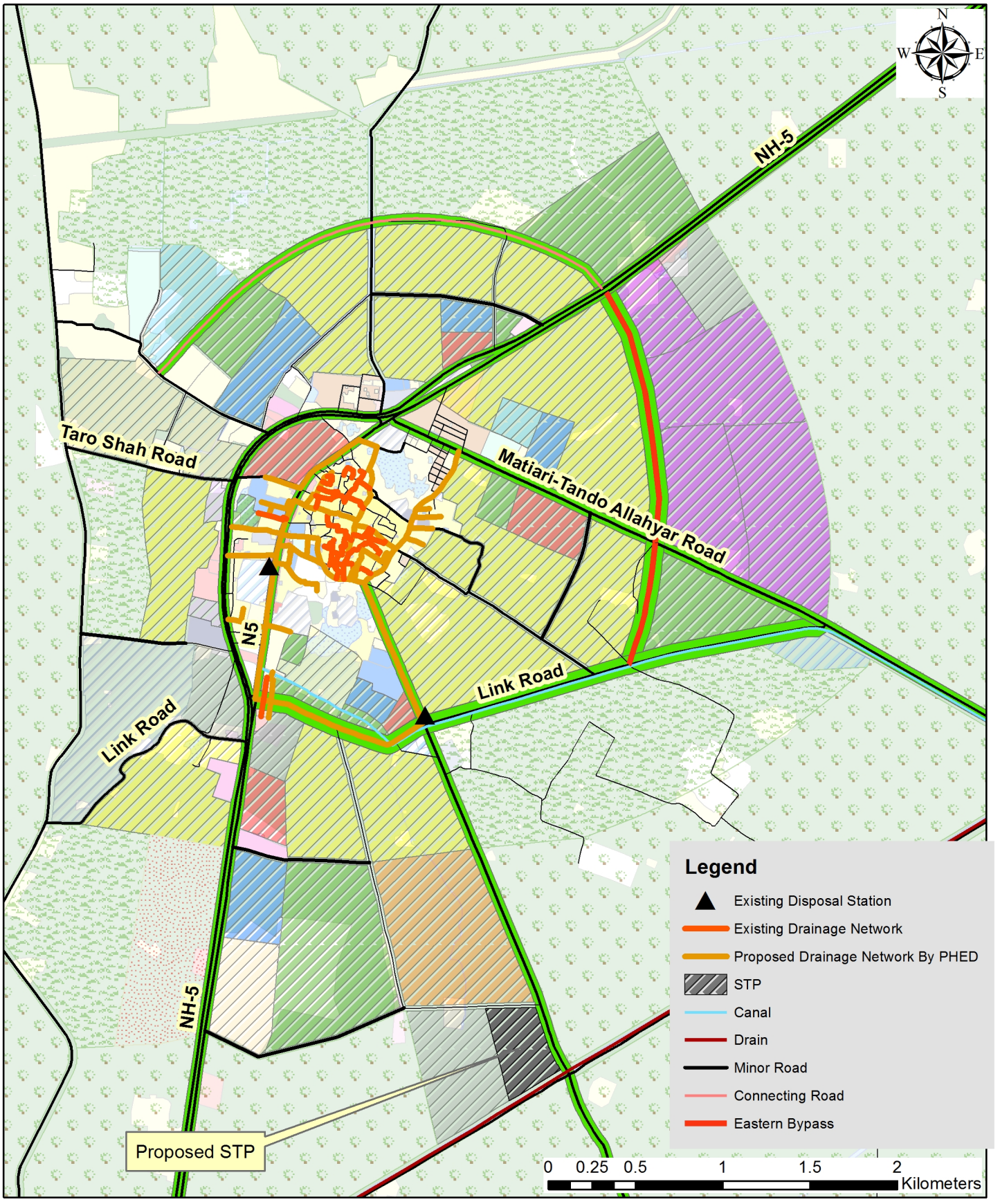
Sewage Treatment Plant

Legend

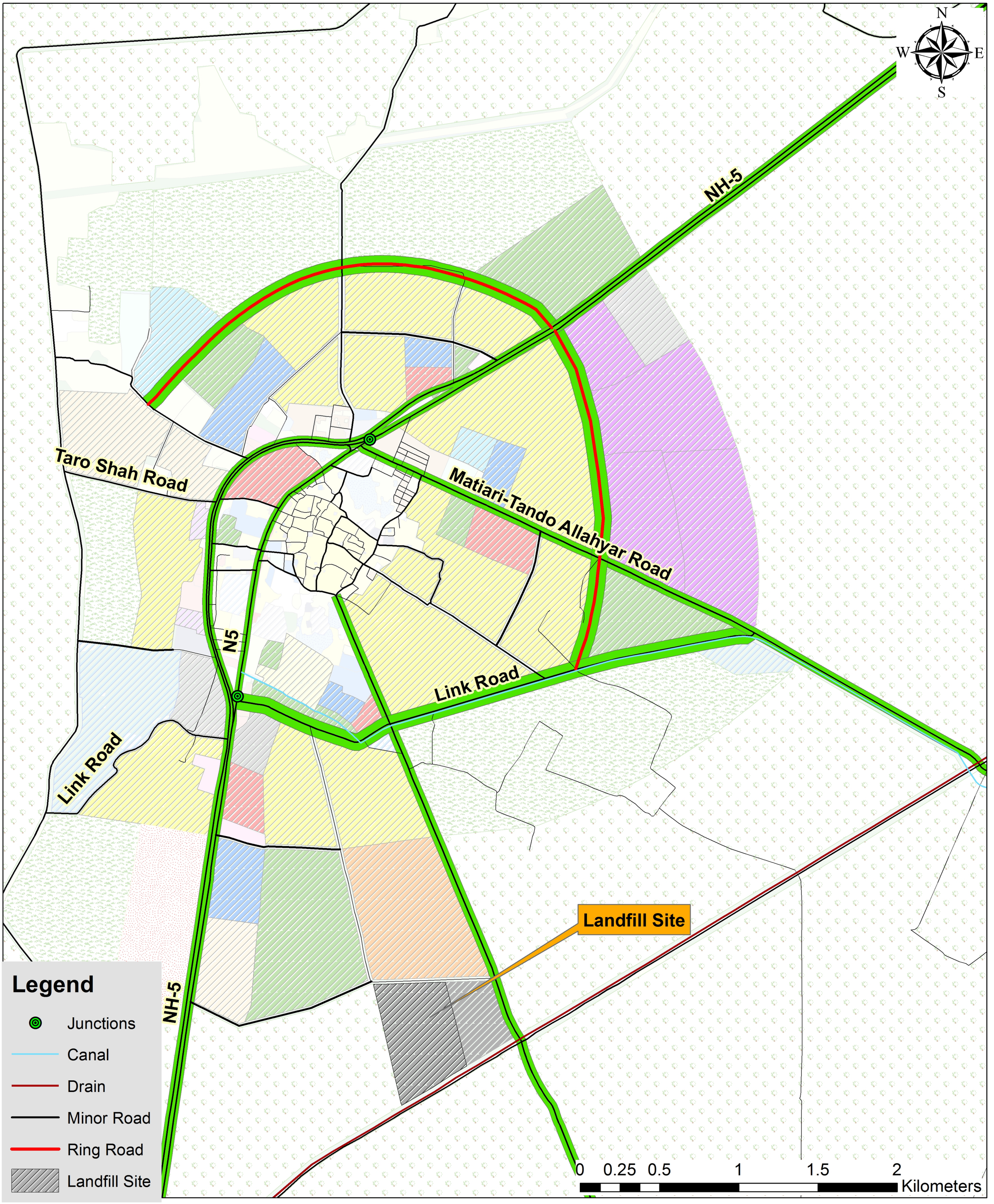
- Junctions
- Canal
- Drain
- Minor Road
- Ring Road
- STP

0 0.25 0.5 1 1.5 2 Kilometers

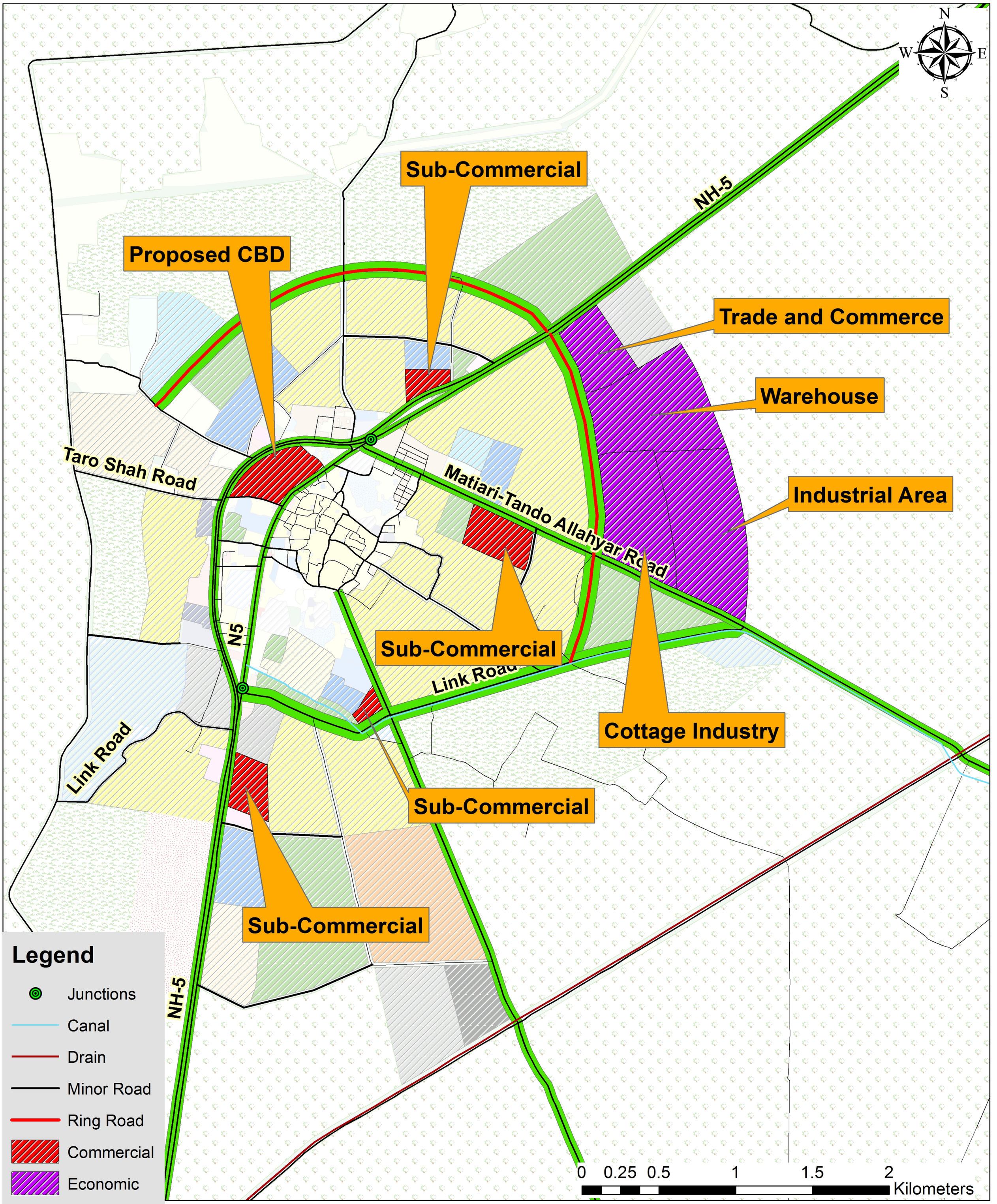
Proposed Utilities and Servies Landuse Plan for Matiari



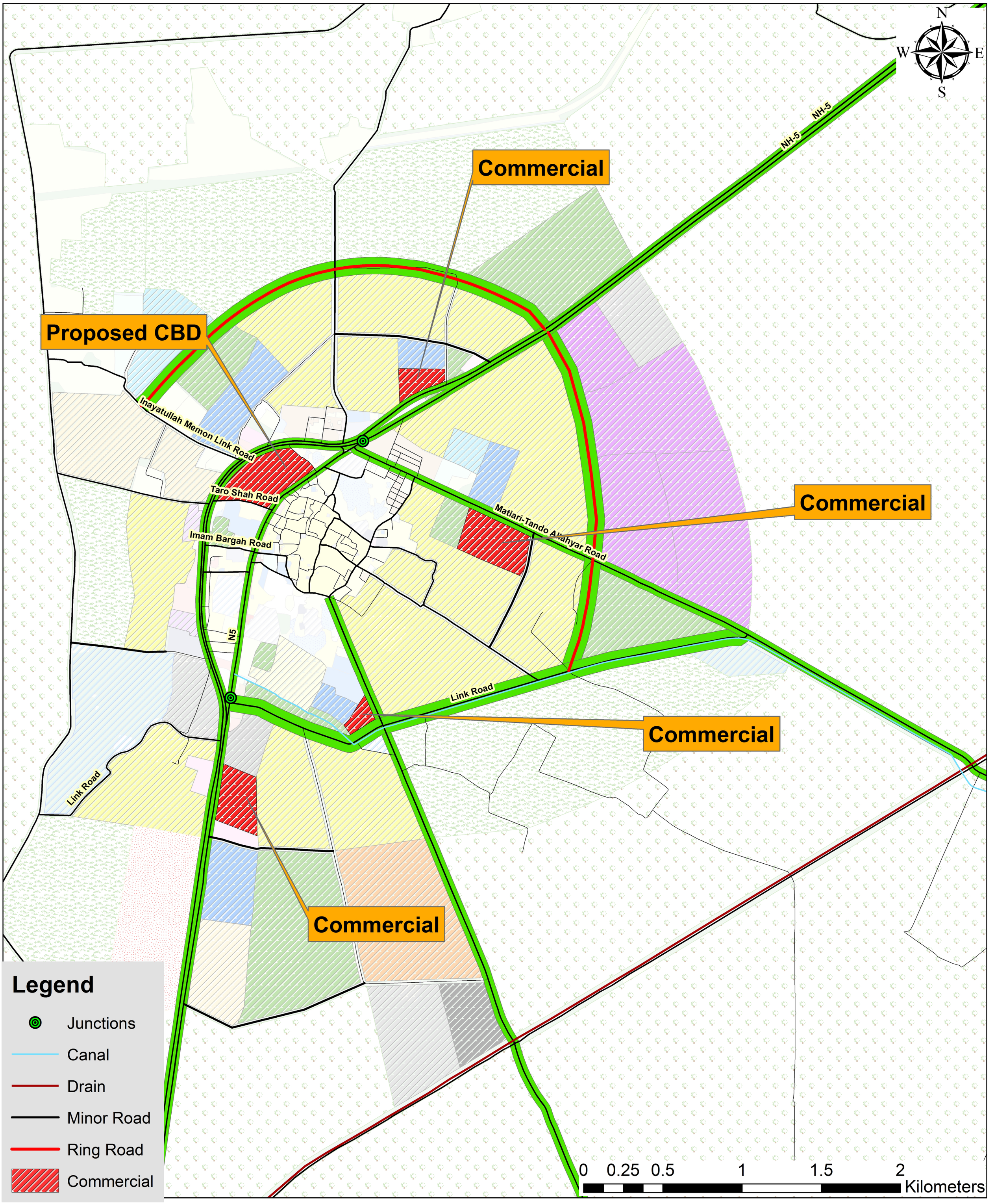
Proposed Utilities and Services Landuse For Matiari Town



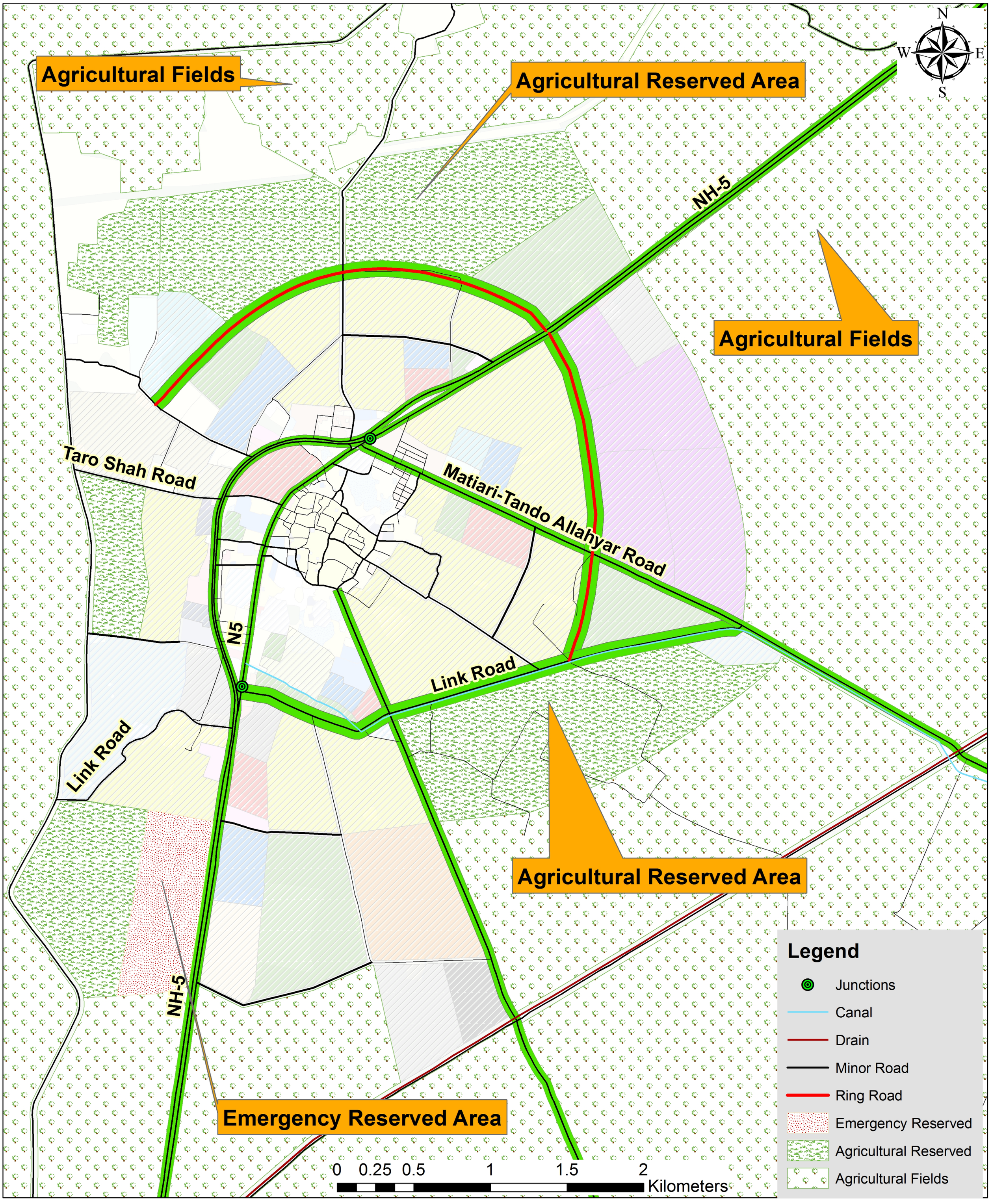
Proposed Economic Landuse For Matiari Town



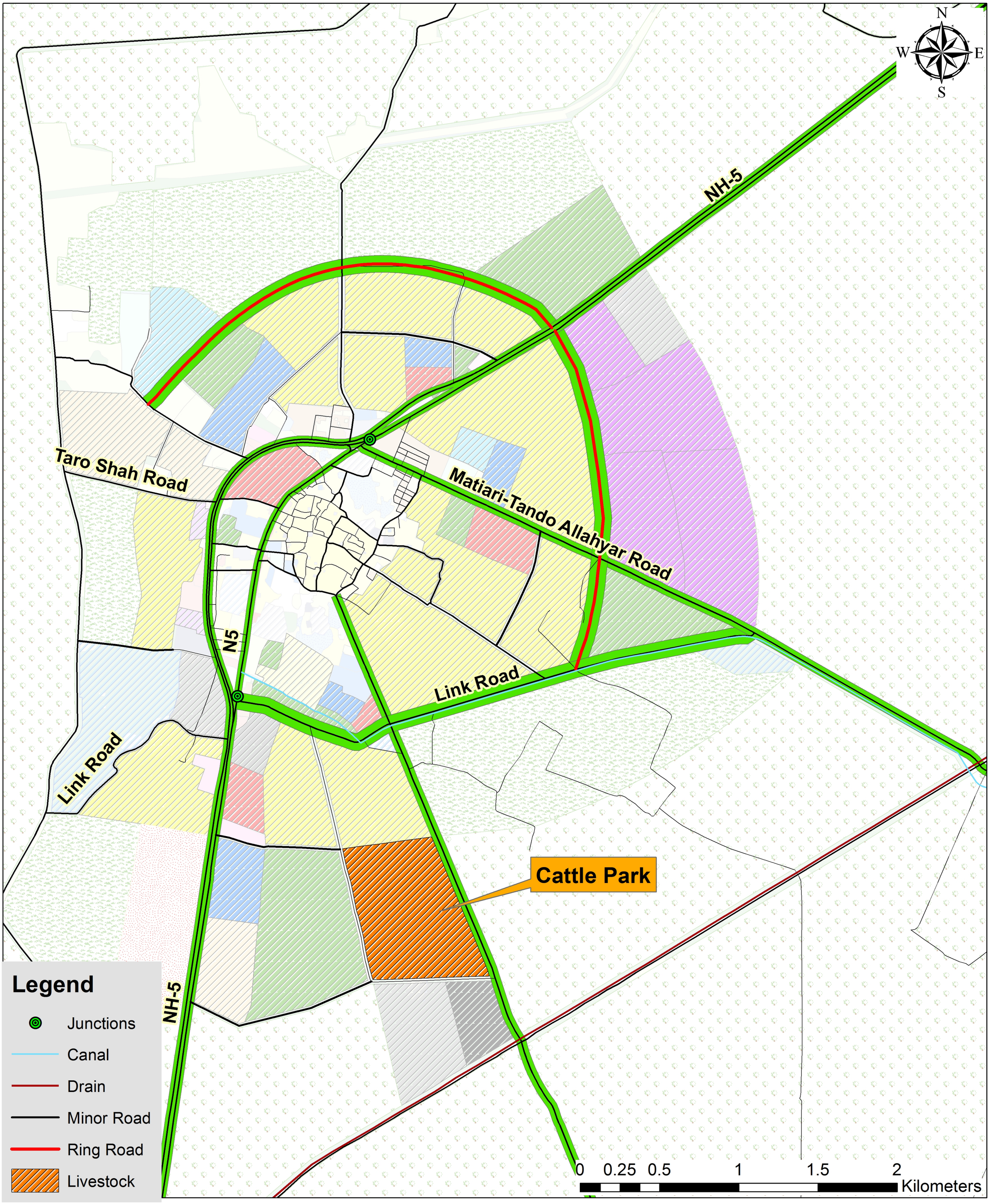
Proposed Commercial Landuse For Matiari Town



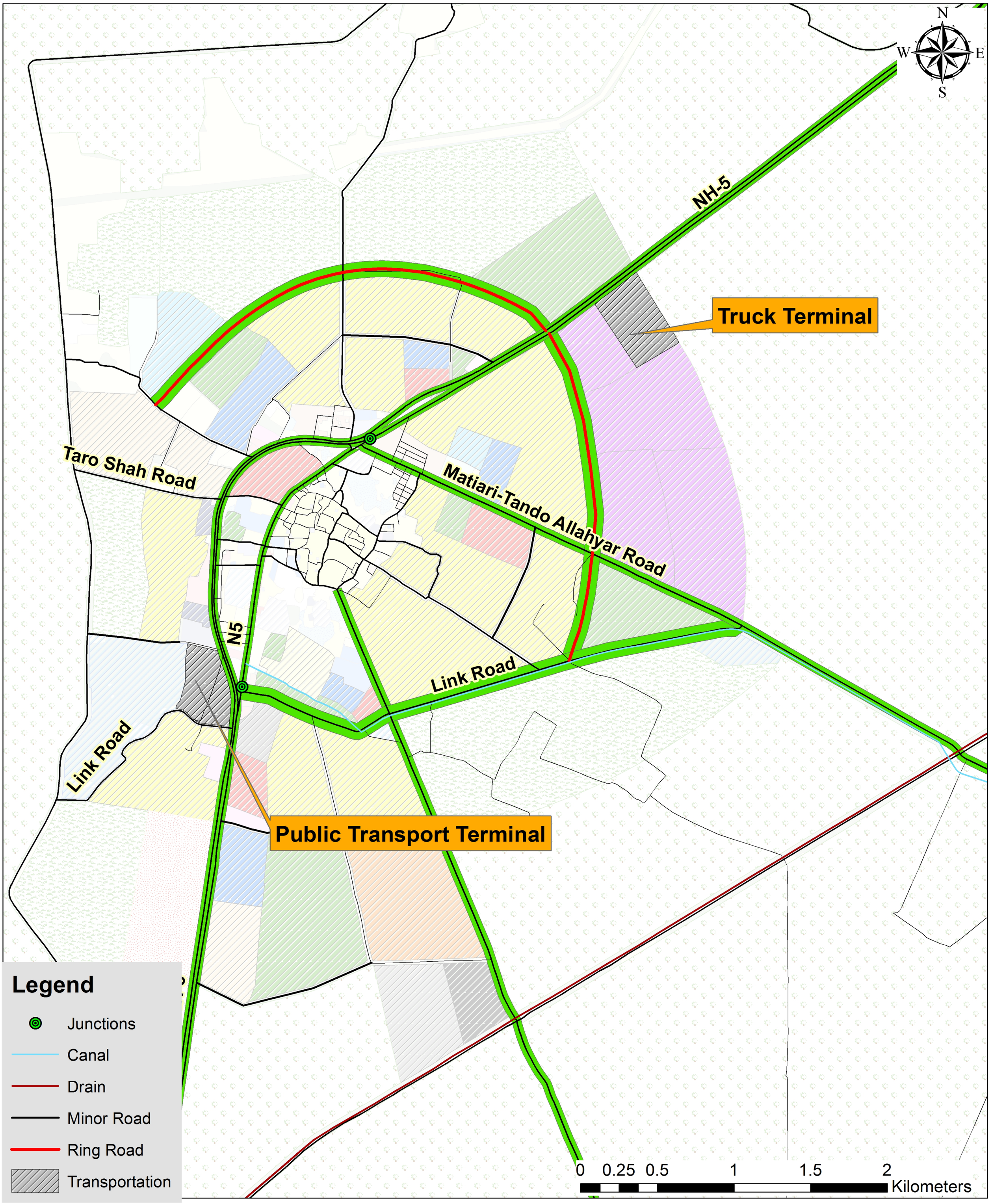
Proposed Agricultural Landuse For Matiari Town



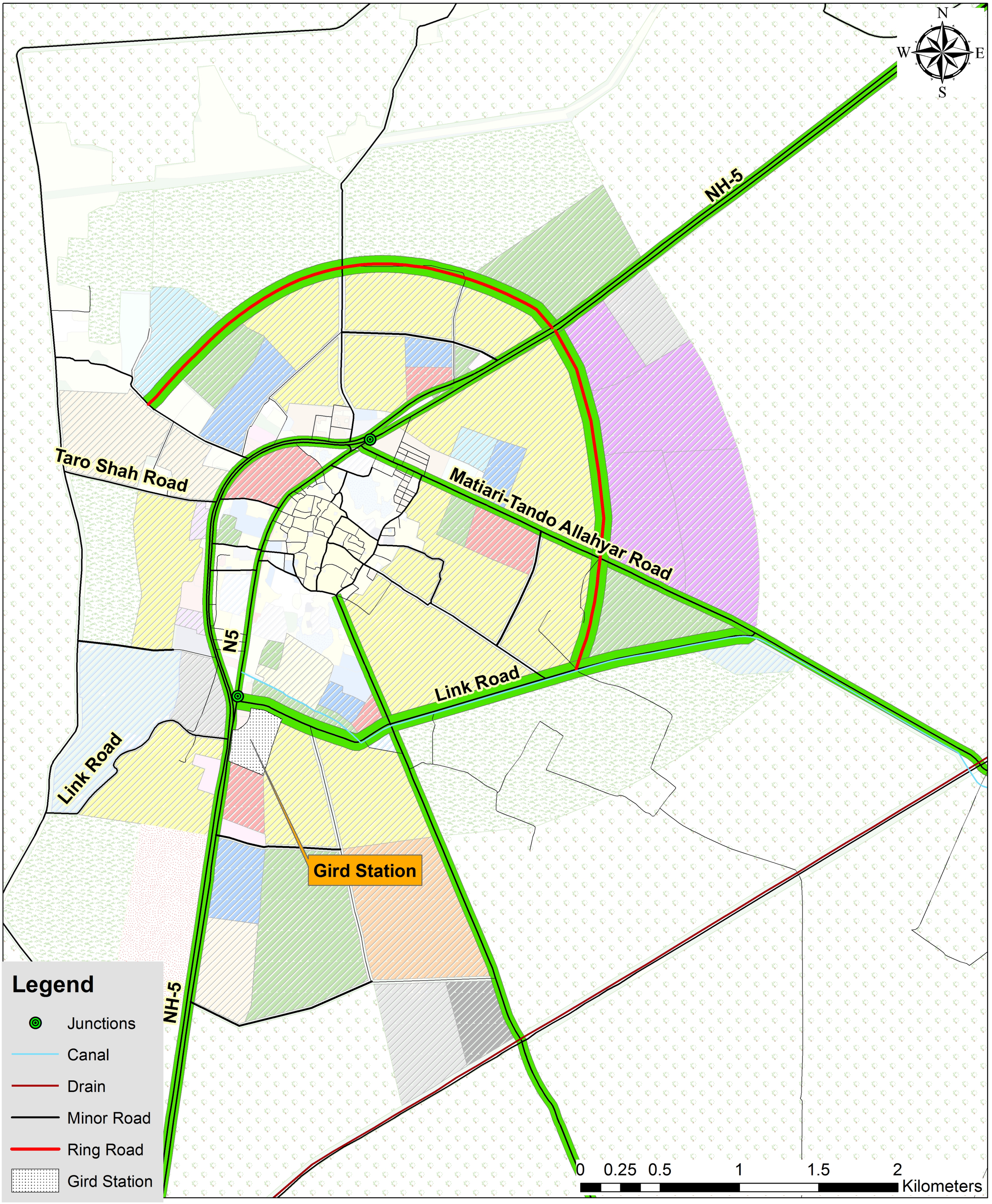
Proposed Livestock Landuse For Matiari Town



Proposed Transportation Landuse For Matiari Town



Proposed Utilities and Services Landuse For Matiari Town



Proposed Public Administration Landuse For Matiari Town

