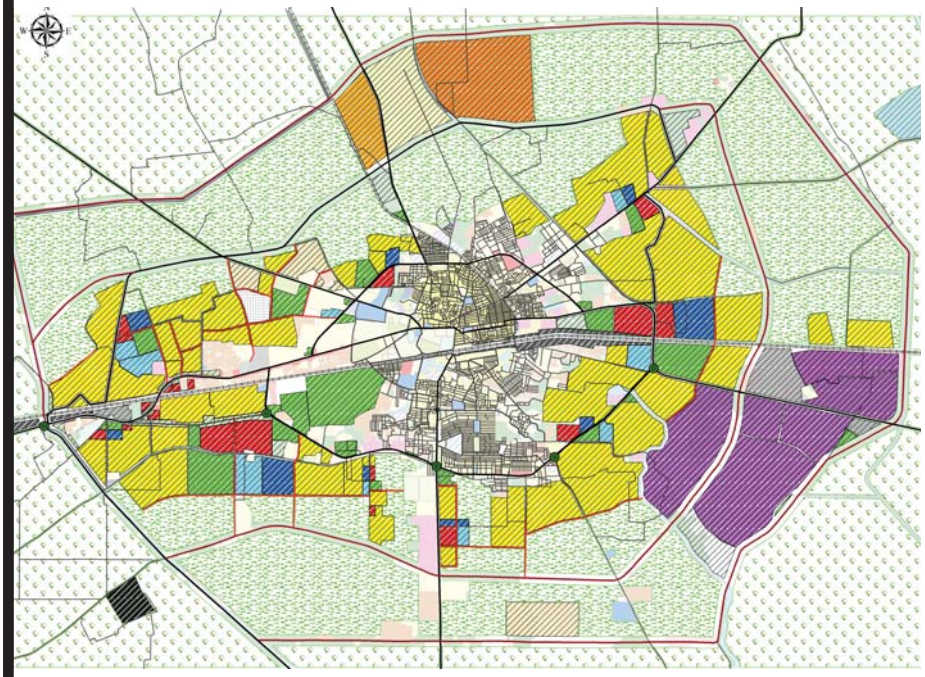
Directorate of Urban Policy Strategic Planning,
P & D Department, Government of Sindh

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)







MIRPURKHAS

February, 2021

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In Association with

MMP
MMP Pakistan (Pvt) Ltd.

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 PLAN OF 14 DISTRICT HEADQUARTER TOWNS OF HYDERABAD, MIRPURKHAS AND SHAHEED BENAZIRABAD DIVISIONS

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Annexure – B: Atlas

EXECUTIVE SUMMARY

A. PROJECT AREA BRIEF

The area of the Mirpurkhas District has been formed by the alluvial deposit of the river Indus. It has a good agricultural and irrigated area in the main portion. The district has a well-established canal irrigation system. Jamrao canal originates from the right bank of Nara canal and serves an area of about 935,000 acres. This district has seven talukas, named (Mirpurkhas, Sindhri, Digri, Hussain Bux Mari, Kot Ghulam Muhammad, Shujaabad and Jhuddo). This district is bounded by District Umerkot on the east, District Sanghar on the north, District Tando Allahyar on the west, District Badin on the south-west and District Tharparkar and Badin on the south. The climate of the district is extreme, both in winters and summers.

District Mirpurkhas has its district headquarters in Mirpurkhas city. According to 2017 population census, Mirpur MC has 233,916 souls. Projected population of Mirpurkhas works out to be 291,684 souls by 2037. Mirpurkhas development took place in two direction within the Ring Road, one is in South direction along Khan and Khipro road and second is in South direction along Digri Road. Mirpurkhas area is very productive in mangoes due to which Mirpurkhas nicknamed 'The city of Mangoes'. The existing Mirpurkhas DHQ Town is divided into six zones. The built-up area of Mirpurkhas comprises of around 5,636 acres of land but the spread of urban area as estimated by the consultants is about 13,632 acres. The land use analysis indicates that almost 30.7% of total urban boundary area is in residential use and 50.7% of the area is covered by agriculture fields.

B. VISION 2037

As per the objective of the Provincial Government the planning process was carried out in Consultation with the stakeholders.

A vision formulating workshop was carried out with the main stakeholders on September 08, 2018. The stakeholders were manly local citizens, government officials, businessmen and member of civil society. They were so logged down with the immediate day to day problems that they could not articulate a long term vision. However the collections of opinions expressed produced the following vision:

"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 most livable cities in the world."

C. DEMOGRAPHY

In 1981 population of Mirpurkhas MC was 124,371 souls. According to the census of 1998, population of Mirpurkhas MC increased to 189,671 with an annual average growth rate of 2.51%. In 2017 the population of the town jumped up to 233,916 souls with an annual average growth rate of 1.11%. Mirpurkhas town has one of the slowest growth rate in Sindh.

D. SECTOR WISE ANALYSIS AND PROPOSAL

The Consultants had carried out data collections in three layers:

- Primary source including sample socio-economic sSurvey.
- 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, Mirpurkhas district area had household size of 5.3 persons and a total housing stock of 41,022. The major issues are inadequate supply of developed land, dilapidated condition of housing, and unchecked growth of squatter settlements called Katchi Abadis, tough documentation procedures and neglecting household below poverty line.

By 2037 the number of households have been estimated around 51,176 on fixed household size of 5.3 persons out of which additional housing requirement will be 10,138. The strategies need to be focused on to safeguard against mafia assaults, initiation of incremental housing schemes, provision of incentives, development of cost effective approaches and regularize notified Kachi Abadis. The short term plan includes provision of water supply to each house, provision of underground sewerage and drainage system, pavement of streets, launching of urban face lifting program, provision of modern street lights, development of green medians, and regularization of land tenure and issuance of notices to owners for the demolition of dangerous buildings. The long term plan focus on increasing number of small size plots and establishment of low-income housing funds. The priority projects need to focus on phase wise land acquisition for low income housing project and phase wise designing of infrastructure for low income housing project for additional population. The immediate action plan should focus on the revitalization of core urban area which is of utmost importance.

2. Social Amenities

2.1 Education

12,154 children are enrolled in schools with 426 classrooms. Currently there is no shortage of classrooms on the basis of 30 students per classroom. The major issues of education sector includes shortage of classrooms and teachers, low enrolment level with gender disparity, poor condition of educational institutions and lack of allied facilities.

The target is to achieve 100% enrolment with 1:1 male female ratio for which the future need is 27,598 classrooms by the end of plan period in 2037. 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, especially girls' schools are within easy walking distance. Some of the strategies are improving the quality of learning outcomes, strengthening governance and service delivery and enhancing the equity of resource allocation. The short term plan includes the addition of classrooms, improvement in the quality of education, training programs for teachers, provision of vocational and skill training centers. The long term plan focus on sustainable construction, improved infrastructure of educational buildings, improve quality of education, public-private partnership and emphasis on vocational training. The priority projects should focus on the training programme for teachers, vocational and skill training centres, addition of classrooms with allied facilities and improvement in quality of education. The immediate action plan includes the rehabilitation and upgradation of schools.

2.2 Health

In district Mirpurkhas, there is one Civil Hospital having 264 beds, two THQ having 82 beds, 38 BHUs at district having 76 beds and five RHCs having 50 beds. There are eight private hospitals with 254 numbers of beds, Muhammad Medical College having 500 bed and Bhittai Dental & medical college having 50 numbers of beds, calculating total number of beds as 1,276. On the basis of NRM recommendation approximately 1,736 beds will be required to be provided gradually. According to

WHO standards, currently there are 1,188 doctors required to serve the district. The major issues include lack of 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 paramedical staff.

The NRM recommends 2 bed per thousand as the medium term target. On this basis approximately 4,409 beds will be required to be provided gradually until 2037. According to WHO standards the future requirement of doctors comes out to be 1,887. Some strategies include improved access to healthcare facilities, expansion of immunization coverage, improvement of health hygiene practices and conducting coordination meetings regarding areas where vaccination is not taking place. The short term plan focuses on the extension of Civil Hospital, upgradation of BHUs, RHCs and TCHCs, health awareness programs, provision of diagnostic facilities, ambulance, pharmacy in all hospitals. The long term plan includes the provision of tertiary level specialized hospital, enhancement of Mobile Health Unit, accommodation facilities for doctors, construction of additional public hospitals, public-private partnership and research and development programmes for doctors and paramedics staff. The priority projects should focus on the extension of Civil Hospital, provision of Mobile Health Unit, provision of a quick response ambulance service with all health units, upgradation of BHUs, RHCs and MCHCs, research and development programmes and provision of diagnostic facilities, ambulance, pharmacy in all hospitals. The immediate action plan involves the provision of better health facilities, rehabilitation and upgradation of DHQ Hospital and rehabilitation of veterinary hospital.

2.3 Recreational

Mirpurkhas recreational facilities includes five parks, two cricket ground, two hockey ground and one football ground. The recreational places include Nazeer Hussain Park, Chakki Para Park, Jamnadas Park, etc. The need assessment involves shortage of recreational facilities, the available ones are in dilapidated condition, lack of interest of relevant stakeholders and ponds available in core urban area of Mirpurkhas should be re-organized and converted into recreational space.

The strategies includes the restoration and maintenance of open spaces and preservation of cultural heritage. The short term plan focus on the rehabilitation and construction of family parks, provision of missing facilities, construction of auditoriums and upgradation of art councils. The long term plan includes the establishment of sports complex, protection of historical places and cultural heritage, youth development programme, promote tourism and urban forestation. The priority projects should focus on rehabilitation and construction of family parks, provision of missing facilities, and construction of auditoriums and up gradation of art councils. The immediate action plan involves the provision of open spaces and parks, construction and rehabilitation of sports facilities and rehabilitation of religious places in the district.

3. Economic Development

3.1 Irrigation

The district has a well-established canal irrigation system. Two major canals i.e Jamrao canal, West Branch Canal, and their distributaries irrigate district Mirpurkhas. Jamrao canal originates from the right bank of Nara canal and serves an area of about 935,000 acres.

3.2 Agriculture

The total geographical area of district Mirpurkhas is 353,000 hectares out of this cultivated area is up to 309,000 hectare. The issues include unstable prices of sugarcane, high price of inputs, insufficiency of covered storage, lack of research centres, water logging and salinity, and shortage of irrigation water and drainage problem.

The strategies include modernize agriculture, improve food production, agriculture technology development and policy formulation. The short term plan includes the provision of agriculture credit facilities, regular supply of irrigation water, improvement in crop production, installation of tube wells, rehabilitation of canals and drains, measures to reduce water logging and salinity and construction of farm to market roads. The long term plan focus on enhancing crop productivity, increase supply and quality of agricultural crops and provision of warehouses.

3.3 Livestock and Fisheries

Animal population of district is highest number of Goats having 666,000 hands followed by Cattle heads at 202,000 and thereafter, buffalos at 234,000. Mirpurkhas town's animal's population is also comprised of buffalos, cattle, goats and sheep. The Livestock is served by 10 veterinary Hospitals, 50 centres, 17 doctors and 23 Paramedics. There are 44 Fish production farms on private land and 4 private fish ponds. There are total 240 Dairy Farms in the district. The issues include landlessness, subsistence farming, limited knowledge, secondary source of income, reduced area for natural grazing and lack of veterinary services. There is need to develop and implement a broad-based fisheries policy which is required for accelerated development of the fisheries sector.

The strategies includes establishment of model livestock, dairy and cattle farms, expansion of veterinary services, improving production performance of livestock, lease of fishing rights, local awareness, aquaculture development, collection of statistical fisheries data and enforcement of fisheries enactment.

3.4 Industries

Sugar mills are famous as sugar cane is cultivated on large scale in this district. The famous industries are sugar mills, cotton factories and flour mills. A limited area of 14,907 hectares was brought under Sugar cane cultivation. There is a field production of 910,603 tonnes at 58.8 tonnes yield per hectare.

One Industrial Estate is established under Sindh Small Industries Corporation in Mirpurkhas district. Vocational training for women should be encouraged and small industrial zone to be extended.
The strategies include sufficient market infrastructure, development of Industrial Estates, Micro-financing, heritage saving, provision of vocational training and establishment of new Industrial zone. The short term plan focus on supporting industrial development, extension of Industrial Estates, modernizing service sector, increase storage capacity, encourage Foreign Direct Investment (FDI), simplify collection of taxes and government dues. The long term plan includes the provision of infrastructure for establishment of new industries, enhancement of colonization, physical revival of existing oil fields and their expansion, enhancing crop productivity and extension of Sindh Industrial Estate. The priority projects should focus on the revitalization, completion and extension of Industrial estate and increasing storage capacity.

3.5 Trade and Commerce

There is a fruit and vegetable market that exist along ring road connecting to Khipro Road creating a congested traffic movement. Along the ring road there are various banks. There is a Meat Market again forming a congested site. Along Mohammad Ali Jinnah Road there is a communication shop, lots of food restaurants and shopping centres. The above activities will improve trading, economic and allied businesses which will ultimately create employment and improve living standard of local and regional residents.

The long term plan includes the expedite development of fruit and vegetable market, specialized wholesale markets, building for service industry and provision of cold spaces and warehouses. The priority projects are construction of new fruit and vegetable markets, provision of parking for existing commercial areas and revitalization and relocation of current fruit market. An important step towards economic development will be encouraged for establishment of financial services in Mirpurkhas.

4. Basic Utilities

4.1 Water Supply

Jamrao Canal (Jamrao Canal) is an irrigation canal which is also the source of drinking water for the residents of Mirpurkhas. The residents of Mirpurkhas are facing an acute shortage of drinking water. Water demand 2017 at 30 gpcd requires 7.2 mgd. The present supply of the town as reported is 3.0 mgd which is too short. The issues of water supply are deterioration of old system, high proportion of non-revenue water, poor water quality, contamination of fresh canal, no sewage and water treatment and lack of latest machinery.

The water requirement for 2037 is projected as 8.75 mgd. The objectives of strategic development plan includes provide access to safe water, priority for un-served areas, frame a broad policy framework, and preference should be given to rehabilitate the existing schemes over constructing new schemes. The strategy for short term plan is the provision of safe and clean drinking water to

entire population of district. The long term plan includes the designing of water supply pipes such that no contamination of water is ensured. The priority projects should focus on the improvement of water intake works, rehabilitation of existing water supply network, installation of new water supply network and construction and rehabilitation of OH tanks. The immediate action plan involves rehabilitation of water supply network, provision of RO plants, construction of water filtration plants and OH tanks.

4.2 Sewerage and Drainage

The sewage gravitates to the collector wells of 10 disposal pumping stations. It was claimed that entire sewage of the city is discharged into four Nalas viz. Umerkot Nala, Sindhiri Nala, Khan Nala and Jamnadas Nala. The issues are improper maintenance of sewerage facilities, informal settlements, poor condition of sewerage system, untreated sewage and no waste water treatment plant. Sewerage water flows at 70% of the water supply therefore presently against the water demand of 7 mgd the sewerage water flows is 4.9 mgd.

By 2037 6.1 mgd sewage will be generated against the estimated water supply of 8.7 mgd. Some of the strategies include improving standards of public health, raising living standards of community, need based interventions in sanitation sector, priority for un-served areas, development of sanitation plan and sewage treatment before discharging. The short term plan focus on improving standards of public health by provision of improved sewerage and drainage services. The long term plan includes the usage of gravity flow systems, acquirement of land and building proper sewage treatment plants leading up to recycling of treated affluent for reuse. The priority projects should focus on the construction and rehabilitation of primary and secondary drains and construction of WWTP and new drainage network The immediate action plan includes repair and rehabilitation of sewerage and drainage network/system.

4.3 Solid Waste Management

Mirpurkhas Town Municipal Committee head office is located in the heart of city. Considering waste generation rate for design purpose as 0.45 kg per capita per day with the current (2017) population of the municipal committee of Mirpurkhas as 233,916 the total municipal solid waste load arising in the municipality is approx. 105,265 kg or 105.3 tons per day.

The strategies include develop an efficient solid waste management, efficient and effective waste collection system and segregation practice for bio-medical waste collection system. The short term plan includes the creation of public awareness and education. The long term plan focuses on the involvement of community and private sector, encouragement of on-site reuse and recycling and implementing waste minimization. The priority projects should focus on the feasibility study for construction of central composting plant and procurement for land acquisition for landfill site. The immediate action plan includes the launching of door to door collection, street sweeping should be done on daily basis, encourage secondary level collection, segregation of solid waste, separate

collection of bio-medical waste, designation of new landfill site and introduction of 4Rs for better environment.

5. Infrastructure

5.1 Energy

There is no power generation facility in Mirpurkhas (MC) vicinity. The power supply is through HESCO-WAPDA transmission system. The issues include less public awareness regarding fuel conservation and scarcity of alternate energy sources.

The strategies need to focus on alternative energy sources, extension of the distribution system and use of solar energy for street lightning and tube wells. The short term plan includes the reduction of power theft, enhancing existing power supply and addition of sub-stations. The long term plan focuses on achieving fuel efficiency, adopting new technologies, altering existing fuel use and encourage energy efficient building construction. The priority projects includes the up gradation of grid station, promote energy efficient appliances and feasibility study for alternate energy sources.

5.2 Gas Supply

Out of 761 houses surveyed by the Consultants 85% had the piped gas available to them. 15% of the houses having no gas availability are using coal, wood, gas cylinder and kerosene oil. 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

Sindhri Airport is located at Tando Gondal near Sindhri, a town in the MirpurKhas District but due to some technical reasons Sindhri Airport is now closed for commercial traffic. The City is also linked with the national network of Pakistan Railways through Karachi railway line. District has only 716 kilometers of good quality roads. A Provincial Highway connects Hyderabad with Mirpurkhas via Sultanabad, Tando Allahyar and Tando Jam. Total high type roads length is 303 kilometers in the district. The issues are less means of transportation in rural areas, highway not able to accommodate full functioning mass transit service, poor condition of roads, no formal bus terminal, traffic congestion, absence of traffic signals, regularized Qinqui system, drainage and parking issues.

The strategies are on creating Traffic Engineering Bureaus (TEBs), expansion of railway station, prevent encroachments, reduce traffic growth and congestion, satisfy mobility needs and implementation of Axle Load Management. The short term plan includes developing and implementing modern route permit renewal, dualization of main arteries and improvement of existing roads. The long term plan focus on the building of regional transportation system, rehabilitation of existing roads and reconstruct them as per specifications. The priority projects include the rehabilitation and beautification of major and minor roads, installation of traffic signals and solar street lighting. The

immediate action plan needs to focus on dualization and rehabilitation of existing roads, placement of monuments and landmarks, provision of footpaths and street furniture.

5.4 Communication

The PTCL offices are located at many places in Mirpurkhas. As per the survey there are about 8% households using PTCL land line. Others 92% household use public call offices in the area or cell phone.

6. Environment and Disaster Risk Management

6.1 Environment

According to the Food Security Analysis (FSA) 2009, access to clean drinking water is extremely low in this district. The issues regarding environment are water logging and salinity, wind erosion, loss of biodiversity, water erosion, water contamination, low quality of surface water and seismic risk.

The strategies include ensuring environmental sustainability, setting up of a National Environment Council (NEC), need of permits to discharge waste, preserving ecological cycles, measures to reduce water logging and salinity, reduce water contamination, create environmental awareness, conserve biodiversity and fostering public-private partnership. The short term plan focus on reducing carbon emissions and zero deforestation. The long term plan includes the improvement of drainage, achieving sustainable development while overcoming environmental challenges and multi-pronged approach to fisheries management. The priority projects should focus on the rehabilitation of irrigated plantation, enhancement of rangeland production and afforestation of Blank Reaches along important highways. The immediate action plan includes the enhancing of tree plantation.

6.2 Disaster Risk Management

Mirpurkhas District was hit by 2011 and 2012 rains/floods. According to the seismic zone map of Pakistan, the Mirpurkhas District is situated at a safe zone. The issues include low level of awareness, not “risk conscious” development, lack of effective policy framework for emergency response and evacuation, and poorly planned land uses.

Some of the strategies includes the development of co-ordination mechanism with PMD for ascertaining flood discharge, develop mechanism for regulation of water discharge, development of monitoring mechanism for inspection of embankments, provision of necessary medical facilities, declaration of emergency by the D.H.O at all medical points at the time of need. The short term plan includes the identification and declaration of disaster affected areas and vigilance of canals. The long term plan includes holding the PPHI responsible for providing medical cover to IDPs, identification of highly vulnerable districts, involvement of the local level actors by the DRR, arrangements that allow the system to switch into emergency mode and need to clarify mutual roles and responsibilities. The priority projects should focus on the vigilance of canals, prompt dewatering of stagnant water,

uninterrupted supply of electricity, arrangement of medical teams, fumigation of the affected areas, ensuring sanitation and cleanliness and that the ambulances should are in working order.

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.

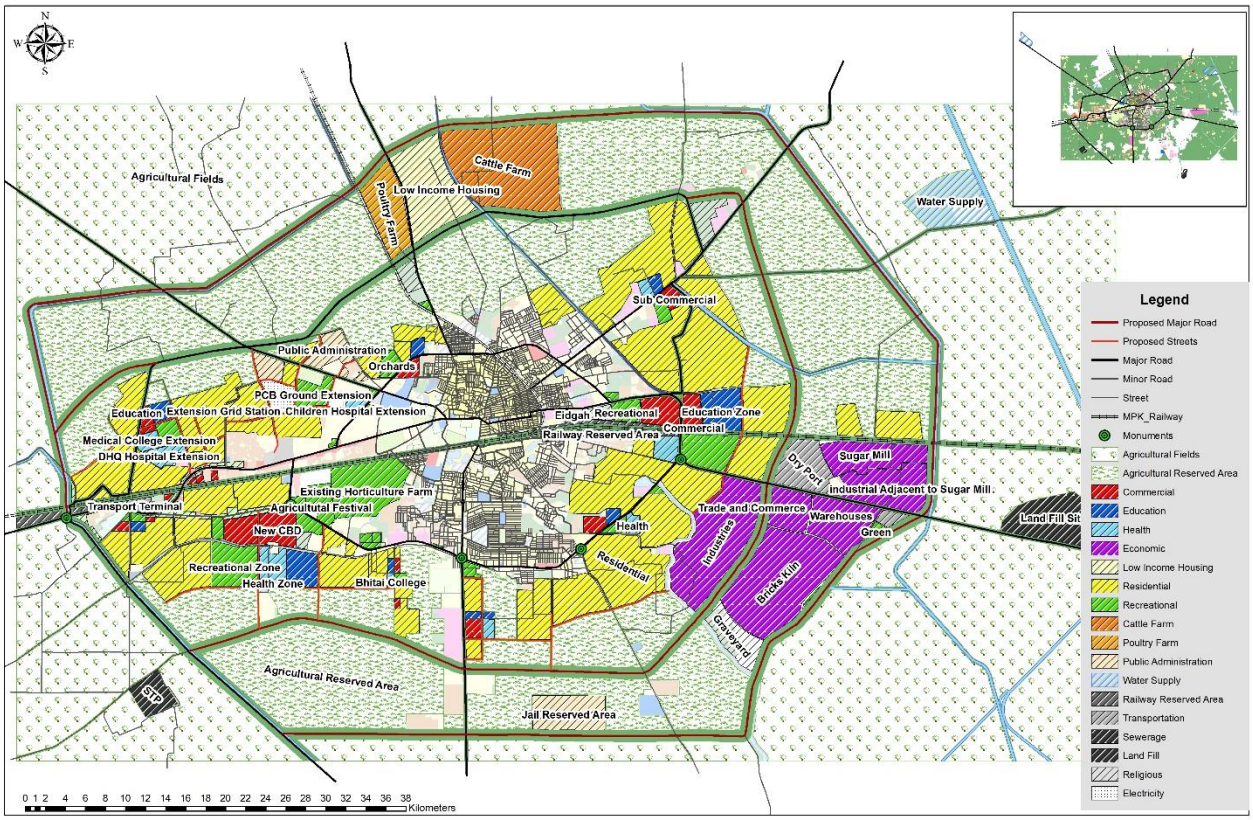
The "Project Management and Implementation Unit" shall supervise and coordinate respective urban developers involved in development activities, conduct monitory audits, prepare evaluation and impact reports. Planning and development department Government of Sindh shall lead "PMIU" to implement Master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

F. STRATEGIES FOR FUTURE DEVELOPMENT

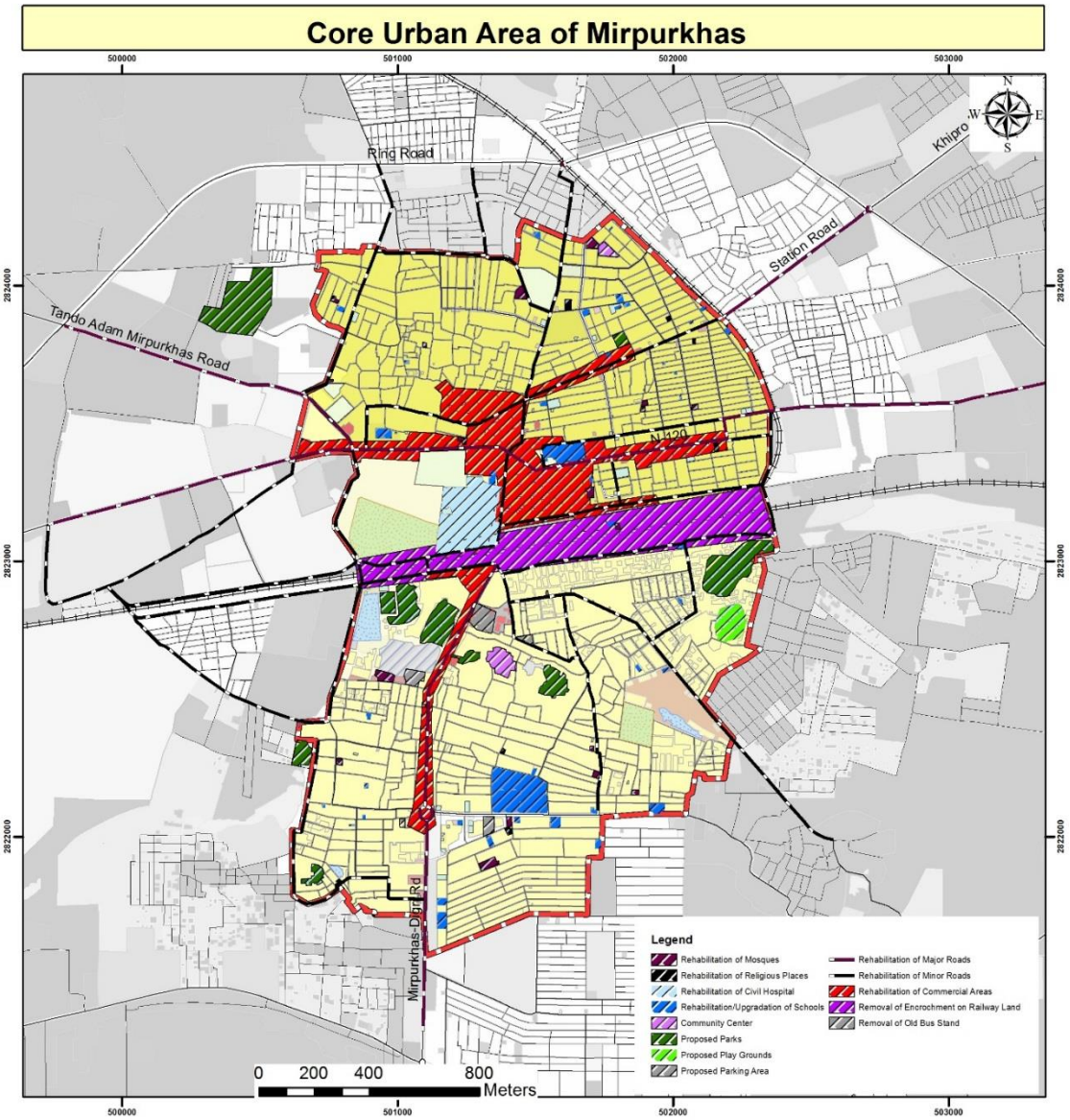
The strategies focus on revitalization of the affordable housing, provision of basic facilities, efficient transportation and communication, energy efficient technology, active service sector, implementation of pro-active governance, develop human resources, facilitate social infrastructure, reinforce 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 Mirpur Khas Town



H. IMMEDIATE ACTION PLAN FOR CORE URBA



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.

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 vertical car parking areas.

- 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 activities etc. in the means of sustainable and smart concept.
- To propose alternate energy sources as country is facing acute shortage especially in summer season.

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

2 AN OVERVIEW OF MIRPURKHAS AND ITS ENVIRONMENT

2.1 History

This region mainly started with the rule of Talpur dynasty (1773-1843). The town of Mirpurkhas was named after its founder Mir Ali Murad Talpur in 1806. Mirpurkhas remained capital of the Mirs of Talpur until 1843 when Sindh was annexed to the British India under the East India Company.

The British made Sindh part of the Bombay Presidency and built a communication network throughout the province. They administratively divided the province in to districts and sub districts (talukas). They built roads, schools, dispensaries and many other civic amenities. Tharparker was made a district, comprising of Umerkot and Mirpurkhas towns. Umerkot was made the district's headquarters, while Mirpurkhas was ignored until the opening of the Jamrao Canal in 1900. This canal made Mirpurkhas stand out of the rest of the towns in the district. It was constituted as a municipality in 1901 and was made the district headquarters of district Tharparkar in 1906.

After the independence of Pakistan in 1947, because of its proximity with the Indian border, Mirpurkhas became the first city to welcome refugees from India to Pakistan. It acted as a primary railway junction for the first trains to come across Rajhistan to the Sindh province. In 1990, the district of Mirpurkhas was carved out of district Tharparkar and was given the status of a district.

2.2 Topography and Geology

The district was created in 1990, prior to that it was a part of the former Tharparkar district. The area of the district has been formed by the alluvial deposit of the river Indus. It has a good agricultural and irrigated area in the main portion and vast stretches of vegetation lined up in many Places with avenue of trees.[1]

The district has a well-established canal irrigation system. With the opening of Jamrao canal in the British era, the importance of this district increased significantly. Jamrao canal originates from the right bank of Nara canal and serves an area of about 935,000 acres. Two major canals i.e. Jamrao canal, West Branch Canal, and their distributaries irrigate district Mirpurkhas. The land structure of this district comprises of plane fertile lands suitable for agriculture. Due to a well-organized canal system, the whole district has water availability, resulting in the grasslands and irrigated crop lands.

[1] 1998 District Census Report of Mirpurkhas

2.3 Geographical Location and Area

District Mirpurkhas lies in 68° 59' 3" to 69° 16' 53" east longitudes and 24° 48' 33" to 25° 48' 7" north latitudes. This district is bounded by district Umerkot on the east, district Sanghar on the north, district Tando Allahyar on the west, district Badin on the south-west and district Tharparkar and Badin on the south. The climate of the district is extreme, both in winters and summers. The summer heats are neutralized by constant sea breeze considerably from the south-west.

2.4 Administrative Set-up

District Mirpurkhas has its district headquarters in Mirpurkhas city. This district has **Seven Talukas**, named (Mirpurkhas, Sindhri, Digri, Hussain Bux Mari, Kot Ghulam Muhammad, Shujaabad and Jhuddo). It has 41 union councils and 416 Dehs (revenue village). Out of the total Dehs, 398 are rural Dehs, 3 are urban and 15 are partly urban.

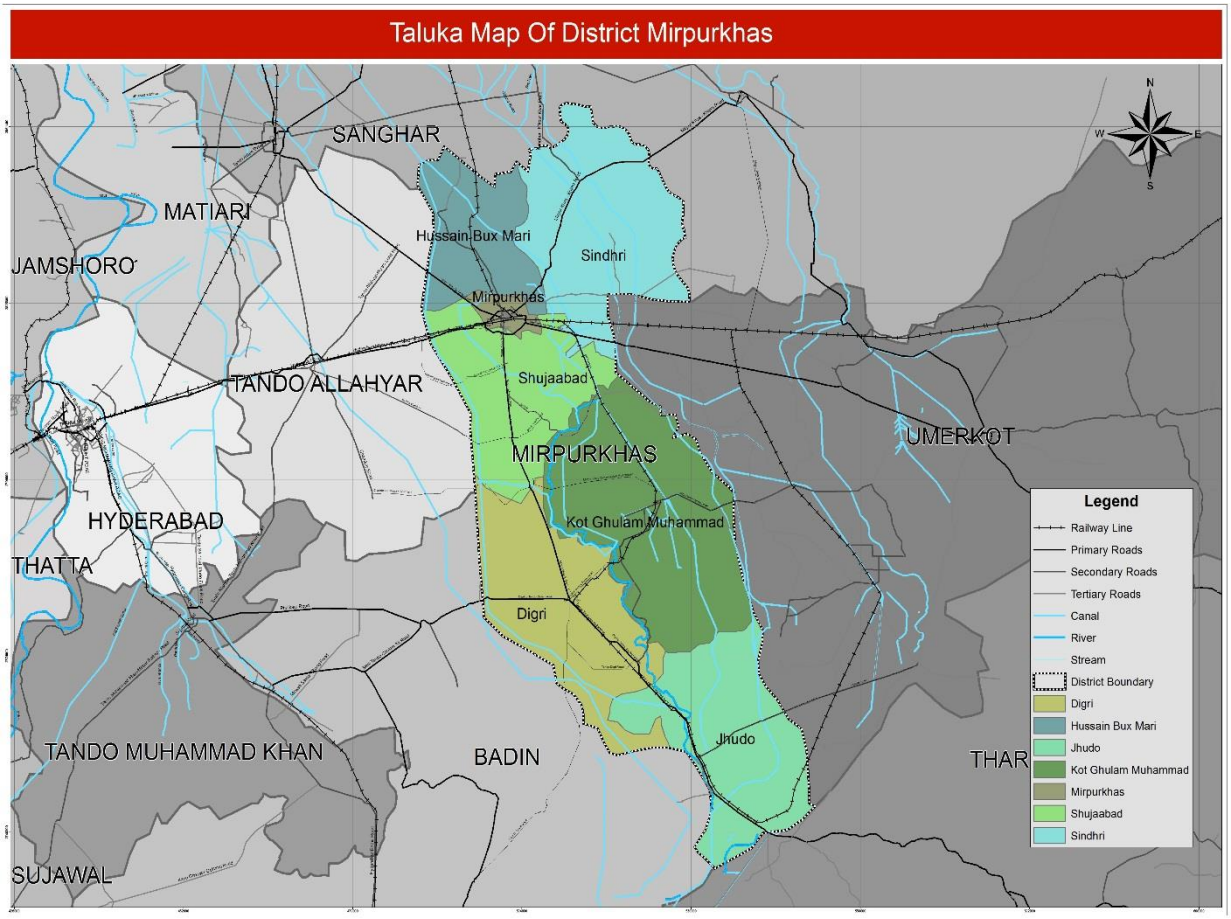


Figure 2:1: Taluka Map of District Mirpurkhas

2.5 Population

i. Past Growth Trends

In 1981 population of Mirpurkhas MC was 124,371 souls. According to the census of 1998, population of Mirpurkhas MC increased to 189,671 with an annual average growth rate of 2.51%. In 2017 the population of the town jumped up to 233,916 souls with an annual average growth rate of 1.11%. Mirpurkhas town has one of the slowest growth rate in Sindh.

ii. Present Population

According to 2017 census the population of the district is 1,505,876, and the population of Mirpur MC is 233,916. The following table shows the comparison of 1998 and 2017 census:

Table 2-1: Comparison of Past and Present Population Statistics

ADMINISTRATION UNIT	Past Census 1998				Current Census 2017			
	Population	AGR	No. of HH	HH Size	Population	AGR	No. of HH	HH Size
Mirpurkhas MC	189,671	2.51%	23,709	8	233,916	1.1%	41,022	5.7
Mirpurkhas Taluka	201,406	2.58%	66,598	5.2	260,182	1.31%	91,998	4.9
Mirpurkhas District	1,006,329	2.68%	211,354	6.1	1,505,876	3.00%	286,547	5.3

Source: District Census 1988 and 2017

iii. Future Projections

According to 2017 census population of Mirpurkhas town is 233,916 souls. Mirpurkhas growth has been quite slow due to many demographic factors. Projected population of Mirpurkhas works out to be 291,684 souls by 2037. There would be a slow growth in population which is depicted in the table and graph below:

Table 2-2 : Mirpurkhas Projected Population

Census 2017	Projected 2022	Projected 2023	Projected 2032	Projected 2037
233,916	247,190	261,217	276,040	291,704

Source: Consultant's Estimates

2.6 Urban Morphology

The urban form which has been studied so far is reflecting that Mirpurkhas development took place in two directions within the Ring Road; one is in South direction along Khan and Khipro road and second is in South direction along Digri Road.

There isn't any particular pattern of development of Mirpurkhas which shows lack of institutional governance and planning due to which rich agricultural land is going to transform into settlement areas.

Primary sector activities are basically agriculture of this region where major crops are cotton, wheat, mangoes and bananas. Unlike other areas in Sindh province, Mirpurkhas District does not produce enough quantities of sugarcane. Mirpurkhas area is very productive in mangoes due to which Mirpurkhas nicknamed 'The city of Mangoes'.

There is virtually no heavy industry in Mirpurkhas District with the exception of Mirpurkhas a small Sugar Mill. Beside sugar production, there are 13 cotton-ginning units in the city and 20 'beeri' (local cigarettes) manufacturing units which together account for another 64% of total manufacturing employment. The industrial sector in Tharparkar (and consequently in Mirpurkhas) is highly underdeveloped.

Although an urban center with a population over 189,671 in 1998 which makes it the largest of all secondary cities of the project, Mirpurkhas is still nothing more than a sub-regional center with commercial facilities that serve a rich but limited in extent (due to the vast deserted areas) agricultural hinterland. Mirpurkhas is also the district headquarters and so it performs administrative, educational and health function of higher order. Finally, being an important railway junction, Mirpurkhas also plays the role of an important transportation node.

The city is faced with the adverse characteristics of an urban center located outside principal development corridors. Mirpurkhas is not favorably located to become an effective growth pole or make a substantial contribution in the implementation of regional policies that aim to take pressures away from Karachi.

2.7 Townscape

Mirpurkhas is the District Headquarter Town of Mirpurkhas District in the province of Sindh in Pakistan and was the capital of an eponymous princely state. Mirpurkhas is the one of largest city in Sindh province and is well known for its mango cultivation, with hundreds of varieties of mangoes produced each year, and a mango festival that has been an annual tradition since 1955.

Initially the town developed in the west of the area, later it grew all around. At present there are number of Housing Colonies all around the DHQ town range. Over-all housing in Mirpurkhas town is shared family system following the multiple base system, where one house contains different families. The building density of the town is low with mostly single story buildings. The town areas served by major roads including; Jameel Shaheed Road, Tando Adam Mirpurkhas Road, Sir Syed Road, Khipro Road, Umerkot Road, Khan Road, DCO Office Road. For the ease of describing the urban form of town, the existing Mirpurkhas DHQ town in divided by consultant into six zones:

- **Zone 1**
  Zone 1 is having major or comprising most of the town's educational institutional part with accordance to the past housing with johar colony and Jamia madina masjid following with mix density commercial shops along small industry.

- **Zone 2**
  Zone 2 is further dividing town into High, low and Medium density residential use, along with two entities of educational use a part of one water pond end to adjoin some heavy industrial part. This zone is having Pak colony with some educational institutes following with the ring road and N120 inducing traffic at Khipro bus stand.

- **Zone 3**
  Zone 3 is having covering an area of DHQ town from Chandni chowk to Umerkot ring road at Pahnwar village, having main railway track with town's old housing colonies like old volkurt para, wapda colony, zeeshan town. Most of the zone is having mix residential use of high density and medium density with accordance of some commercial and community base town educational and commercial market shops.

- **Zone 4**
  Zone 4 is having vacant land parcels in it with unison of some Govt. office with SSGC office with most commercial use of the city along the road side facilities.

- **Zone 5**
  Zone # 05 is further apportioning township into more residential use with Hindu para, Rahim nagar, al atta town, mir colony, with a natural low slope water pond with mix use of some commercial of area. Main roads in this zone are Mirpurkhas digri road, school road. Mirpurkhas town's major Govt. use area is within this zone.

- **Zone 6**
  Zone # 06 at present is having new upcoming residential housing schemes like bahria town phase 1 and Shah Ikram town, along in this zone the Mirpurkhas town is crossing its urban limit on the North West side of the town for Hussain Bux Mari road.

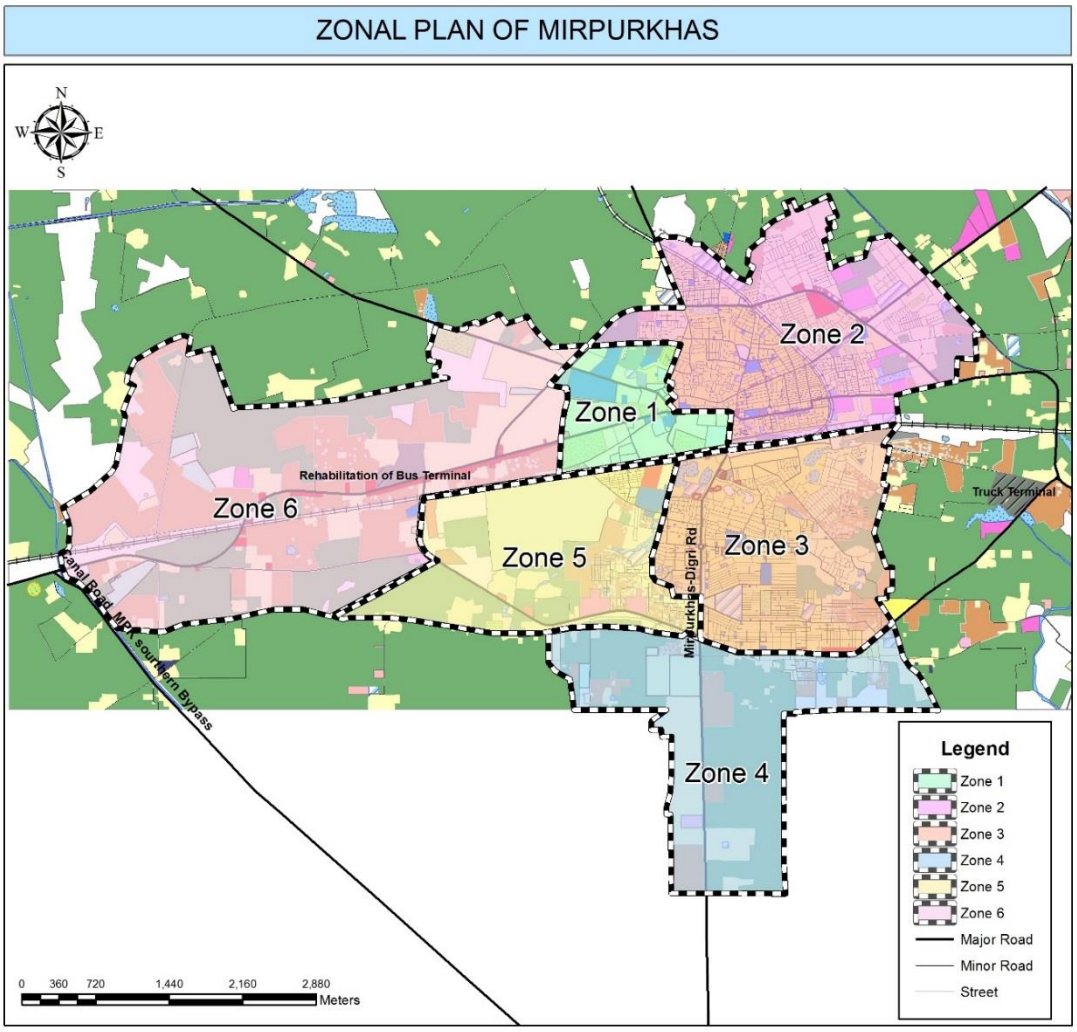


Figure 2:2 Zonal Plan of Mirpurkhas

2.8 Land Use an d Spatial Analysis

The built-up area of Mirpurkhas comprises of around 5635.5 acres of land as compare to consultant's urban boundary which is 13631.6 acres. The land use analysis indicates that almost 30.7% of total urban boundary area is in use of residential purpose only and 50.7% of the area is covered by agriculture fields.

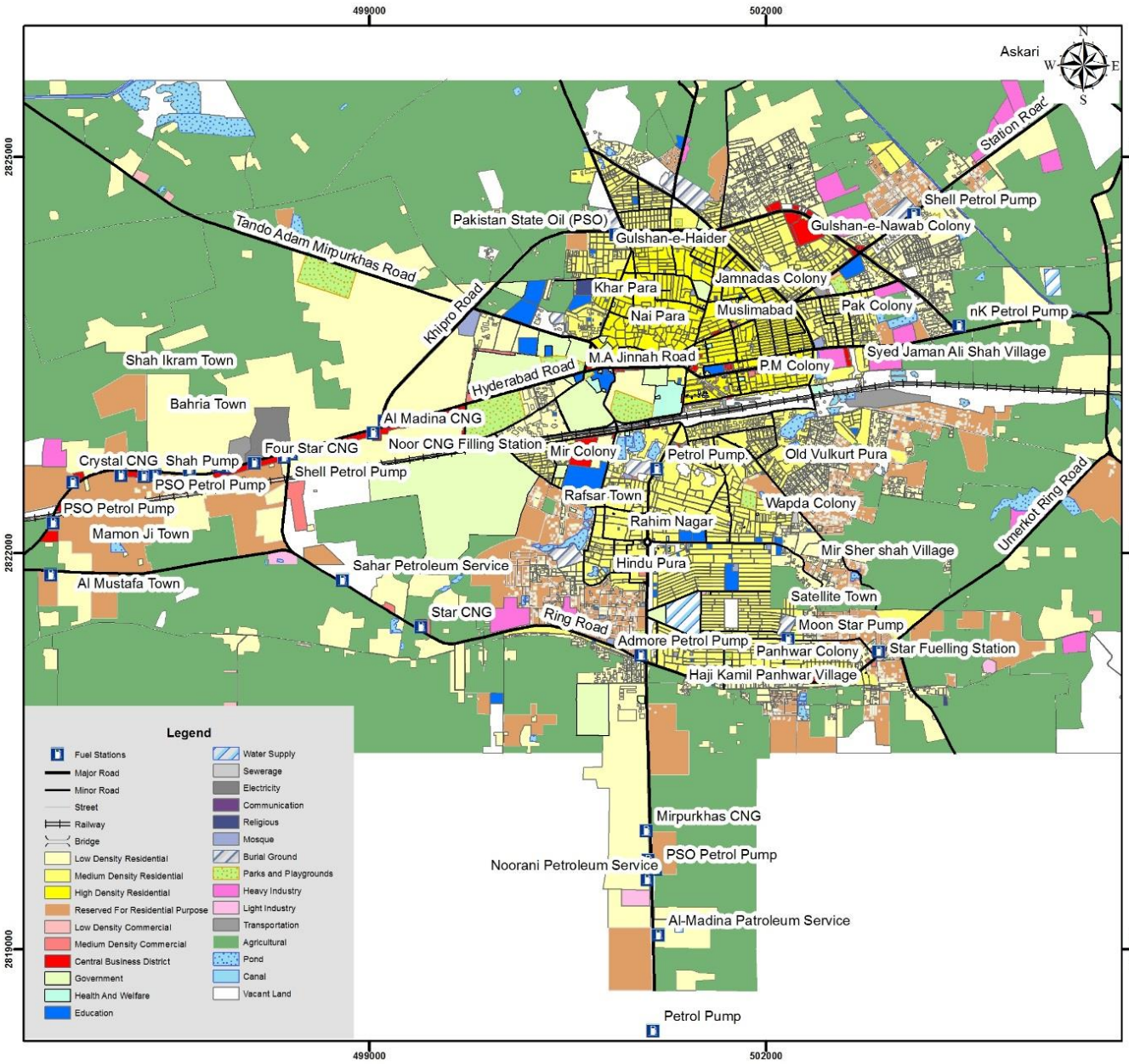


Figure 2:3: Land use Map of Mirpurkhas

Table 2-3: Land use Classification and Percentages

MIRPURKHAS(URBAN BOUNDARY)				
CATEGORIES	**LANDUSE CLASSIFICATION**			**AREA (ACRES)**
URBAN	Residential	Residential	Low Density Residential	1918.9
			Medium Density Residential	801.0
			High Density Residential	278.0
			Reserved For Residential Purpose	1183.9
	Sub Total			4181.8
	Commercial	Commercial	Low Density Commercial	20.8
			Medium Density Commercial	24.3
			Central Business District	76.5
	Sub Total			121.6
	Parks and Playground	Parks and Playground	Parks and Playgrounds	101.1
	Sub Total			101.1
	Amenities	Institutional	Education	108.4
			Government	297.1
			Health And Welfare	21.2
			Religious	23.0
		Utilities And Municipal Service Facilities	Electricity	25.7
			Gas	0.0
			Sewerage	1.3
			Communication	0.1
			Water Supply	26.0
		Burial Ground	Burial Ground	50.2
	Sub Total			553.0
	Industrial	Manufacturing	Small-Scale Manufacturing/ Light Industry	7.3
			Large-Scale Manufacturing/ Heavy Industry	152.8
	Sub Total			160.1
	Transportation	Transportation	Transportation	517.9
	Sub Total			517.9
	Sub Total			5635.5
NON-URBAN	Agriculture And Forestry		Agricultural	6910.2
	Sub Total			6910.2
	Water Bodies		Canal	33.1
			Pond	138.8
	Sub Total			171.9
	Vacant Area			914.0
	Total			914.0
TOTAL				**13631.6**

Source: Spatial Analysis done by Consultants

3 VISION FOR STRATEGIC DEVELOPMENT PLAN OF MIRPURKHAS



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.

3.1 Vision Formulation Workshop

The basic aim of vision formulation exercise is to have pluralistic approach to establish a shared and common vision for the development of Mirpurkhas 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.

For Vision Formulation, a Consultative workshop was held Mirpurkhas (Divisional Headquarter) at DC office Darbar Hall and DC office Mithi @ Tharparkar on **September 8th 2018** and 14th February 2019 in coordination with Directorate of Urban Policy & Strategic Planning (DUP&SP) Planning & Development Department Government of Sindh.

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 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 Mirpurkhas 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 Mirpurkhas '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.

MIRPURKHAS 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 live able cities in the world."

PROPOSED MASTER PLAN OF MIRPURKHAS TOWN

4 PROPOSED MASTER PLAN OF MIRPURKHAS TOWN

4.1 Spatial Pattern

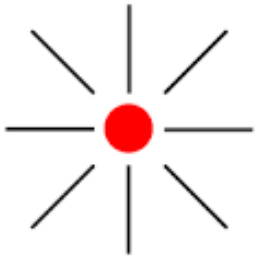
Mirpurkhas is an ancient city with a rich history and it is famous, all over Pakistan, for its mangoes. The town of Mirpurkhas was named after its founder Mir Ali Murad Talpur. Since, its area is very productive in mangoes, due to which Mirpurkhas also named as "the city of Mangoes'". The region used to be a Buddhist settlement known as Kahoo Jo Daro. Some of the remaining Stupas (Buddhist Shrine) can still be seen in an archaeological site of this district.

The importance of Mirpurkhas increased significantly, as it has a well-established canal irrigation system and it comprises of plane fertile lands suitable for agriculture. Two major canals, Jamrao Canal (originates from right bank of Nara Canal) and West Branch Canal; and their tributaries irrigate Mirpurkhas.

The urban development in Mirpurkhas is mainly took place in two direction; one is in northern direction along Khipro Bypass and second is in southern direction along Digri Road. Due to lack of planning and control mechanism in Mirpurkhas the rich agricultural land is under pressure and transforming into housing schemes. Therefore, presently the spatial extent of Mirpurkhas city is found in three talukas including its own taluka of Mirpurkhas in center, Shujaabad in south and Hussain Bux Mari in north.

Mirpurkhas City, being a district headquarter town, it performs administrative, educational and health function of tertiary level. The town of Mirpurkhas has Sindhri Airport accessible from Khipro Road at 30 kilometers distance from the town center. Mirpurkhas is also regional center of commercial activities, as it has an important railway junction, which plays a role of main transportation node.

In addition, a provincial highway N-120 connects Hyderabad with Mirpurkhas via Sultanabad, Tando Allahyar and Tando Jam. The town of Mirpurkhas is also linked with its taluka headquarters and other important towns through metaled roads. The town areas served by major roads including; Jameel Shaheed Road, Tando Adam Mirpurkhas Road, Sir Syed Road, Khipro Road, Umerkot Road, Khan Road, DCO Office Road.

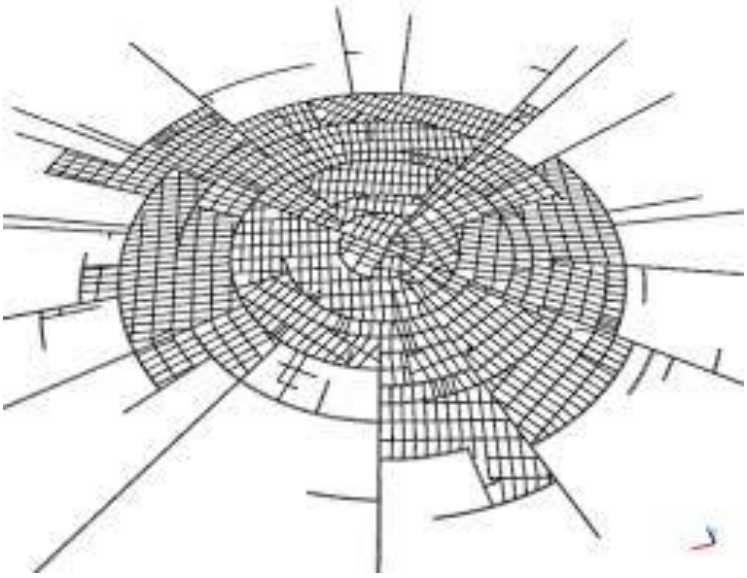


4.2 Basic Urban Form

The existing town is a medium 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 Sindhri, Digri, Kot Ghulam Muhammad Talukas.

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 seven major roads including N-120 connects Mirpurkhas with the other cities, all converging on the town center. Interconnection of these radiating roads with the proposed Ring Roads around the existing town, will keeps the development compact.



Since this town is large enough in terms of its spatial spread and its projected future population, thus the alignment of two Ring Roads are made. The proposed ring roads are more of ellipse shape, as First Ring Road is basically formed by connecting existing spatial pattern and Second Ring Road is shaped considering outlying development. In addition, the existing Khipro and Umerkot Bypasses will act as Northern and Southern Arteries respectively; providing connectivity between radial roads. However, N-120 will remain the main spine of the existing and future town.

4.3 Proposed Master Plan

The Proposed Master Plan for Mirpurkhas 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

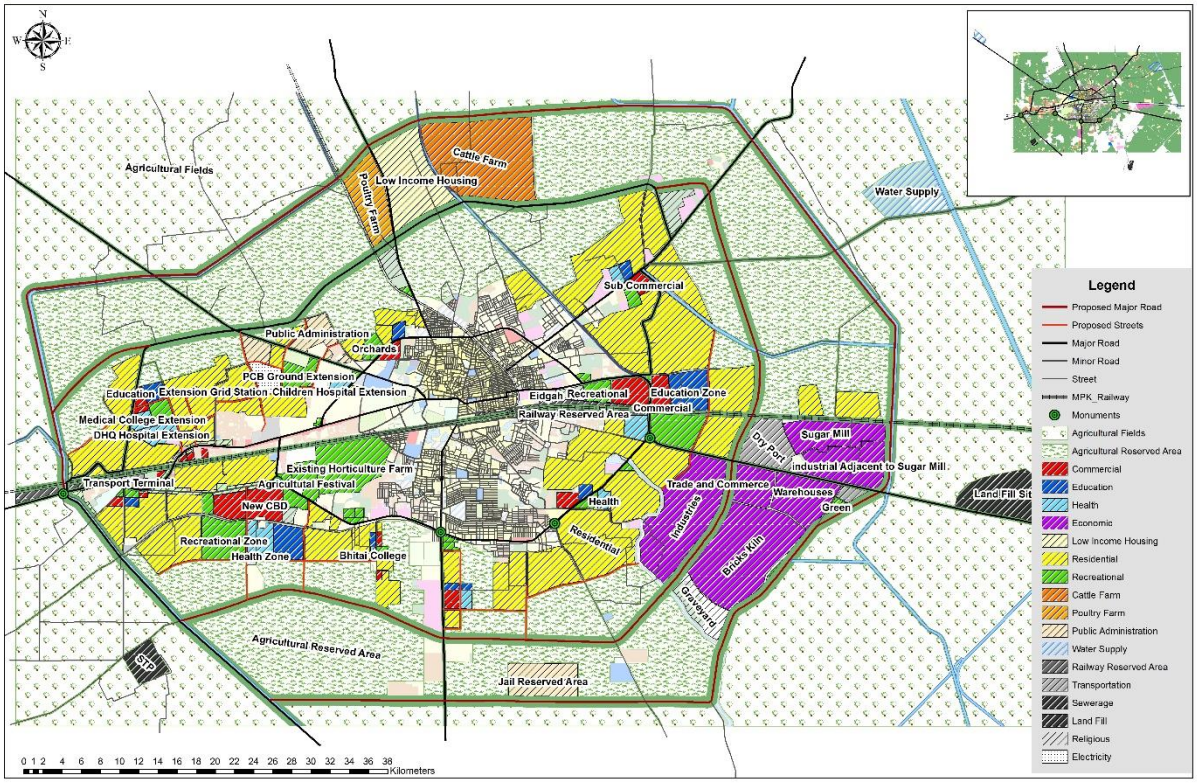
The total extent of the area included in the overall proposed Mirpurkhas Master Plan is 28,000 acres approx. for a population of 292,000 by 2037. In this way, Mirpurkhas Town in next twenty years is expected to have population density of 10 persons per acre and overall six housing units per acre with an average household size of 5.7.

The hallmark of the plan is that it is **compact without being congested**. As the future expansion of the Mirpurkhas Town is expected to be large, thus the complete Proposed Mirpurkhas 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 placing two main centers in east and west, within two elliptical ring roads and N-120 as central spine of connectivity. First Ring Road is around existing spatial spread, while Second Ring Road is running all around the periphery, both originating from west at same point. Furthermore, five large sub centers and two small centers are created with the Arteries in north and south, with major radial roads in all directions. The intersection of radial roads and arteries 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.

Proposed Master Plan for Mirpur Khas Town



4.4 Salient Features of Planning

- Since the town is in ellipse shape, there are two main CBDs (Central Business Districts) occurs in west and east sides of the town. In addition, sub commercial areas are also identified to reduce the burden over the main CBDs at Medical College, Khipro Bypass, Khipro Road, Umerkot Bypass, Digri Road, Bhittai College and Muhammadi College.
- New Industrial Area, Trade and Commerce, Warehouses and Dry Port are placed along Umerkot Road with respect to existing Sugar Mill area along same road. Moreover a much larger area for Brick Kilns is also proposed in between Ring Roads to gather scattered brick production activities for better environment.
- Two transport hubs are designated along N-120 in west and east directions. The reservation for railway land with buffer area is also suggested. Regarding air connectivity, it is recommended to improve the accessibility from Khipro Road to Sindhri Airport.
- The areas for graveyards have also been reserved at the far ends of the proposed town. However, these are accessible from Khan Road, Khipro Road and Ring Roads.
- The cattle and poultry areas are proposed in the northern direction in between two Ring Roads, to limit the town development further and it will also benefit the population of nearby villages and other settlements.

- The new public administration area is proposed opposite to PCB Ground along Tando Adam Road, to serve and manage this large city of Mirpurkhas.
- Likewise commercial centers, health, educational and recreational main centers are proposed in west and east direction. Further health, educational and recreational activities are placed with sub centers of the town.
- In addition to recreation, the existing PCB Ground is also proposed to expand and upgrade as per standard. Another important feature of the town is a tradition of Mango Festival, in this regard agricultural festival area is marked adjacent to horticulture area.
- The areas reserved for agriculture in between the Ring Roads will be helpful in restricting housing development and preserving the agricultural farms from the onslaught of the housing projects by private sectors. Furthermore the rich agriculture areas within the existing town, are recommended to reserve as orchards.

4.5 Two Ring Roads – Connecting Existing with Outer Developments

The proposed ring roads are more of ellipse shape, as First Ring Road is placed within the Second Ring Road. In order to limit the physical extent of the town in west direction, both Ring Roads are starting at same point from west, either going in north or south direction:

i. The **First Ring Road** is formed considering existing development of Medical College and New Bypass in north and Industrial Area in South.

ii. And the **Second Ring Road** is marked considering important outer developments like; SMBBT Township in north, Sugar Mill in east and Public School in south.

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 ring road. As the areas on both sides of the Ring Road will attract many developers. The land two hundred feet on both sides of the ring road should be notified for development control where only planting of local trees should be allowed.

4.6 Radial Roads – Regional Connectivity

All proposed radial roads are existing major roads, providing transport connectivity with other urban and rural regional areas. Most of these roads are converging to core urban area, or in other words these roads are originating from the existing town. In this way, the existing town will remain focal point of all development along the roads. However, these roads are also serving as vital radial regional connections.

As a result, there are seven proposed radial roads with increased ROW, which will serve as future regional connections. These includes; Hyderabad Road (N-120), Umerkot Road (N-120), Tando Adam

Road, Khan Road, Khipro Road, Digri Road and Public School Road. In addition, Khipro and Umerkot Bypasses are connecting radial roads and serving as Northern and Southern Arteries. However it is very important to control upfront development along the major roads. Likewise Ring Road, on both sides of major roads planting of local trees is also highly recommended.

4.7 Proposed Land Use Zoning

The proposed land use zoning is broadly based on NRM Standards[2]. 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 Mirpurkhas as DHQ Town, secondary zoning i.e. Level-2, is also categorized accordingly, again in consideration to the NRM Standards[3]. The proposed land use zoning is shown in the table:

The total area requirement for full fledge metropolis will be around 28,000 acres. As shown in the table of proposed land use classification, the percentage of all land uses are slightly lower, while agricultural is high, in comparison to the NRM standards. In consultation with the stakeholders, the emphasis is given to agricultural development within town limits. Thus the criteria is to restore the agricultural fields in and around town area. In this way, agricultural area is at least sharing the community open spaces (recreational) load as well.

[2] 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

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

Table 3-4-1: Proposed Land Use Classification for Mirpurkhas

S.No	PROPOSED LAND USE CLASSIFICATION FOR MIRPURKHAS TOWN						
	Level - 1 Functional Zoning	Level - 2 Functional Zoning	Areas (acres approx.)		Land Uses (%)	Areas (acres approx.)	Land Uses (%)
1	Residential	Existing Residential	2,998	8,499	30.5%	8,499	30.5%
		Present Housing Schemes	1,184				
		Proposed Residential	4,317				
2	Commercial	Existing Commercial	122	489	1.8%	489	1.8%
		New CBD & Tourism West	128				
		New CBD & Tourism East	105				
		Sub Commercial at Khipro Road	21				
		Sub Commercial at Khipro Bypass	19				
		Sub Commercial at Umerkot Bypass	21				
		Sub Commercial at Digri Road	19				
		Sub Commercial at Medical College Road	15				
		Commercials at Bhittai College Road	8				
		Commercial near Muhammadi College	8				
		Small Commercials along N-120	22				
3	Economic	Trade and Commerce	98	262	0.9%	2,387	8.6%
		Warehouses	164				
4	Livestock	Cattle Farms	536	709	2.5%		
		Poultry Farms	173				
5	Industrial	Existing Industries	160	1,416	5.1%		
		Sugar Mill Area	166				
		Industrial adjacent to Sugar Mill	195				
		Bricks Kiln	483				
		New Industrial Area	412				
6	Health and Welfare	Existing Health and Welfare	21	237	0.9%		
		DHQ with extension	40				
		Medical College with extension	22				
		Children Hospital with extension	10				
		Health and Welfare West Zone	63				
		Health and Welfare East Zone	37				
		Health Area at Khipro Road	14				
		Health Area at Umerkot Bypass	16				
		Health Area near Digri Road	14				

7	Educational	Existing Educational	108	362	1.3%	1,227	4.4%
		Educational West Zone	69				
		Educational East Zone	99				
		Educational Area near Medical College	24				
		Educational Area at Khipro Road	12				
		Educational Area at Khipro Bypass	14				
		Educational Area at Umerkot Bypass	11				
		Educational Area near Digri Road	14				
		Educational near Muhammadi College	7				
		Educational near Bhittai College	6				
8	Religious	Existing Religious	23	59	0.2%		
		Religious West side	13				
		Religious East side	23				
9	Public Administration	Existing Public Administration	297	570	2.0%		
		Public Administration and Housing	116				
		New District Jail	157				
10	Recreational	Existing Parks and Playground	101	924	3.3%	924	3.3%
		Existing Horticulture Area (Orchards)	224				
		PCB Sports Complex extension	54				
		Agricultural Festival	54				
		Recreational Zone West	162				
		Recreational Zone East	138				
		Recreational Area near Medical College	31				
		Recreational Area at Khipro Road (Orchards)	21				
		Recreational Area at Khipro Bypass (Orchards)	27				
		Recreational Area at Umerkot Bypass	22				
		Recreational Area near Digri Road (Orchards)	28				
		Recreational near Muhammadi College	10				
		Recreational near Bhittai College	8				
		Green	43				
11	Graveyards	Existing Graveyards	50	240	0.9%	240	0.9%
		Graveyard along Southern Bypass	107				
		Graveyard along Khipro Road	52				
		Graveyard along Railway Line	31				
12	Transportation	Existing Transportation	518	2,322	8.3%	3,257	11.7%
		Dry Port	140				
		Railway Reserved	114				
		Transport Terminals West	20				
		Transport Terminals East	23				
		Junctions, Intersections, Overhaeds, Underpasses	117				
		Road Network	1,390				
13	Utilities and Services	Existing Utilities and Services	53	935	3.4%		
		Water Supply	433				
		Sewerage	168				
		Land Fill	231				
		Electricity	50				
14	Urban Forestation	Urban Forestation	1,120	1,120	4.0%	10,804	38.8%
15	Agriculture	Agricultiral Fields	9,467	9,467	34.0%		
16	Water Bodies	Canals and Ponds	216	216	0.8%		
17	Vacant	Vacant Area		-	0.0%		
		Total Area for Future Development of Mirpurkhas	27,827	27,827	100%	27,827	100%

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	8,499	30.5%
2	Commercial	2-3%	Commercial	489	1.8%
3	Industrial	2-10%	Economic	2,387	8.6%
			Livestock		
			Industrial		
4	Institutional	3-5%	Health and Welfare	1,227	4.4%
			Educational		
			Religious		
			Public Administration		
5	Community Open Spaces	4-6%	Recreational	924	3.3%
6	Graveyards	2-3%	Graveyards	240	0.9%
7	Arterial Circulation & Terminals	15-20%	Transportation	3,257	11.7%
			Utilities and Services		
8	Protected Reserved	15-25%	Urban Forestation	10,804	38.8%
			Agriculture		
			Water Bodies		
			Vacant / Reserved		

4.7.1 Residential Zone

The important features of the proposed master plan is accommodation of all income groups with diverse options for housing. Therefore in total 8,500 acres of residential land use is proposed, which will create six housing units per acre on average. Thus in overall town more than 51,000 housing units are expected to be in town by 2037.

There are existing vacant land parcels in overall town, specially in west 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 296 acres adjacent to SMBBT Township along Khan Road in between Ring Roads, is proposed for medium to high density development. While for other income groups, mixed density (low, medium and high) residential areas are 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:

New Residential Scheme [4]		
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

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

- **Houses**

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

The following guidelines are for houses zone development:

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

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

Houses - Applicable SBCA Bylaws[5]					
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 Mirpurkhas Town, the trend of vertical residential development, in form of apartments is already existing. Secondly, as new migrants are expected from other urban areas as well, thus there is a need to fulfill the modern residential need like apartments. On the other hand, apartments are more effective in accommodating large number of households in less acres of land due to increased density in comparison to houses. 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[6]					
Types	**Densities[7] 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)

[5] Houses/Bungalows, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.2, page no 141.
[6] Flat Sites Category, Zoning Regulations /Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.4, page no 144.
[7] Residential Density Standards, as per Sindh Building & Town Planning Regulations, Chapter 20.3, page no 123.

4.7.2 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:

- **West and East CBDs (Commercial Business Districts)**
  Considering the shape and growth of the town, two CBDs are have been located in the area of central attraction accessible from N-120. The main land uses of the CBD will be regional corporate headquarters, financial centers, media houses, IT / software, specialized production service and retail shopping outlets with dedicated parking and large open spaces. This will integrate a great deal of financial, business, culture, service institutions and lots of supporting facilities; such as business office buildings, large shopping malls, hotels and apartments, etc. These will be developed with perfect and convenient traffic, communications and other infrastructures, favorable economic development, environment friendly places; which are convenient for commercial activities.

  There are few historic and famous places in Mirpurkhas; Chitori: historical graveyard with many sandstone tombs of Talpur rulers, Kahu Jo Daro: Ancient Buddhist archaeological site, Jhalori: Ancient village near Jamrao Canal famous for its crops and Residence of Mir Sher Muhammad Khan Talpur “The Lion of Sindh”. Considering the potential of tourism, the CBD areas will also include convention center, expo center, hotels, shopping malls, exhibition ground, etc.

- **Sub Commercial Centers**
  In continuation to the main CBDs, it is recommended to place sub commercial areas at other major intersection to share the burden of commercial activities. Thus, seven sub commercial centers are proposed at Medical College, Khipro Bypass, Khipro Road, Umerkot Bypass, Digri Road, Bhittai College and Muhammadi College.

  The small commercial areas are marked as per the trend of famous eateries with s-curve of Hyderabad Road (N-120). Further small commercials in the residential areas are also located 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[89]	**Prohibited Uses**
- Plot Sizes: 1,000 sq.yds. (min) - FP: 40% - 65% - FAR: 1:2.75 – 1:5.5 - Floors: G+6 & G+8 (max)	- Residential housing schemes - Large health and educational institution

4.7.3 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 east side of the town at Umerkot Road (N-120), trade and commerce area is positioned. This will provide in and out trading activities of the region especially to other areas of the district. It will includes grains, fruit and vegetable markets, wholesale markets, slaughter house, storage areas etc.

  This area will also technical services like mechanical workshops and spare parts (auto mobile repairing), building construction materials, home depots, furniture market, housewares, food and beverages, computer hardware etc. However with the passage of time, technological advancement and changing needs; new requirement will come up to cater to the job market through new economic opportunities and activities.

- **Warehouses**
  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.

[8] Commercial, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.3, page no 143.
[9] Flat Sites Category, Zoning Regulations /Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.4, page no 144.

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[10]	**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

4.7.4 Livestock Zone

Among neighborhood towns, Mirpurkhas is mainly an agricultural and industrial town. However, local inhabitants also rely on livestock such as cattle, buffaloes, goats and poultry as other source of income. In this regard, separate zone for cattle and poultry are placed in northern direction in between two Ring Roads, to promote livestock production. 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**[11]
  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.

[10] Industrial Areas, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.6, page no 145.
[11] Dairy Plots, Zoning Regulations / Area Standards, as per Sindh Building & Town Planning Regulations, Chapter 25.8, page no 149.

The following guidelines are for livestock zone development:

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

4.7.5 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 [12]		
S.No	**Land Use**	**SBCA Standards**
1	Industrial	70% max
2	Commercial	1% max
3	Parks / Playground	3% min
4	Public Uses	6% min
5	Roads	20% min
6	Residential	8% min
No roads shall be less than 40 feet in small industries. No roads shall be less than 50 feet in medium and large industries. Industrial plot of 5 acres or more, residential area for labour and staff is allowed at rear.		

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

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

- **Industrial Area adjacent to Sugar Mill**
  Considering the location of Sugar Mill, it is recommended to first develop its nearby area for industrial development. Since the potential of large scale industries also present in this town, not only agriculture related industries.

- **Industrial Area Extension**
  The New Industrial Area is proposed ***along Umerkot Road (N-120)*** and also accessible from First Ring Road. This is more appropriate to develop small scale industries. 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 small scale industries may include flour mills, ice factories, packaging of fruits and vegetables, feeder crops, cottage industries of handicrafts, souvenirs etc. While medium to large scale industries will include flour mills, rice husking mill, sugar mills, cotton ginning factories, fiber factories and chemical factories. Since the town has finest export quality of mangoes. Thus it is suggested to promote the industries related to mangoes production and their byproducts.

- **Brick Kiln**
  Not only housing schemes, brick kilns are another factors of capturing precious agricultural land and generating pollution in the town. Therefore, it is proposed to designate an area in extreme southeast of the town, in between two Ring Roads for Brick Kilns. In this way the production activities of bricks will not destroy the environment of the town. These kilns will be setup with all precautions and standards of safety measures.

The following guidelines are for industrial zone development:

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

4.7.6 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:

- **Medical College and DHQ Hospital Extension**

Since Medical College and DHQ Hospital are recently constructed in northwest of the town, their extension is proposed to make these a full fledge public health care like a District Health Complex. Since it will become tertiary level center for health facilities, thus nursing college, staff residence, hostels, community and allied facilities will also be accommodated here. It could also include; Rehabilitation Centers, Special children, Edhi Homes (orphanage / old age / women) etc.

- **West and East Health and Welfare Areas**

  The two new health and welfare areas are marked with West and East CBDs, to make it accessible for other towns as well and to attract private investment in health and welfare sector. It is widely possible that this area will be utilized for distinct health and welfare facilities in long term phase; like specialized hospitals, research and welfare centers etc. It will comprises of the specialized units like oncology, urology, infertility centers, organ transplantation, and specialized treatment centers, research and development centers.

- **Sub Health Centers**

  The sub centers are formed considering public and private health institutions like Children Hospital, Muhammadi Hospital and Bhittai Hospital. These will serve the clinical as well as

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

regular hospitalization needs like Maternity, Emergency, Dental, OPDs, Laboratories and Diagnosis, Pharmacies, Blood Banks, Physiotherapy Centers etc.

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[14]	**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

4.7.7 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:

- **West and East Educational Areas**

Likewise health, the two educational areas are also marked with West and East CBDs, which are required for the future demand of young population and to attract private investment in the field of education as well.

The idea is to introduce more 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,

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

in form of wings, departments and blocks. Its further upgradation is proposed to multiply its fields of study and increase its student intake capacity. For this more buildings, teaching and non-teaching staff, residences and other related facilities will be required.

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

The advance educational facilities are also suggested, as the society is moving towards global dynamics, diversified fields of education will be prerequisite. It could include upcoming need of the job market like; engineering, business, management, finance, media, IT and software, etc.

The specific area for future universities will also be reserved in this zone. The purpose behind is to involve regional level youth in the education and research, in order to enhance the educational attainment level.

The library, data and information centers and scientific research institutes are also recommended in this zone to provide all kind of facilities for research and development in different fields.

- **Sub Educational Centers**

In order to improve educational facilities at all levels, sub educational centers are developed for schools and colleges. These will serve the need of the resident within the neighborhood area. It is mainly proposed to provide more schools and colleges for both boys and girls. It is suggested to accommodate all the required facilities and service like; libraries, laboratories, playgrounds, washrooms, etc.

It 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 center are also suggested to be placed in this area 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.

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[15]	**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

4.7.8 Religious Zone

In the proposed master plan two religious sites are allocated in the Mirpurkhas Town; one is with West CBD and other is with East CBD. 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[16][17]	**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

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

4.7.9 Public Administration Zone

The exiting offices of Public Administration are mostly in core urban area of the town. Considering future requirements, the new public administration area is marked along Tando Adam Road, in northeast direction.

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

- **New Public Administration**
  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 Mirpurkhas 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.

  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.

  The area for police lines extension is also recommended to include in public administration area. The purpose of including an additional area is to extend the facility as per future requirement and also to provide accommodation facilities to employees of different grading.

  - **District Jail**
    Mirpurkhas District Jail is recently shifted to a newly constructed District Jail at Digri Road. Since the new development of town is expanding towards south, District Jail will be inside the town. Thus for a long term plan, a new site has been designated for District Jail, along Second Ring Road. This will also serve the purpose of additional 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[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

4.7.10 **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:

- **PCB Sports Complex Extension**
  At present PCB Sports Complex exist along Tando Adam Road, further extension is proposed at land adjacent and behind to it. It will include cricket, football, hockey and other ground, cultural center and gymnasium. These type of sports facilities will be of national level standards to promote at least domestic sports.

- **Agricultural Festivals**
  Mirpurkhas is well known for its mango cultivation, with hundreds of varieties of mangoes produced each year, and a mango festival that has been an annual tradition. Considering local tradition of mangoes festivals, a space adjacent to existing horticulture area has been designated for such events. These grounds will also be used for large population events like carnivals, eid festivals.

[18] Ibid

- **West and East Recreational Areas**
  Similarly to health and education; two recreational areas are also proposed in West and East CBDs. A large park could be accommodated in the heart of the proposed recreational areas. 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.

  These recreational areas will include Sports and Cultural Complexes; comprises of cricket, football, hockey and other ground, cultural center and gymnasium. These will also include large scale amusement facilities like thrilling rides in a safe and pleasant manner will be provided. Moreover theme parks like Art Park, ice park, floral garden, glow garden etc. could also be introduced as per the demand of the region.
  Mirpurkhas is a regional center there are also need to locate botanical and zoological gardens. These gardens will serve not only a metropolis of future but urban and rural areas of Mirpurkhas region as well.

- **Sub Recreational Centers**
  In sub recreational centers; multipurpose playgrounds, orchards and family parks are proposed to place for active and passive facilities. These are ideally need to be in center of the residential areas, accessible for all.

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

4.7.11 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 are three proposed graveyards along Khan Road, Khipro Road and in between Ring Roads.

These graveyards can be further divided according to the requirement of practicing religions in the town. Both of these sites are approachable from existing roads and will also remain in the peripheries of the town.

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

The following guidelines are for graveyard zone development:

4.7.12 **Transportation Zone**

In Mirpurkhas Town, the transportation is a combination of air, rail and road network of radial roads, bypasses, ring roads, 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:

- **Proposed Road Network**
  The proposed road network is originate from the existing radial roads and bypasses. By adding ring roads the existing roads becomes major connecting corridors and existing bypasses act as main arteries for the Mirpurkhas Town through widening and beatification. And N-120 (Hyderabad and Umerkot Roads) will remain the main spine of the existing as well as proposed road network.

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:

S.No	Major Roads	ROW (ft)	Forestation (ft)
i.	First Ring Road	200	200
ii.	Second Ring Road	200	200
iii.	Hyderabad Road (N-120)	200	200
iv.	Umerkot Road (N-120)	200	200
v.	Tando Adam Road	150	100
vi.	Khipro Road	150	100
vii.	Digri Road	150	100
viii.	Khan Road	100	50
ix.	Public School Road	100	50
x.	Northern Artery (Khipro Bypass)	150	100
xi.	Southern Artery (Umerkot Bypass)	150	100
***ROW – property to property distance** ***Forestation on both side of ROW**			

Primary Roads: The two Ring Roads, running on the periphery of the town and N-120, combination of Hyderabad and Umerkot Roads, 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, parking and cycle/pedestrian tracks.
Tertiary Roads: The tertiary roads will have a right of way of 100 feet (min) with at least two lanes, median, footpaths, parking and cycle/pedestrian tracks.

- **Public Transport Terminals**
  In both East and West Transport Terminals separate public transport terminals are proposed. These public transport terminals are 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. These 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 both transport terminals separate truck terminals are also proposed. Since from this 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.

- **Dry Port**
  Since Mirpurkhas is a regional trading center and it would require this type of facility for export quality products. Thus a Dry Port is proposed in eastern side along Umerkot Road near industrial development. 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.

- **Railway Reserved Area**
  The town has one of the oldest Railway Station, which is also a junction. It is located in middle of the town, on Hyderabad - Khokhrapar branch railway line. The railway line is coming from Hyderabad side and going towards Khokhrapar. It is suggested to reserve the area for railway use only, to avoid any sort of encroachments. Consequently, the available vacant land parcels have been marked as Railway Reserved Area, in order to avoid further violation of railway ROW. Further it is recommended to improve the railway service for better cost effective connectivity for the town's economy.

- **Airport Area**
  Mirpurkhas Town is also benefitted with air route as well, named as Sindhri Airport. Though this airport lies outside the town area at 26 kilometers, accessible form Khipro Road. It is suggested to resume air service, to rehabilitate the existing infrastructure and to improve accessibility. Currently it occupies large land parcel, thus for long term it is recommended to include more area for airport use. This area will be used to extend the airport functions and allied facilities. Therefore, upgradation of this airport is highly recommended to cater more air traffic with efficiency and to enhance its flight capacity as well.

The following guidelines are for transport zone development:

Permitted Uses	Allied Permissible Uses
- All types of parking areas - Designated ROW - Green belts - Footpaths	- Drivers and staff accommodation - Support offices, rest areas, washrooms, shops etc.

- Traffic management devices	- Street furniture like lights, trash bins, benches etc.
Applicable SBCA Bylaws[19]	**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

4.7.13 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.

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

- **Water Supply**
  The main water supply sources are Jamrao Canal (east and west branches), Mirpur Minor and Jarwari Canal. Thus with the existing water reservoirs in east and west directions along Jamrao Canal, the additional areas are being reserved for water supply works; to extend the water reservoirs as per the town's water demand and related water supply infrastructure. This will also cater to water supply filtration plant and other advance purification mechanism.

- **Sewage Treatment Plant**
  Two areas are designated for STPs and their related uses, in southwest and southeast directions. Both sites are 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 outside the main town area, in east side considering wind direction. This landfill site is directly accessible from Umerkot Road (N-120). 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 Mirpurkhas Town is existing along Hyderabad Road (N-120). 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 new area for grid station setup with upcoming future load and requirement, is

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

proposed in northeast direction of the town. It is accessible from Tando Adam Road through local road network.

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

4.7.14 **Urban Forestation Zone**

Urban forestation along both Ring Roads 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 the Ring Roads from uncontrolled development, urban forestation of two hundred feet at both sides of the road should be planted. It is advised to restrict development in this area and implement the rules and regulations to keep the town green.

In addition to the Ring Roads, urban forestation of 50 to 100 feet on both side of the major roads are also proposed depending upon their ROW, to avoid direct / upfront development along roads. All major roads crossings will have initially green roundabouts with enough space for grade separated junctions in the future.

The following guidelines are for urban forestation zone development:

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

4.7.15 **Agricultural Zone**

In order to limit the town development agricultural reserved areas are proposed. In this manner not only town spatial growth will be confined but also essence of agriculture activities will remain close to

the town. It will also create a healthy environment and less burden will be on spread of infrastructure network. The existing villages or settlements in the periphery of the town will also be benefited and not removed from their place of livelihood.

The recommended crops for production are; maize, rice, sugarcane, cotton, bajra, wheat, barley, gram and barseen. In addition to these, fruit orchards of mangoes and bananas are abundant 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.

4.7.16 **Water Bodies**

The east and west branches of Jamrao Canal, Mirpur Minor and Jarwari Canal are main water courses of the Mirpurkhas. It is suggested to protect the water courses in and around the town area, further canal 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.

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4.7.17 **Vacant Zone**

The objective of providing vacant area with in the town limit is to cater the emergency need at time of any disaster. With this respect a huge land parcel is kept reserved for emergency need, which could

be utilized for portable homes, mobile health care facilities, camping for vulnerable of calamities, temporary storage of bulk material etc. The proposed vacant area is within the Mirpurkhas Town but being on the peripheral area, would not disturb the town activities in general and it is directly accessible from the Ring Roads.

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

As per 2017 census population results, Mirpurkhas municipal area had household size of 5.7 persons and a total housing stock of 41,022. Most of them were categorized as pacca houses which include Pacca (Brick construction) and RCC houses.

General housing condition of the surveyed houses was satisfactory. Sample survey of the town reveals that approx. 31% of the houses were constructed in between 6 to 10 years. 35.6% of the houses had a plot size of approximately 80 sq. yards with an average of 5 to 6 members in each household. The age of houses construction as per respondents upto 5 years about 11%, upto 10 years 31%, upto 20 years 29%, upto 30 years 17% and above 31 years 11%.31% of the households surveyed consist of 3 to 4 members. 32% of the households consist of 5 to 6 members and 17% of the households consist of 7 to 8 members.

As far as the utility services in the houses are concerned, basic services needs improvement as the sample survey reveals 95% of the houses have drained (flush system) in their houses while 5% of the houses have un-drained toilets which requires manual cleaning.

General housing condition observed during socio economic survey, condition of houses was satisfactory although major reasons for the housing backlog are lack of resources, inadequate planning, and wrong land development policies that favour elite at the cost of poorer sections of the society. In Mirpurkhas urban area, the problem manifests as unstoppable growth of unauthorized housing societies and squatter settlements through encroachment of state and private land.

5.1.1. **Katchi Abadis**

The demand for high and middle income housing is met by the formal sector through public run schemes or private sector developers. The low income groups however find it very difficult to buy developed land and build a modest house from their meagre income. The so-called low income housing schemes initiated by the public sector under various programmes are at best affordable for lower middle income groups. The private builders, having been driven by the financial returns do not venture into any project for the low income group. This segment of population is therefore left to help themselves and with a little help from family, friends and land grabbers, squat on the public lands wherever available and within no time, a cluster of shabbily constructed shelters appears, which defy even minimum definition of a shelter. With time these clusters grow in size and gradually construction is upgraded from temporary to semi-permanent, known as Katchi Abadis. These marginal settlements are without any utilities or urban services until they are regularized, which is also conditional to the ownership and designated use of land on which they are located. Relegated to informal housing

sector, Katchi Abadis indicate a wide gap between the income /savings of the lowest income groups and the affordable house.

5.1.2. **Katchi Abadis in Mirpurkhas MC[20]**

According to data provided by Sindh Katchi Abadis Authority (SKAA), there are eleven sites, identified as Katchi Abadis in Mirpurkhas MC. These are spread over 33.30 acres covering 1,171 housing units with 10,397 population approx. Thus, it is estimated that 4.44% population of Mirpurkhas MC resides in Katchi Abadis. Out of total only eight Katchi Abadis were notified from 1988 to 1992. However, remaining three sites are still in process of regularization. The list of Katchi Abadis present in Mirpurkhas MC is given below:

List of Katchi Abadis in Mirpurkhas City						
S. No.	**Location / Local Council**	**Name of Katchi Abadi**	**Total Area in (Acres)**	**No. of Housing Units**	**Estimated population**	**Date of Notification**
1	Mirpurkhas MC	Chutta Goth	7.00	600	7530	31-03-1988
2		Mehar Colony	1.50	40	250	31-03-1988
3		Muslim Colony	3.20	80	400	29-07-1992
4		Muslimabad	3.20	96	336	Un-Notified
5		Muzafarabad	2.00	50	450	29-07-1992
6		Near Mehmoodabad	2.00	50	400	31-03-1988
7		Near Cemetery of R.S.No.258	1.20	40	225	Un-Notified
8		Pathan Para	6.00	50	500	31-03-1988
9		Rewachand Garden Colony	3.00	75	5.00	29-07-1992
10		Saindad Colony	1.20	40	1.50	31-03-1988
11		Zulfiqar Colony	3.00	50	300	Un-Notified
Total			**33.30**	**1,171.00**	**10,397.50**	

[20] Data provided by Sindh Katchi Abadis Authority, December 2019

5.2 Issues

The following are the major issues in the housing sector:

- Inadequate supply of developed land and its skyrocketing prices are making housing ownership beyond the affordability limits of the majority of population.
- 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.
- Legal documentation procedures for property transactions is very tough and costly.
- The households below poverty line have remained neglected, in all housing policies.

5.2.1 SWOT Analysis

S. No.	STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
	HOUSING			
1	1. 80% of the population lives in family owned houses 2. 73% of the Town population has pacca houses 3. The trend of new housing schemes construction by private development is increasing 4. Most of the formal population is served by electric, gas and water supply. 5. The trend of rental housing is low just 11% of the population lives in rental housing	1. High prices of houses in private sector 2. The informal housing sector lacks provision of utility services like gas supply, clean water and drainage facilities	1. Demand for new planned housing schemes 2. Demand for low income housing 3. Demand for public housing projects 4. Opportunity for local micro financing for housing 5. Installation of basic utility services through new projects	1. Homelessness 2. High housing prices and rents 3. Increase in urban sprawl 4. Inflation of land. 5. Shortage of open spaces in urban areas 6. Formation of urban slums

5.2.2 Need Assessment

On basis of projected Population for year 2037 the numbers of households have been estimated around 51,176 out of which additional Housing Requirement will be 10,138.

Table 5-1: Housing Statistics

Housing Backlog Statistics Mirpurkhas MC upto 2037

S. No.	Housing	Population	Household Size	No. of HH
1.	**Present 2017**	233,916	5.7	41,022
2.	**Future 2037**	291,704	5.7	51,176
3.	**Additional (2017-2037)**	57,788	5.7	10,138

Source: Consultants Estimate 2017 & Population Census 2017 of Mirpurkhas MC

5.2.3 Policy Guidelines

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

i. ***Policy Measures for Land***[21]

- Priority Identification of Land for Housing
- Land Acquisition
- Development of Land Information System
- Rationalization of Land Registration and Tenure System
  The informal and customary tenure systems shall be rationalized into a formal and registered social contract.

ii. Policy Measures for Housing Finance[22]

- Financial Institutions shall be encouraged to give mortgage loans for housing purposes at market rates.
- 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.
- Tenancy Laws shall be reviewed and rationalized to promote housing through investment and to protect the interest of the lending institutions.

[21] National Housing Policy 2001

[22] Ibid

iii. Policy Measures for Katchi Abadis, Squatter Settlements & Slums[23]

- The process of regularization and up-gradation of the pre-1985 Katchi Abadis shall continue as per current policy.
- Formation of new Katchi Abadis shall not be allowed and shall be discouraged by exercising strict development controls in all urban areas.
- Resettlement plans shall be prepared by the concerned Land Owning Agencies (LOAs) in consultation with affected communities for shifting of Katchi Abadis dwellers who fall within hazardous or security/operational zones
- In all government housing schemes, 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. Katchi Abadis resettlement plans and up-gradation plans shall be an integral part of these housing plans.
- 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.

5.2.4 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 Mirpurkhas City
- Construction of housing for low income group

[23] Ibid

5.2.5 Strategic Development Plan

The aim of this Strategic development Plan is to facilitate all for the provision of housing; especially to poor and deprived population in the town. In this regard following strategies need to be focused:

- Capacity building of institutions involved in housing provision and related sectors, to safeguard against malpractices, inefficiencies, weaknesses and mafia assaults.
- Incremental housing schemes on the lines of Orangi, Qasba, Khuda Ki Basti etc. should be initiated based on lessons of experience.
- Provision of incentives through tax rationalization, reduction in property tax
- Development of indigenous and cost effective approaches particularly for low income group and mass production.
- Regularize notified Katchi Abadis complemented by policies to restrain the emergence of new Katchi Abadis.

I. Long Term Plan

- Concepts of small towns should be worked out to minimize the housing requirement in secondary cities.
- 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 in Bangladesh which is a microfinance organization and community development bank founded in Bangladesh. It makes small loans to the impoverished without requiring collateral

II. Short Term Plan

- Provision of municipal tap water supply for each house in the core urban area.
- Provision of underground sewerage and drainage system.
- Pavement of streets (through concrete slabs, hard tiles or brick pavement).
- Urban face lifting program should be launched including improvement of front elevation through local government funding while rest of the house building should be improved by the owner himself.
- Provision of modern street lights in the entire residential area of the core urban area of Mirpurkhas. Two flower pots should be attached to every street light pole for beautification and environmental improvement of the area.
- Median of all major roads should be developed as green median. Roof gardens may also be encouraged to combat pollution in the residential area.
- Regularization of land tenure in Katchi Abadi areas after implementation of the improvement package.
- All dangerous buildings in the old core urban area of Mirpurkhas should be earmarked and notices should be served to the owners for their demolition.

5.2.6 Priority Projects

Detailed Planning and Feasibility Project

i. Development of Housing Site for Low Income People

- **Project Justification**

Most of the population of Town is living in slums areas and depreciated houses. A significant households in Mirpurkhas 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 Mirpurkhas should launch as part of the urban strategy. An affordable housing program for low income households.

Description	Results
Present Population census 2017	233,916
11 % Population of ***Mirpurkhas*** Living in rental houses with no house ownership	19,578
Households required @ 5.7	3,318

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 80% family owned, 9% rent free/Govt. employers and 11% on rent. Therefore on a priority basis, the provision of a developed site for residential purpose is proposed to accommodate at least 3,435 families in short term plan.

Approx. 3,435 Number of housing units up to 120 sq.yd will be proposed. Tentative ten million cost per acres as development cost is estimated with all allied facilities and infrastructure.

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 housing 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, District administrative Mirpurkhas

Estimated Cost: 3,440.00 Million Approx.

Project Name	Long Term	Proposed Area (acre) & Lengths (m)	Preliminary Cost (million/- PKR)	Justification
Land acquisition for Low Income Group	Long Term	172 acre	1,720.00	3,435 Number of units up to 120 sq. yds. 20 houses per acre. For this proposed site land acquisition assumed 10 million per acre.
Development of Housing Site and Services for Low Income Group	Long Term	172 acre	1,720.00	3,435 Number of units up to 120 sq. yds. 20 houses per acre. For this proposed site development we have assumed 10 million per acre with internal allied facilities and infrastructure.

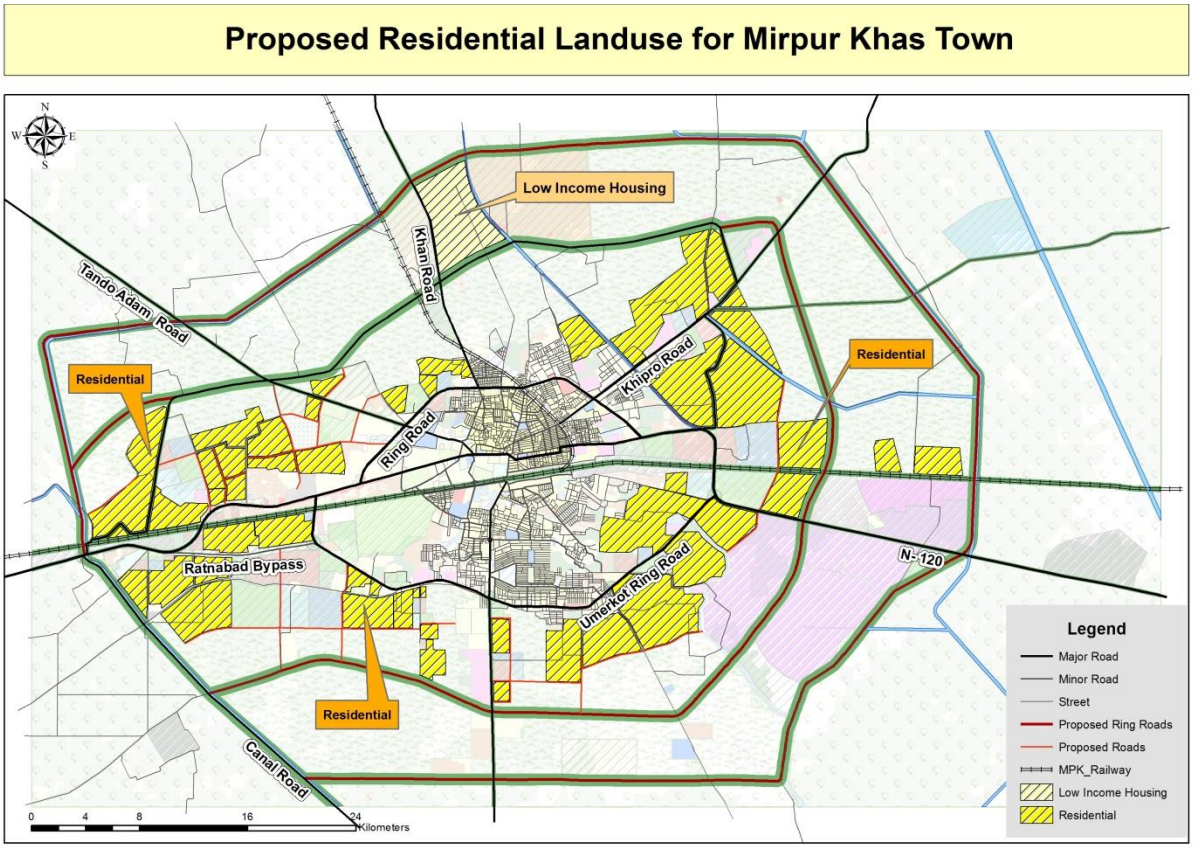


Figure 5:1 : Proposed Residential *Landuse for Mirpurkhas DHQ Town*

6 SOCIAL SERVICES

6.1 Education

6.1.1 Existing Situation

The reason for the deterioration of education in government schools in Pakistan, especially primary and secondary education, is that the standard of educational expenditure set by the UNESCO is minimum 4% of the GNP, but Pakistan during last 66 years has been spending on an average only 2% of the GNP. The state of education in Sindh is best reflected in its literacy figures and in the serious disparity between rural and urban areas. The Sindh has the largest number of ghost schools in the country and thousands ghost teachers draw government salaries.

The education sector in Sindh is facing many challenges; major being very low enrolment level, rural and gender disparity, and low level of quality education. Besides, the alarming fact that there is a large number of out of school children, even those in the systems are not performing and learning outcomes are less than optimal. There are also issues of large number of closed schools and poor infrastructure in functional schools. There is overall poor condition of schools and college due to Lack of repair and maintenance of buildings, lack of playgrounds, libraries, electricity, labs, toilets etc. In district Mirpurkhas, there are 1,973 primary schools out of which 1,689 are for male student and 284 are for female students. The enrolments is 104,645 (male 70,304 and female 34,341) with Teaching Staff available as 3,944 out of which 2,691 are male and 1,253 are Female.

The tables below show the present statistics of educational institutions in Mirpurkhas Taluka:

Table 6-1: Present Education Institutions and Enrolment Record of Mirpurkhas Taluka

Primary ,Middle and Elementary Schools

S. No.	Type	No.s	Class rooms	Enrolments	Teachers	Students per Classroom	Teacher Student Ratio
1	Govt. Girls Primary Schools (GGPS)	15	54	2039	141	38	1:14
2	Govt. Boys Primary Schools (GBPS)	10	60	1444	71	24	1:20
3	Primary School (Co-education)	57	251	7815	513	31	1:15
4	Middle Schools (Girls)	2	29	397	36	14	1:11
5	Middle School (Boys)	1	2	0	0		0
6	Middle School (Co-Education)	4	27	290	23	11	1:13
9	Elementary Schools (Mixed)	1	3	169	2	56	1:85
Total / Average		**90**	**426**	**12,154**	**786**	**29**	**1:34**

Source: District Education Department Mirpurkhas

Table 6-2: Present Education Institutions and Enrolment Record of Mirpurkhas Taluka Secondary Schools, Higher Secondary Schools							
S. No.	**Type**	**No.s**	**Class rooms**	**Enrolments**	**Teachers**	**Students per classroom**	**Teacher Student Ratio**
1	Secondary School (Girls)	8	86	3845	186	45	1:21
2	Secondary School (Boys)	5	81	3478	195	43	1:18
3	Secondary School (Co-Education)	5	83	3240	216	39	1:15
4	Higher Secondary School (Co-Education)	1	18	1142	26	63	1:44
5	Higher Secondary School (Girls)	1	39	2345	92	60	1:25
6	Higher Secondary School (Boys)	2	36	2206	97	61	1:23
	Total / Average	**22**	**343**	**16256**	**812**	**47**	**1:20**
Source: District Education Department Mirpurkhas							

6.1.2 Condition of Educational Institutions

There is overall poor condition of schools and college due to lack of repair and maintenance of 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.

6.1.3 Technical Institutions

The present number of technical institutions in district Mirpurkhas are 8, 1 male polytechnic institution with total enrolment of 734 and teaching staff of 8. There are 2 commercial institution with enrolment of 33 and 4 teaching staff. The total number of vocational institution are 5 (male: 2 and female 3), with the enrolment of 295 (male: 71 and female 224) having teaching staff of 17 (male: 6 and female: 11).

6.1.4 Issues

- Shortage of class rooms as per current enrolment

- Low enrolment level with gender disparity
- Shortage of teachers causing low quality of education
- 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.

6.1.5 SWOT Analysis

S.	STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
	Education			
1	1. Urban literacy rate is higher than rural 2. 67% of population is literate.	1. Poor condition of schools buildings and facilities. 2. Lack of high level of education institutions 3. High demand rate for private schooling education system	1. More people will be attracted to urban areas for education 2. More educational institutes are required 3. More PPP mode is required for educational sector 4. Hiring of qualified teachers	1. The children of peasants and farmers will not get education 2. Shift of educated professional to other major towns of the province 3. Expansive quality education

6.1.6 Need Assessment

I. Present Need at District level (primary to Higher education)

Secondary data received from RSU-Sindh Management Information System (SEMIS). Government of Sindh gives an overall situation of Education attainment from primary to matriculation enrolments in Mirpurkhas district. Present number of Boys and Girls students in Schools at Mirpurkhas is 162,368 in 1,848 different level of schools. Available number of class rooms for Primary, Middle, Secondary and Higher Secondary are 4,020. As per present figures provided by Reform Support Unit RSU Education & Literacy Department, the occupancy is 40 students per class room in primary to higher secondary schools which is higher as per National Reference Manual (NRM) standard of 30 students per class room. Mostly building structures of various schools in Mirpurkhas are old and needs repair.

Table 6-3: Present Need Assessment in District Mirpurkhas

Education Type	School
Enrolment	162,368
Class Room	**4,020**
Student Capacity Per Room	40
No of Teachers	**6,076**
Teacher Student Ratio	27

Source: RSU-Sindh Management Information System (SEMIS)

II. Taluka Mirpurkhas (primary to Higher education)

Secondary data received from Reform support unit RSU education & literacy department. Government of Sindh gives an overall situation of Education attainment from primary to matriculation enrolments in DHQ town.

Present number of Boys and Girls students in Schools at Mirpurkhas is 28,903 in 112 different level of schools. Available number of class rooms for primary, middle and higher secondary are 645.

As per present figures provided by Reform Support Unit RSU Education & Literacy Department, the occupancy is 40 students per class room in primary to higher secondary schools which is higher as per National Reference Manual (NRM) standard of 30 students per class room. Mostly building structures of primary, middle and secondary schools in Mirpurkhas are old and need to be repair. Most of Secondary Schools have sufficient basic facilities in satisfactory condition, like drinking water, electricity and toilets. As per data provided by RSU and District Education Officer that 78% of schools have boundary wall, 72% of schools have proper wash rooms & toilets, 72% schools have the facility of electricity and 72% schools have water and sewerage facility and 55% of the school needs new furniture.

- Present Need Assessment Education Sector(2017)

(a) District Mirpurkhas (Includes primary to Higher education institutions)

- As per NRM (National Reference Manual) and NEP (National Education Policy) standards, students per class room occupancy ratio are 30 students per class room for primary, middle and secondary level. Total enrolment and available number of class rooms shows that there is a present shortage of class rooms.

Table 6-4: Present Need Assessment in Taluka Mirpurkhas

Education Type	School
Enrolment	28,903
Class Room	645
Student Capacity Per Room	45
No of Teachers	1,648
Teacher Student Ratio	18

Source: RSU-Sindh Management Information System (SEMIS).

- Present need can be fulfilled by providing new class rooms in existing school buildings or providing new school buildings with provision of play grounds and other facilities.
- Therefore, for the short term plan, for district provision of 926 classrooms at different levels is required with the repairing of existing buildings with all basic facilities and training of teaching staff is required.

III. Future Need at District level (primary to Higher education)

The long term plan target is to achieve 100% enrolment with 1:1 male female ratio by 2037; therefore 23,279 additional classrooms will be required to accommodate upcoming

generation for next twenty years. This need could be fulfilled either by addition in existing buildings or more new schools and colleges will be need to constructed in future to serve additional estimated population of 2,301,723 (10 and above).

Table 6-5: Future Assessment (2037) at District Level				
Projected population 2037 (10 and above)	**As per 1998 Census 35.97% Attainment (from Primary to Higher Secondary)**	**Required Class Rooms @ 30 (2037)**	**Present Supply (2017)**	**Future Demand (2017-2037)**
2,301,723	**827,930**	**27,598**	**4,319**	**23,279**
Source: Consultants Estimate based on 1998 Census.				

IV. Taluka Mirpurkhas

In future the target is to achieve 100% enrolment with 1:1 male female ratio in next twenty years. Therefore the need will be of 2,578 additional classrooms for schools and colleges, which will be required to accommodate upcoming generation in 2037, as shown in the table below. This need will be fulfilled either by addition of classrooms in the existing buildings or new buildings will be constructed in the future.

Table 6-6: Future Assessment (2037) at Taluka Level		
S.No.	**Description**	**Results**
In Schools of Mirpurkhas		
1	Expected total enrolment by 2037 @ 100% enrolment	80,203
2	Total classrooms requirement in 2037	2,674
3	Additional classrooms requirement in 2037	2,360
In High schools and Colleges of Mirpurkhas		
1	Expected total enrolment by 2037 @ 100% enrolment	23,499
2	Total classrooms requirement in 2037	588
3	Additional classrooms requirement in 2037	218
Source: Consultant's estimates based on population projection on 2017 census and 1998 census age pyramid		

6.1.7 Policy Guidelines[24]

- Development of Teachers and professional substitutes
- Introduce farmer field trainings in rural schools to ensure that the next generation of farmers is already tuned to market intelligence and opportunities. Introduce wider farm mechanization.
- Construct required schools and higher education institutions in all districts. Take stock of operational and staffed schools and eliminate ghost schools.
- Ghost Schools and absentee teacher should be identified and removed.
- Maintenance of existing depilated schools and buildings should be given top priority.

6.1.8 Strategic Development Plan

Education 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 rehabilitation of these institutes to provide sufficient and high quality health to the people of Mirpurkhas.

- 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.
- Strengthening governance and service delivery by improving the functioning capacity from the school community level up to district and province level. This will include: agreed school standards; IT enabled evidence for accountability at all levels of trained management, aligned to education devolution; School Consolidation Policy and School Based Budgets and Management; and strong public-private partnerships. Priority will be given to strengthening district-level management.
- 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.

I. Long Term Plan

- Sustainable construction new of schools and colleges with all facilities to cater additional future enrolment.
- Improve infrastructure of the school buildings.
- Invest in human capital to improve the quality of education.
- Establishment of new units particularly at HQ Town and Tehsil towns as the shift from rural to urban areas is being gradually made and
- Participation of private sector directly or through public-private partnership.
- Emphasis on vocational training for both sexes.

[24] Sindh Vision 2030

II. Short term Plan

- Addition of classrooms in existing school and college buildings along with allied facilities with basic utilities.
- Improvement in the quality of education through revision of curriculum to a higher level
- Training programme for teachers to increase capacity building
- Vocational and skill training centers in alliance with contemporary demand

6.1.9 Priority Projects

i. Rehabilitation of Schools and Allied Infrastructure

➢ **Project Scope & Justification**

Education Plays Very Important Role to achieve the goals of any urban strategy. Currently, the situation of Primary and Secondary education in Mirpurkhas 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 Mirpurkhas)*. ***The List of the schools in this project are given bellow:***

S. No.	Name	Category	Area (Acre)
1	Pakistan Bait-ul-Mal School	Education	0.36
2	Govt. High School	Education	0.36
3	Govt. Girls Primary School	Education	0.21
4	Govt. Board Primary School Mubrak Panhor	Education	0.14
5	Govt: Darul Uloom-al-Qasmia High School	Education	3.19
6	GBPS. HAMID PURA	Education	0.21
7	GBPS. MEHMOODABAD	Education	0.26
8	GBPS. ISLAMIC	Education	1.30
9	GBPS. PIR JILLANY	Education	0.38
10	GBLSS. NISHTER	Education	0.04
11	GBPS. MUZAFAR ABAD	Education	0.06
12	GBPS. ALAM MARI	Education	0.02
13	GBPS. SIR SYED	Education	0.07
14	GGPS. PAK COLONY	Education	0.04
15	GGPS. MEHMOODABAD	Education	0.14

16	GGHS. MAHMOODABAD	Education	0.51
17	Government Primary School	Education	0.84
18	GGPS. KAMIL PANWAR	Education	0.25
19	GGHS. RABIA BASRI	Education	0.45
20	Municipal High School	Education	0.04
21	GBPS. ABDUL WAHEED	Education	0.18
22	Govt. Comprehensive Higher Secondary School	Education	15.00
23	Govt. Elementary College of Education for Men & Women	Education	4.92
		Total Area (Acre)	**28.97**

- **Project Benefits**
  By the increasing in the litracy ratio the living standad of the population will improve and increse the empolymet oppertunities with in the district.
- **Implementing Authority -** Department of Education, Provincial Government and Mirpurkhas MC.
- **Estimated Cost: *630.00 Million PKR Approx.***

ii. Rehabilitation of Technical and Vocational Training Institutes & establishment of various capacity Building Training Programs to enhance Academic capacities.

iii.

- **Project Justification: -** Rehabilitation/Construction of Technical and Vocational Training Institutes
  Sindh Technical and Vocational Training authority (STEVTA) is providing the technical education to the people of Sindh for increasing their technical institutes. In Mirpurkhas, 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. 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 introduce 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% build up area)	Short Term	5.794	630 .00	5.794 acre = 252386.6 sft, at the rate of 5000/- PKR per sft construction cost with all infrastructure cost. (considered 30 % as Built up Area)
Various capacity Building Training Programs to enhance Academic capacities.	Short Term	-	20.00	Teachers Capacity building programs can also strengthen their teaching skills for better results.

Proposed Educational Landuse for Mirpur Khas Town

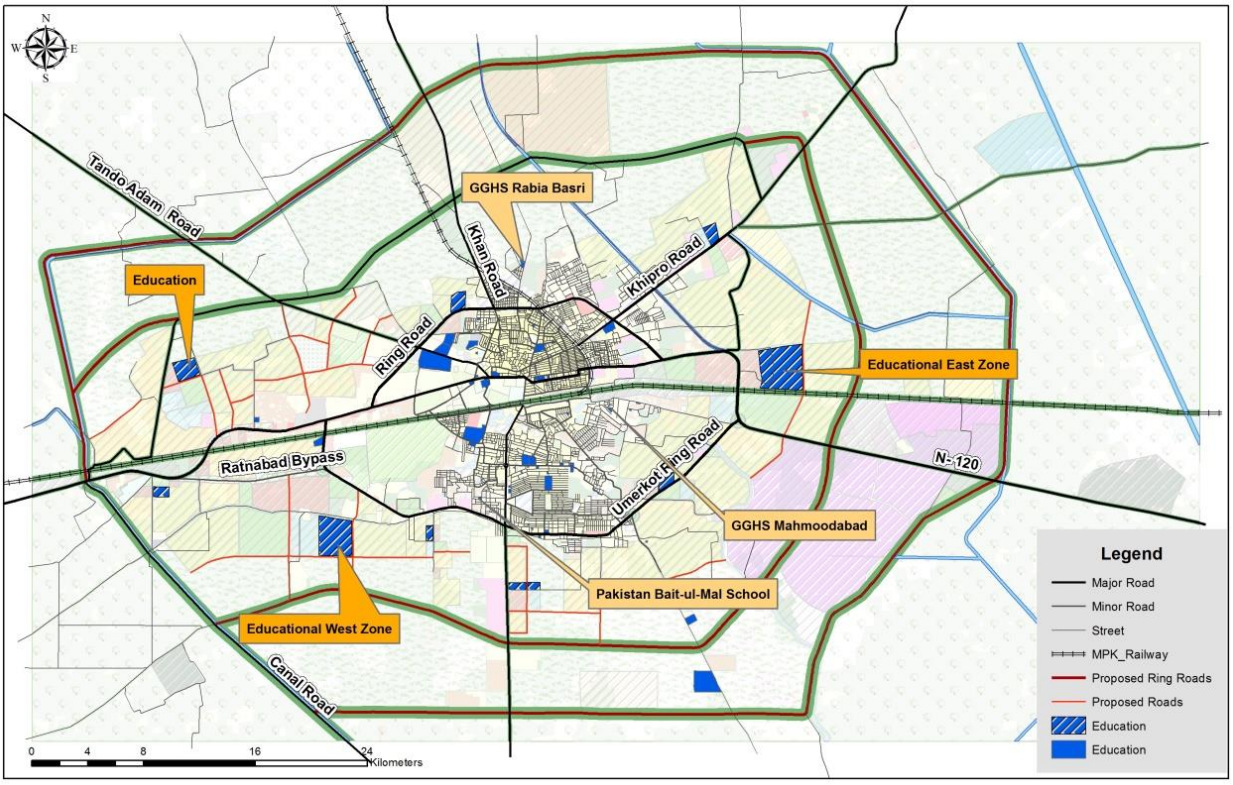


Figure 6:1: Proposed Educational *Landuse for Mirpurkhas DHQ Town*

6.1.10 Immediate Action Plan for Core Urban Area

i. Rehabilitation and Up gradation of Schools

All 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.

- 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
- The important educational buildings present in core urban area like; Govt. Shah Abdul Latif Higher Secondary, Govt. Boys Primary and Govt. Girls High Schools.

At present only four educational facilities are present in core area of Mirpurkhas. Besides repair and rehabilitation we are only proposing associating facilities with all allied services related to basic utilities, access road and building renovation. To some extent as the population grown beyond the urban core area assumed boundary the short term and long term educational projects are already proposed in priority projects sector wise for future population of town.

MIRPURKHAS - CORE TOWN AREA			REHABILITATION OF EDUCATION FACILITIES							
S. N	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	Ibn e Rasheed Girls College	**3.44**	3.44	3.96	5.16	5.16	3.44	0.86	1.72	0.86
2	Government Girls High School	**2.27**	2.27	2.61	3.41	3.41	2.27	0.57	1.14	0.57
3	Govt. Girls Higher Secondary School	**3.23**	3.23	3.72	4.85	4.85	3.23	0.81	1.62	0.81
4	Model College Mirpurkhas	**2.23**	2.23	2.56	3.35	3.35	2.23	0.56	1.12	0.56
5	Government Shah Waliullah Primary and High School	**0.37**	0.37	0.43	0.56	0.56	0.37	0.09	0.19	0.09
Total		**11.5**	11.54	13.28	17.32	17.32	11.54	2.89	5.77	2.89
Total PKR Rs. Million			**82.54**							

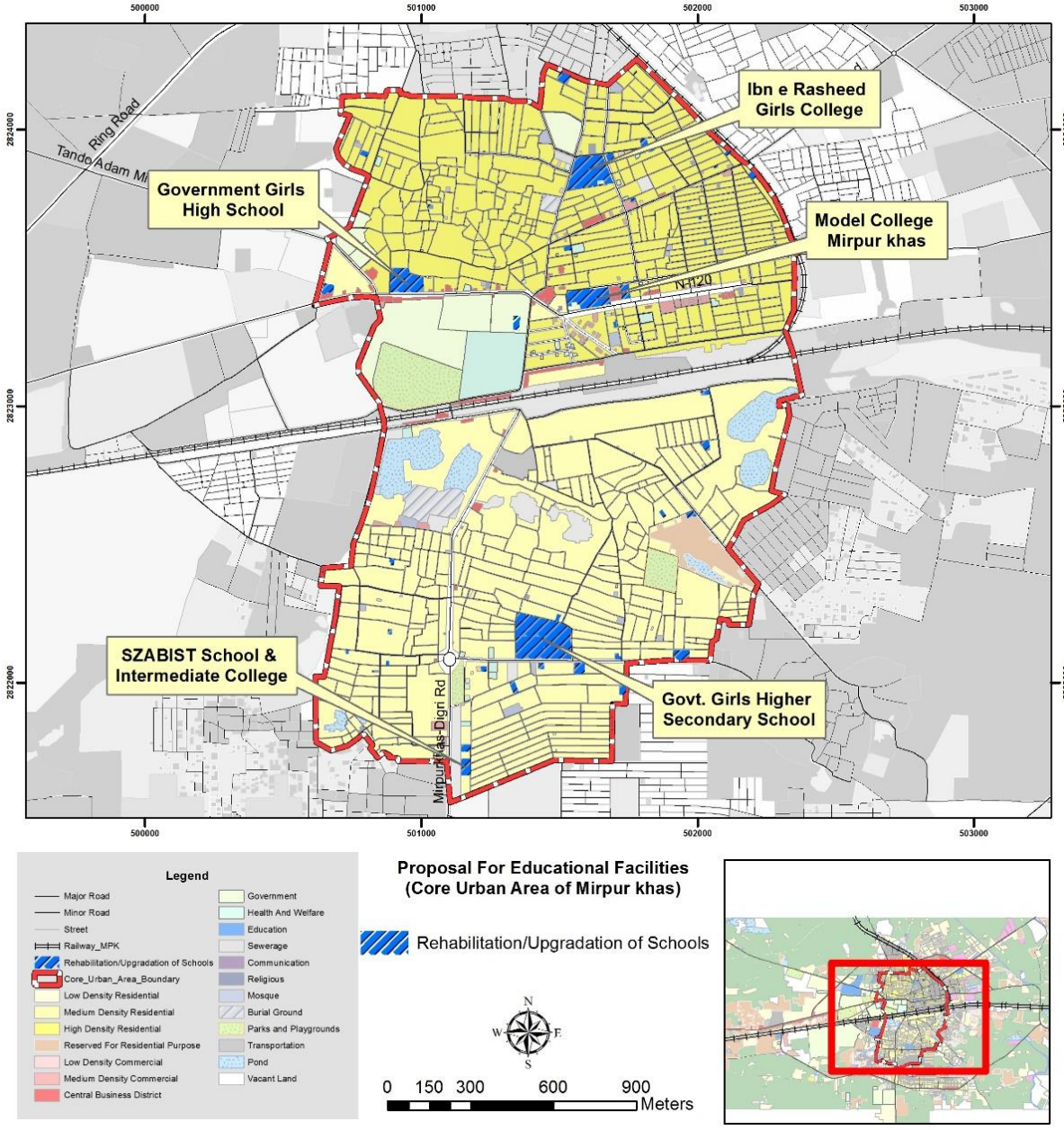


Figure 6:2: Rehabilitation of Educational Facilities of core urban area Mirpurkhas.

6.2 Health

6.1.1 Existing Situation

In district Mirpurkhas, there is one civil hospital having 264 beds, 2 THQ having 82, 38 BHUs having 76 beds and 5 RHCs having 50 beds. There are 8 private hospitals with 254 numbers of beds, Muhammad Medical College having 500 bed and Bhittai Dental & medical college having 50 numbers of beds serving at the Mirpurkhas district. There is only one Leprosy clinic, one Unani Shifa khana and four Maternity homes which serving the whole district population.

Table 6-7: Government and Private Health Facilities with Bed capacity

Type	No.	Beds
Civil	1	264
Taluka	2	82
BHUs	38	76
RHCs	5	50
Private	8	254
Muhammad Medical College	1	500
Bhitai Dental & Medical College	1	50
Total	**56**	**1,276**

Source: Health Profile of Sindh, 2017

The total numbers of dispensaries at district Mirpurkhas is 134 out of which 80 are Government, 4 are Semi government, 25 are L. Bodies and 17 are private. There are 14 M.C.H.C (Mother and Child Health Center) out of them 11 are government. There are 34 T.B clinics in district Mirpurkhas.

The present total number of doctors at district Mirpurkhas are 318.there are 12 Physicians (Govt: 3, Private: 9), 13 Surgeons (Govt: 3, Private: 10), 14 Gynecologist (Govt: 2, Private: 12), 15 Pediatricians (Govt: 4, Private: 11), 22 Dentists (Govt: 14, Private 8) and GMO doctors are 242 (Govt: 211, Semi Govt: 12, L. Bodies: 12, Private: 2).

Health Sector at DHQ Mirpurkhas (Medical & Para Medical Staff)

It is quite disappointing fact that almost 50% of sanctioned posts of doctors and para-medics are vacant. At present, Mirpurkhas DHQ has 179 sanctioned posts of doctors out of which 94 are the actual appointments and remaining are vacant (including both male and female doctors). 63 dispensers, 195 other paramedic and non-paramedic staff is 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 6-8: Medical & Para Medical Staff @ DHQ Town Mirpurkhas

Posts	Sanctioned	Filled	Vacant
Doctors	179	94	85
Staff Nurse	63	0	0
Dispensers and Paramedics & Non-Paramedic Staff	195	0	0

Source: District Health Officer, Mirpurkhas 2017

a. Laboratories

Currently THQ/DHQ is facing lot of problems due to unavailability of Laboratories. Shortage of electricity, surgical instruments, and lack of machinery are the major issues.

b. 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 under supply or delayed supply or lack of procurement powers at the district level. The DHQ/THQ Hospital and other health facilities are facing lot of problems regarding shortage of medicines supply. Most of patients have to purchase medicines from the local market. Presence of sub-standard medicines in local markets adds troubles for the patients.

c. Private Health Facilities

Few private health facilities are working in Mirpurkhas city like: Muhammad Medical College Teaching Hospital, Bhitai Dental College and Al-Mustafa welfare trust.

d. Muhammad Medical College and Teaching Hospital

Currently, tertiary level private health facility, Muhammad Medical College and Teaching Hospital is serving the regional population of South Sindh at Mirpurkhas. According to official sources of MMCH, there are currently 500 beds in Teaching Hospital. MMCH is facilitating 82% of projected population of Mirpurkhas town.

e. Bhittai Dental & Medical College (Bhittai Trust)

Currently, tertiary level private health facility, ***Bhittai Dental & Medical College (Bhittai Trust)*** is serving the regional population of South Sindh at Mirpurkhas. According to official sources of BDMCH, there are currently 50 beds in Teaching Hospital. BDMCH is facilitating 8% of projected population of Mirpurkhas town.

6.1.2 Issues

The following are the major issues in the health sector

- 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
- Large number of Vacant posts of doctors and medical staffs in health institutes of the district.
- Accessibility to health care facilities in remote rural areas is difficult.

6.1.3 SWOT Analysis

S. No.	STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
	Health			
1	1. Availability of DHQ Hospital	1. Limited health facilities in urban area. 2. There are only 56 public health facilities available for total population of town. 3. There are 1376 beds for total population which is not a sufficient number. 4. Shortage of doctors and para medical staff	1. More investment is required through PPP in health sector. 2. More job for doctors. 3. More job for the paramedical staff.	1. Less emergency response to health incidents. 2. Death rate may increase. 3. Difficult to control eradication of epidemics diseases.

6.1.4 Need Assessment

- **Present Need Assessment District Mirpurkhas (Population, Bed Ratio) 2017**

  There are currently 264 beds in civil Hospital, 500 beds in Muhammad Medical College and 50 beds in Bhitai Dental & Medical College, 76 beds in 38 BHUs, 50 beds in 5 RHCs and 254 beds in Private hospitals in district Mirpurkhas. The present bed ratio is one bed for every 1,180 population of Mirpurkhas. As per NRM medium term target of 2 beds per 1000 population for Pakistan. Currently there is need of 1,736 additional beds & 1188 additional doctors to cater the present population of district Mirpurkhas. The shortage of staff, lifesaving drugs / medicines and funds for building maintenance are endemic main problems in the health sector.

Table 6-9: Present Need, Supply & Demand at District level upto 2017

Present Population	Available Beds	Present need	Required Beds	Available Doctors	Present Need	Required Doctors
1,505,876	**1,276**	**3,012**	**1,736**	**318**	**1,506**	**1,188**

- **Future Need Assessment District Mirpurkhas (Population, Bed Ratio) 2037**

  Therefore, the target up to the year 2037 is to provide 2 beds per 1000 projected district population as per standard given in the National Reference Manual on Planning and Infrastructure Standards (NRM).To achieve this target of hospital bed ratio, around 3,327 more beds will be required to fulfill future bed requirement. According to WHO (World Health

Organization) standards doctor to population ratio is 1:1000 so taking that as a reference point the future requirement of doctors comes out to be 1,887 doctors for the future population of Mirpurkhas District. Future Supply, Need and Gap and Population per Bed Ratio is given in table.

Table 6-10: Future Demand, Supply & Need at District level upto 2037

Future Population	Available Beds	Future need	Additional Beds Required	Available Doctors	Present Need	Add. Doctors Required
2,204,523	1,276	4,409	3,133	318	2,205	1,887

6.1.5 Policy Guidelines[25]

- Enhance basic health care by making it more accessible & affordable, efficient, effective and timely.
- Regulate protection from disease and the quality of healthcare across the province.
- 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.

6.1.6 Strategic Development Plan

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

- Improve access to health care 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,
- Expansion of immunization coverage
- Improve health hygiene practices though awareness raising workshops, seminars, and mother and teacher meetings etc. about sanitation, hygiene and communicative diseases.
- Conduct coordination meetings with government health department regarding remote areas where vaccination is not taking place.

I. Long Term Plan

- Tertiary Level Specialized Hospitals to cater District
- Enhancement of Mobile Health Unit for far-flung areas of District
- Availability of ambulance network may be created especially for rural areas

[25] Sindh Vision 2030

- Accommodation facilities for Doctors and Paramedic Staff
- Construction of additional BHUs, RHCs and TCHCs
- Establishment of new units particularly at HQ Town and Tehsil towns as the shift from rural to urban areas is expected to grow exponentially.
- Participation of private sector directly or through public-private partnership
- Research and development programme for doctors and paramedics staff

II. Short Term Plan

- Extension of Civil Hospital for more specialized wards /sections
- Up gradation of BHUs, RHCs and TCHCs.
- Health awareness programme for the deprived population
- Provision of diagnostic facilities, ambulance, pharmacy in all hospitals
- Rehabilitation and improvement in the existing BHUs and hospitals.

6.1.7 Priority Projects

i. Provision of Missing Facilities at Civil 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 Mirpurkhas.

- **Project Benefits**

  This project will provide high quality health facilities and free medicines to the people of District Mirpurkhas.

- **Implementing Authority -** Government of Sindh - Health Department
- **Estimated Cost: 420 Million PKR Approx.**

Project Name	Short Term	Proposed Area (acre) & Lengths (m)	Preliminary Cost (million/- PKR)	Justification
Provision of Missing Facilities at Civil Hospital	Short Term	12.0 acre	200.00	Provision of pharmacy, diagnostic and ambulance facilities and installation of incinerators.

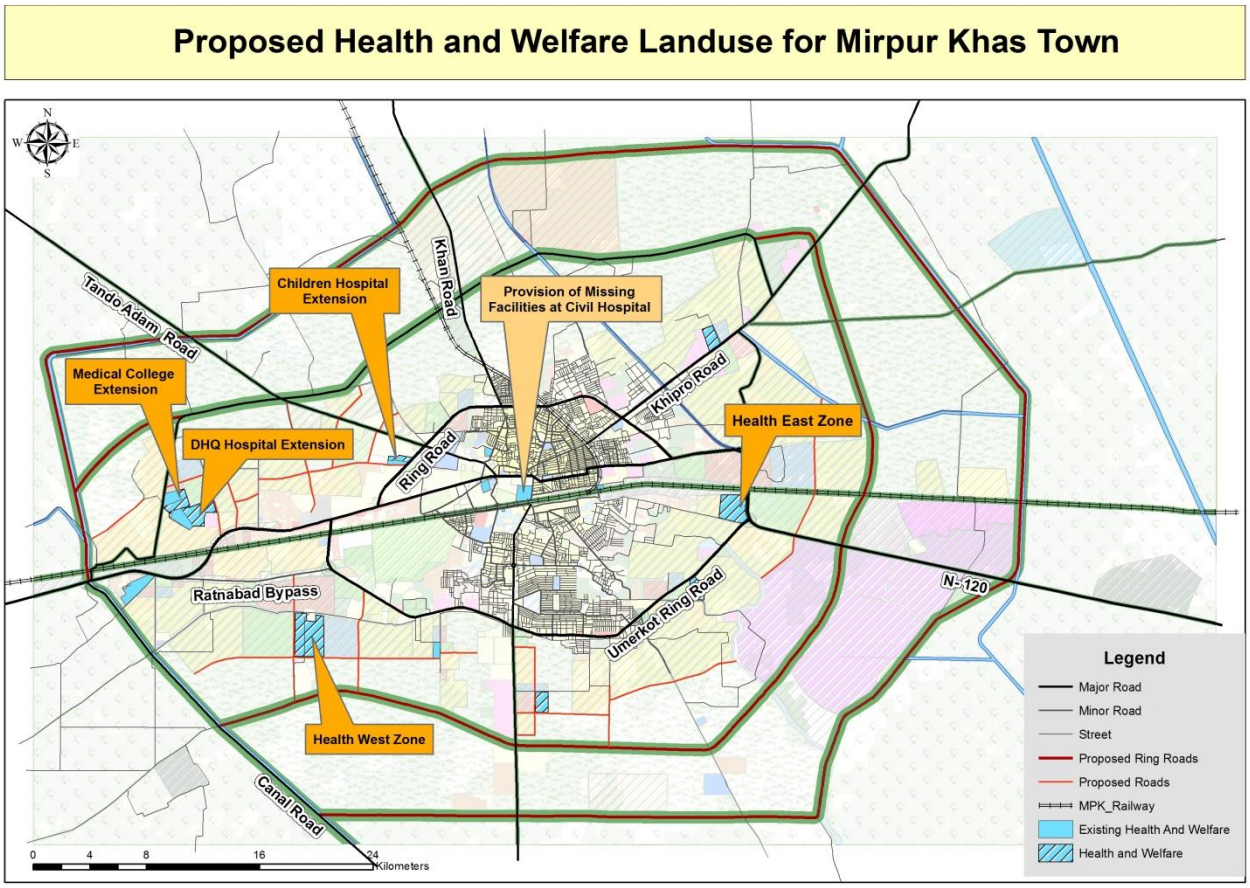


Figure 6:3: Proposed Health & Welfare *Landuse for Mirpurkhas DHQ Town*

6.1.8 Immediate Action Plan for Core Urban Area

Health sector of Mirpurkhas district is proving better health facilities for the population of south. The private clinics and hospital are present there, while RHC is also present just outside the core area. However, mother and child health care hospital is lacking in the core area.

i. Repair & Rehabilitation of DHQ Hospital /Civil Hospital Mirpurkhas

District headquarter Hospital Mirpurkhas is fully functional with lack of basic facilities like; unavailability of incinerator, waiting area for patients, Basic Laboratorial facilities, shortage of doctors' & para medic staff etc.

- Provision of Emergency transport facility (Ambulances) for DHQ Hospital
- Rehabilitation of mother & child care wards with allied facilities, Installation of Incinerators, pharmacy.

Repair & Rehabilitation of DHQ Hospital /Civil Hospital Mirpurkhas						
S. No.	Area / Locality / Address	Area (acre)	Repair & Rehabilitation - Activity Wise Cost in Millions			
			Street / Road / Parking	Provision of Utilities	Public Facilities	Security
1	Repair & Rehabilitation of DHQ Hospital /Civil Hospital Mirpurkhas	**12.20**	**15.38**	**9.95**	**19.22**	**3.84**
Total PKR Rs. Million		**48.39**				

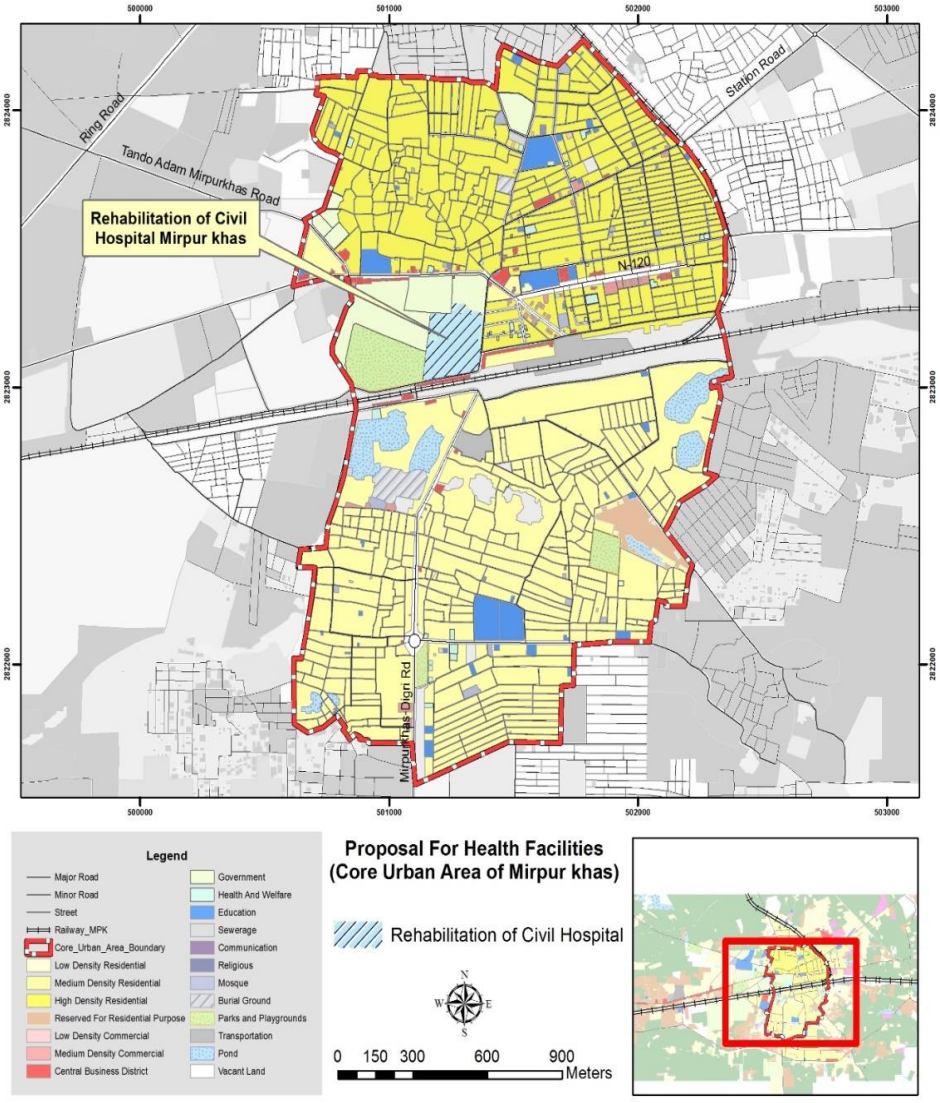


Figure 6:4: Rehabilitation of Health Facilities of core urban area

6.4 Recreational

6.4.1 Existing Situation

The availability of parks in any city is essential for the safe and healthy environment. Mirpurkhas recreational facilities includes five parks, two cricket ground, two hockey ground and one football ground but due to the lack of management these may hardly be classified as proper recreational facilities as per standard requirement.

6.4.2 Public Parks

Mirpurkhas is famous for its pleasant environment & greenery. Although it has lost some of its green glory due to high level of water table of saline, Mirpurkhas town has more than seven public parks located in housing societies to provide passive recreation to its residents. The local government parks wing is responsible to maintain & development of parks and plantation in incidental open spaces.

Below is the list of parks & playgrounds present in Mirpurkhas district.

i. *Nazeer Hussain Park near Teen Talwar Chowk*
ii. *Chakki Para Park near Madina Masjid*
iii. *Jamnadas Park near Fiazan-e-Madina Madarsa*
iv. *Baldia Park near State life Building*
v. *Parda Park near saint Traza Hospital*
vi. *Ali Talpur Sports Ground*
vii. *Jinnah Ground*
viii. *Gama Stadium (Near DC Office)*
ix. *Khipro stand ground*

6.4.3 Clubs

The city has several clubs providing community recreation, passive as well as active, to its members. List clubs is given below;

- ✓ Mirpurkhas Gymkhana (Mirpurkhas Gymkhana mentioned above has the facilities of a Squash Court, Badminton Court and Gymkhana)
- ✓ Mirpurkhas Press Club
- ✓ Mirpurkhas Rotary Club
- ✓ Citizen Gymkhana

No historical place or cultural heritage exists to be preserved in the core urban area of Mirpurkhas. However, conservation, restoration and revitalization of cultural heritage buildings (such as old shrines, graveyards and mosques in Mirpurkhas) should be done on immediate basis.

6.4.4 SWOT Analysis

S. No.	STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
Recreational and Sports				
1	1. Local environment of the town supports green Urbanism 2. Five parks are present in DHQ 3. Heritage sites are also present 4. Availability of both passive and active recreational facilities i.e. Two cricket grounds, one hockey ground & one football ground 5. There is also a museum and 2 libraries	1. Shortage of budget 2. Shortage of Water facility to maintain green spaces, green belts and trees plantation 3. Lack of maintenance of existing recreational facilities.	1. Air pollution reduction. 2. Healthy environment. 3. Protection of natural habitat. 4. Policy formation required for the proper maintenance of existing recreational facility. 5. Revenue can be generated by maintaining aesthetically the existing facilities. 6. Construction of Family parks	1. Give birth to passive recreation 2. Obesity 3. Loss of cultural values

6.4.5 Need Assessment

- According to Consultants survey, there is 2.01% of area for parks and playground but due to high residential land use there is need have many other parks in core urban area
- Shortage of Public Park, playgrounds and recreational facilities.
- Available Recreational facilities are scarce and in dilapidated condition.
- Lack of interest of local government for provision of recreational health facilities
- There is a pond available in core urban area of Mirpurkhas which should be re-organized and converted into recreational space like rafting, boating, swimming or for any other entertainment purpose for the residents of the Mirpurkhas.

6.4.6 Policy Guidelines[26]

- 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;

[26] NOPRA 2005

- Clean air and clean water and other environmental objectives are vital components of quality outdoor recreation experiences; and providing quality recreation opportunities
- Mirpurkhas needs infrastructure and programmes for sports activities, sport confections, gymnasium and family parks, and children play area and gardens.

6.4.7 Strategic Development 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 Municipal Committee due to danger may be purchased by MC or Local CBO. They may purchase these old houses which have out lived its age and these houses can be converted into small parks with benches, trees and shades. This will help pedestrians to take rest while visiting core urban area of Mirpurkhas.
- Development and preservation of cultural heritage

I. Long Term Action Plan

- Establishment of Sports Complex along with old SRTC bus stand
- Protection of historical places and cultural heritage
- Youth development programme for sports and recreation
- Promote tourism through provision of support facilities
- Promoting Urban Forestation
- New graveyard proposal along Khipro Road.
- Establishment of new open spaces as well as establishment of indoor and outdoor game facilities.

II. Short term Plan

- Rehabilitation and construction of family parks and playground
- Provision of missing facilities in existing recreational areas
- Construction of auditoriums and up-gradations of art councils
- Establishment of synthetic grounds, playing turf (for hockey, football) and indoor gym facility.

6.4.8 Priority Projects

i. Construction/ Rehabilitations of Recreational Facilities

➢ **Project Justification**

The availability of parks in any city is essential for the safe and healthy environment. Mirpurkhas recreational facilities includes five parks, two cricket ground, two hockey ground and one football ground but due to the lack of management these may hardly be classified as proper recreational facilities as per standard requirement.

- **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

ii. Conversion of stagnant water pond into lagoon (Near Railways Quarters)

- **Project Justification**

  The availability of stagnanent water ponds in town area threats human health. Malaria and dengue are among the main dangers of stagnant water, which can become a breeding ground for the mosquitoes that transmit these diseases. Stagnant water can be dangerous for drinking because it provides a better incubator than running water for many kinds of bacteria and parasites. Stagnant waste water ponds causes many epidimics / health diseases i.e. maliria, dengue and various skin issues. That's why it is essential to convert waste water pond into useful landuse for the safe and healthy environment, which is near to Railway station. The land will be reclaimed and convert into recrational facilites with Public pivate mode, which may include:

  - Community Hall/Centre
  - Women Development Centre
  - Indoor Gymnasium
  - out door Sports
  - Skill Training Centres
  - City Garden
  - Family Park/Amusement Park
  - Well designed urban spaces

- **Project Benefits –** this project may benefit for the safe and healthy environment.
- **Implementing Authority** Sindh Government, Local Government and private investors
- **Estimated Cost:** 444.13 Million PKR Approx.

Project Name	Short Term	Proposed Area (acre)	Preliminary Cost (million/-) PKR	Justification
Rehabilitation of Gama Stadium	Short Term	8.5 acre	133.58	**A.** Spectator area 20,000 sft. Repair & Rehab; @ the rate of 1800/ sft. - Total 36.00 Million for Rehabilitation of Spectator area. **B.** Playground Area 4.48 Acres (195,149 sft, Repair & Rehab;

Project Name	Short Term	Proposed Area (acre)	Preliminary Cost (million/-) PKR	Justification
				@ the rate of playground @ rate of 500/ sft. ○ Total 97.58 Million for Rehabilitation of playground area. **A+B = 133.58 Millions**
Rehabilitation of Satellite Town Sports Ground	Short Term	5.15	112.17	Playground Area 5.15 Acres (224,334 sft, Repair & Rehab; @ the rate of playground @ rate of 500/ sft. Total 112.17 Million for Rehabilitation of playground area.
Provision of missing facilities in existing Parks i.e. Jamna Das Colony Park, Nazeer Hussain Park and Gulastan-e-Baldia Park	Short Term	5.5 acre	148.38	5.5 acre = 239,580 sft, at the rate of 1800/- PKR per sft construction cost with all infrastructure cost. (30% Built-up area).
Conversion of stagnant water pond into lagoon	Short Term	12.00 Acre	50.00	These funds will be utilized only for land reclamation, further developed will be based on PP Mode

Proposed Recreational Landuse for Mirpur Khas Town

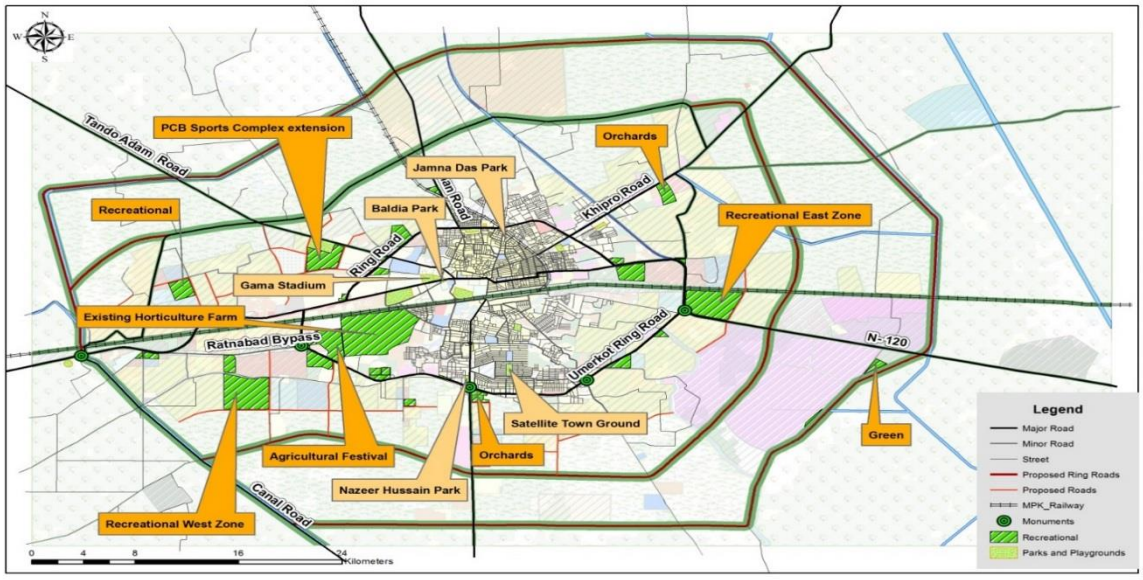


Figure 6:5: Proposed Recreational *Landuse for Mirpurkhas DHQ Town*

Salient Features of Planning

- In addition to recreation, the existing PCB Ground is also proposed to expand and upgrade as per standard. Another important feature of the town is a tradition of Mango Festival, in this regard agricultural festival area is marked adjacent to horticulture area.

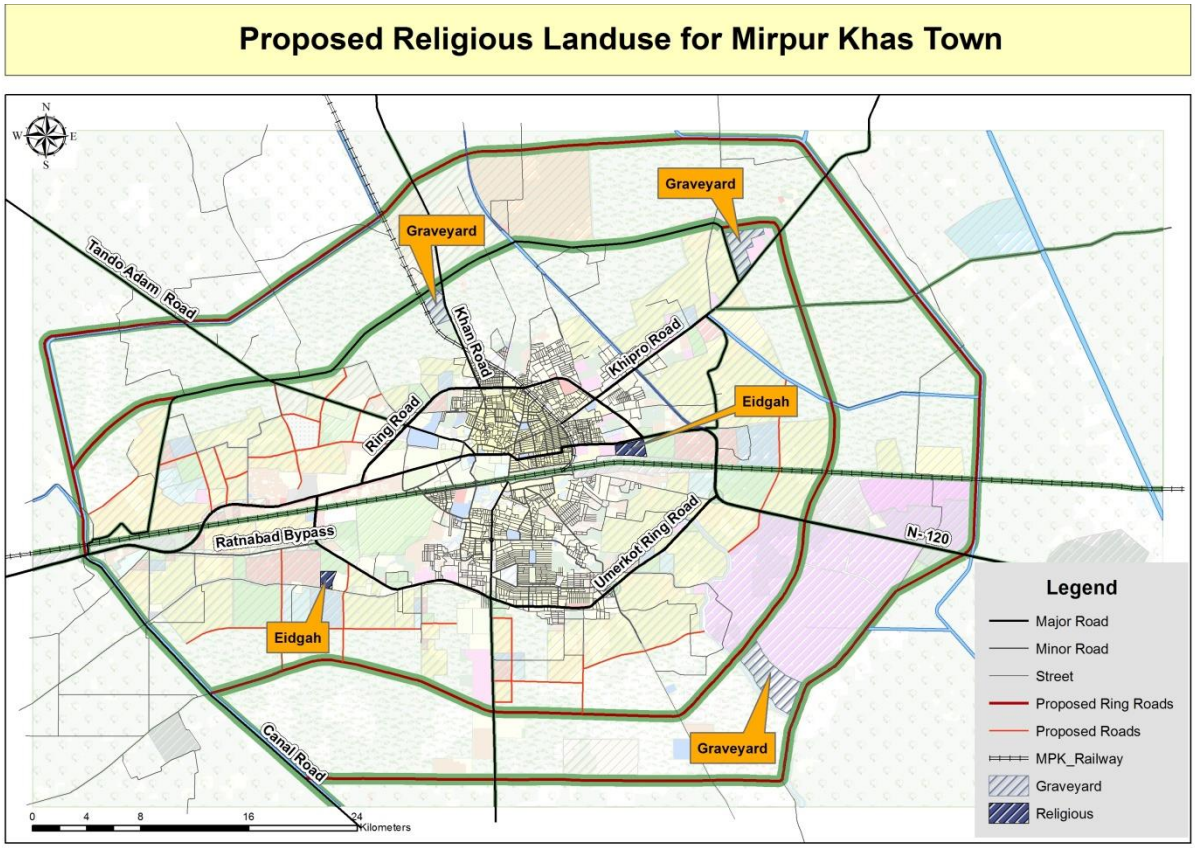


Figure 6:6: Proposed Religious *Landuse for Mirpurkhas DHQ Town*

Salient Features of Planning

- The areas for graveyards have also been reserved at the far ends of the proposed town. However, these are accessible from Khan Road, Khipro Road and Ring Roads.

6.4.9 Immediate Action Plan for Core Urban Area

The availability of parks in any city is essential for the safe and healthy environment. Mirpurkhas recreational facilities includes five parks, two cricket ground, two hockey ground and one football ground but due to the lack of management these may hardly be classified as proper recreational facilities as per standard requirement.

There is an acute shortage of compulsory open spaces in core urban area of Mirpurkhas DHQ Town. Present sports & recreational facilities consist on Shamma Ground, Jinnah Ground & Chandni Chowk Park.

- **Provision of Open Spaces and Parks:**
  All three sports & recreational facilities present in core area are in poor condition, therefore provision of repair & rehabilitation of existing facilities on immediate basis is proposed. According to Consultants survey, there is 2.01% of area for parks and playground but due to high residential landuse there is need have many other parks in core urban area and existing parks should be restored and maintained. Availability of recreational facilities can be a vehicle for positive social change for youth. Promoting recreational facilities benefits beyond the traditional aspirations of improved health and wellbeing. Various open land parcels are present in core town area. And mostly vacant land parcels are occupied by stagnant water and which could be re-organized and converted into recreational open spaces.

RECREATIONAL FACILITIES REHABILITATION						
S.No	**Heritage / Cultural Site Name**	**Area (acre)**	**Rehabilitation Required Area wise or job wise cost (PKR)**			
			Street / Road / Parking	**Utility infrastructure**	**Public Facilities**	**Security**
1	Rehabilitation of Shamma Ground	3.73	3.73	4.29	4.66	0.93
2	Rehabilitation of Jinnah Ground	0.53	0.53	0.61	0.66	0.13
3	Rehabilitation of Chandni Chowk Park	1.43	1.43	1.64	1.79	0.36
Total		**5.69**	**5.69**	**6.54**	**7.11**	**1.42**
Total PKR Rs. Million		**20.77**				

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 includes 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 w.r.t to secured environment.

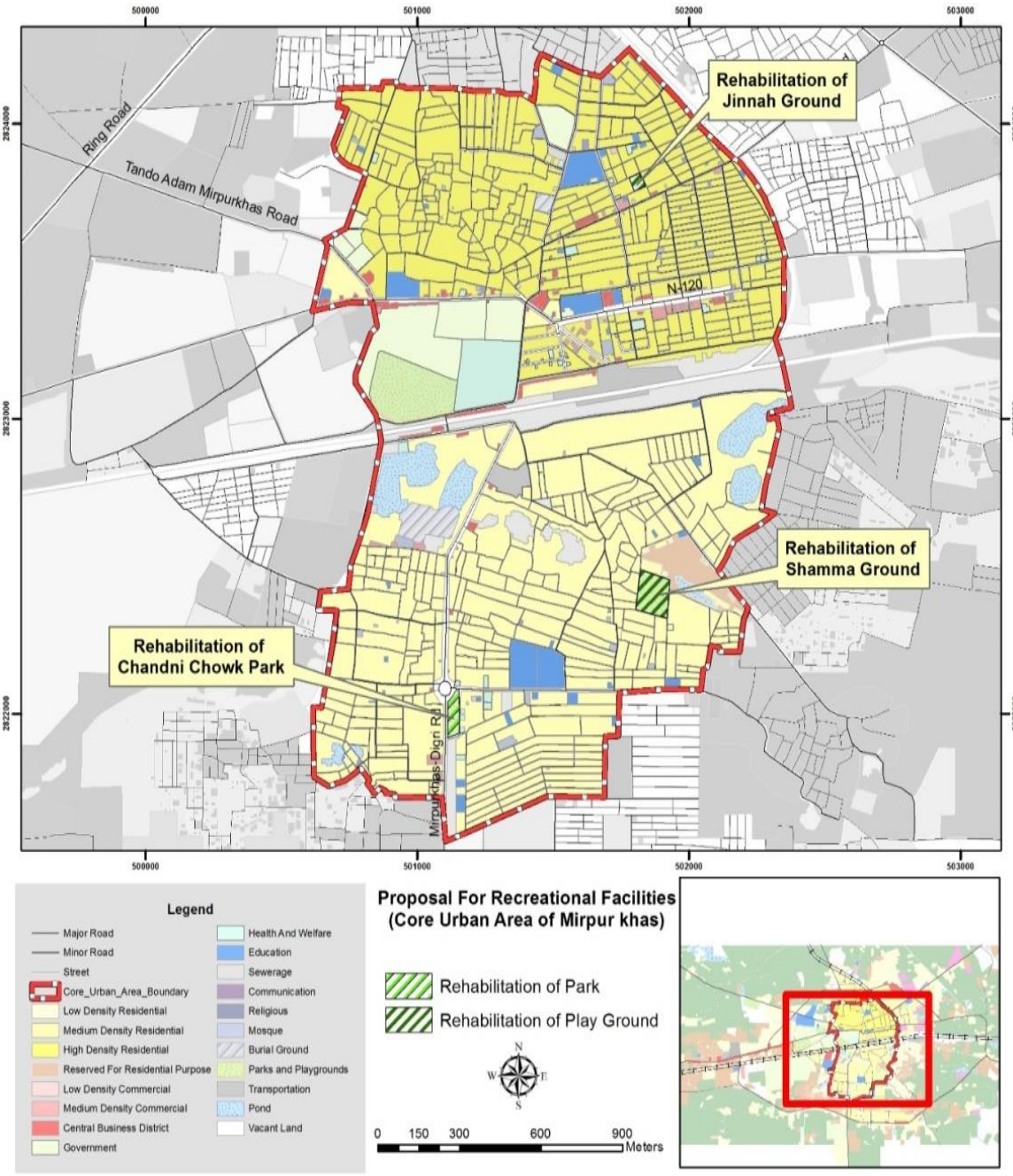


Figure 6:7: Proposed site for Recreational facilities

7 ECONOMIC DEVELOPMENT PLAN

Economy of an area or town plays an important role for its sustainability and further growth. Mirpurkhas contributes significantly in agriculture sector of Sindh because its climate is suitable for production of various food items including the Kharif crops of maize, rice, sugarcane, cotton and bajra and Rabi crops of wheat, barley, Gram and barseen. In addition to these, fruit orchards are abundant in this district. The land structure of this district comprises of plane fertile lands suitable for agriculture. Due to a well-organized canal system, the whole district has water availability, resulting in the grasslands and irrigated crop lands.

Economy can make a town a live town from dead town. The progress of economic activities in district depends upon facilitation to farmers by using modern techniques now and surely in the future. The district as a whole is well-known due to its characteristic of agriculture engine and Mango Production which serves all over Sindh by using market of Hyderabad, the regional Hub. It is situated on a main regional corridor which connects Umerkot, Sanghar and Nawabshah with Hyderabad.

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.[27]
- Increase farmer's income.[28]
- 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.

[27] ADP 20017-18 Industries Punjab
[28] ADP 2017-2018 Agriculture Punjab

- Facilitate social support and gender equality.
- 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.

7.1 Agriculture

7.1.1 Existing Situation

The land structure of this district comprises of plane fertile lands suitable for agriculture. Due to a well-organized canal system, the whole district has water availability, resulting in the grasslands and irrigated crop lands. It has a good agricultural and irrigated area in the main portion and vast stretches of vegetation lined up in many Places with avenue of trees.[29]

Mirpurkhas contributes significantly in agriculture sector of Sindh because its climate is suitable for production of various food items including the Kharif crops of maize, rice, sugarcane, cotton and bajra and Rabi crops of wheat, barley, tomatoes, onions, red chillie, Gram and barseen. In addition to these, fruit orchards are abundant in this district. Deh statistics have reported that fruit orchards are widespread in 67% of the Dehs.[30] The annual three-day National Mango is held at Mirpurkhas. Annually mango display festival organized at Mirpurkhas and more than 400 orchard owners participate in world famous event. Mango festival is been organized by district administration since last 54 years to promote mango of Mirpurkhas in the international market.

The district Mirpurkhas has a well-established canal irrigation system. With the opening of Jamrao canal in the British era, the importance of this district increased significantly. Jamrao canal originates from the right bank of Nara canal and serves an area of about 935,000 acres. Two major canals i.e., Jamrao canal, West Branch Canal, and their distributaries irrigate district Mirpurkhas.

In this district, there are four distributaries, two minor and thirty-four outlets directly drawing water from Jamrao canal. The West Branch Canal is the largest offshoot of Jamrao Canal having a design capacity of 900 cusecs to serve the cultivable area of 230,800 acres. The water distribution system of West Branch Canal consists of two distributaries, three minors and sixty two outlets drawing water directly from the west branch.[31]

In the year 2015-16, 132,605 hectares was irrigated out of 167,571 hectares whereas in 2016-17 132,608 hectares was irrigated out of 166,397 hectares which shows that the irrigated area becomes un-irrigated by means of non-supply / short supply of irrigated water which could be one of cause due to low economic conditions of people of Mirpurkhas. The table below gives information regarding sources of irrigation water supply in the district[32].

- **<u>The Land Utilization</u>**

  The total geographical area of district Mirpurkhas is 353,000 hectares out of this cultivated area is up to 309,000 hectare. Out of cultivable land during 2016-17, actually cultivated to 166,000 hectares leaving 143,000 hectares as current fallow. Waste land available to 17,000 hectares, whereas, 25,000 hectares are not available for utilization. There was a Minor

[29] 1998 District Census Report of Mirpurkhas
[30] (PESA-District Profile Mirpur Khas).
31 Ibid
32 Sindh Development Statistics 2018

changing in land utilization occurs in district Mirpurkhas within one year as mentioned above the land utilization was decreased due to inadequate supply of irrigation water and high rates of fertilizers and pesticides.

Table 7-1 Comparison of Land Utilization of District Mirpurkhas

Sr. No	Type of Cultivated area	2012-13	2013-14	2014-15	2015-16	2016-17
1	Cultivated area	314,000	312,000	313,000	311,000	309,000
2	Current Fallow	150,000	141,000	143,000	143,000	143,000
3	Net area sown	164,000	166,000	170,000	168,000	166,000
4	Cultivated Waste	18,000	17,000	17,000	17,000	17,000
5	Not available for cultivated	20,000	21,000	22,000	24,000	25,000

Source: Development Statistics of Sindh 2012 to 2018

Based on the above figures, crops production will be increased by utilizing "Cultivable waste" land and the yield per hectares will also improve with availability of 17,000 hectares "Cultivable waste" land. As mentioned above the land utilization was decreased due to unsupplied of irrigation water and high rates of fertilizers and pesticides.

7.1.2 SWOT Analysis

S. No.	STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
	Agriculture			
1	1. Strong agriculture based economy 2. Strong network of distribution of agro based products 3. Suitable climate for production of various food & crops in both seasons 4. This district is famous, all over Pakistan, for its mangoes	1. Unavailability of modern techniques 2. Less revenue generation by local government 3. Lack of agriculture credit facilities and microfinance options 4. Shortage of irrigation water	1. Job opportunity for rural population 2. Strong transport system 3. Outside investors show interest in agriculture sector	1. Shortage of skilled professionals 2. Less efficient local markets. 3. Shortage of agro based industries 4. High land prices

7.1.3 Issues

- The sugarcane prices are unstable in Mirpurkhas 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)
- Development of Agriculture research centers.
- 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.

7.1.4 Strategic Development Plan

- Modernize and revitalize agriculture.
- Improved food production to reduce hunger including emergencies and disasters that require agricultural support.
- Agricultural technology development, dissemination and adoption.
- Cross-cutting issues-policy formulation and review, agricultural statistics.
- Use of modern techniques for cultivation by choosing healthy seeds and fertilizers for increasing yield per acre.
- Enhancement of the storage capacity.
- Provision of warehouses, food gowdowns for storage of agricultural products.
- Construction of covered gowdown.

ii. Long Term Plan

- Enhancing crop productivity through adoption of new technologies
- Increase the supply and quality of agricultural crops
- Provision of warehouses for storage of agricultural products

iii. Short Term Plan

In order to improve the crop production improvement and intervention from government departments are need 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

- Rehabilitation of canals and Re-Sectioning/Relining of major &minor canals and drainage system which results in Improvement of water supply to agricultural land that in turn increase in crop production for internal consumption & exports
- Measures to reduce water logging and salinity
- Construction of farm to market roads

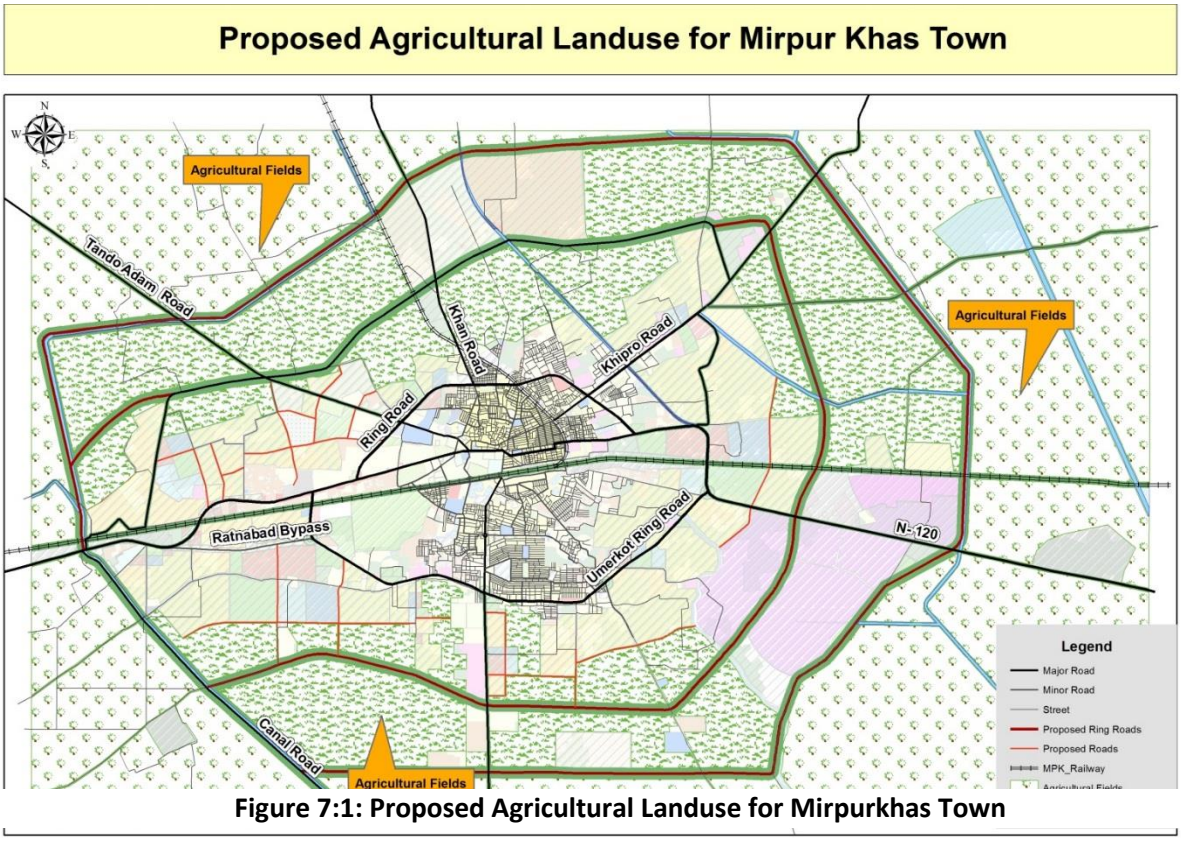


Figure 7:1: Proposed Agricultural Landuse for Mirpurkhas Town

7.1.5 Salient Features of Planning

- The areas reserved for agriculture in between the Ring Roads will be helpful in restricting housing development and preserving the agricultural farms from the onslaught of the housing projects by private sectors. Furthermore the rich agriculture areas within the existing town, are recommended to reserve as orchards.

7.2 Livestock

7.2.1 Existing Situation

Animal population of district is highest number of Goats having 666,000 heads followed by cattle 202,000 heads and buffalos 234,000. Mirpurkhas town's animal's population is also comprised of buffalos 4357, cattle's 935, goat 2100, and sheep's 400. There are total 240 Dairy Farms in the district Mirpurkhas. The marketing of the dairy products from district Mirpurkhas is mainly in local markets of

towns and are also marketed in large cities like Karachi through the proper transportation mechanism. There are numbers of poultry form in Mirpurkhas, which are traded to other cities of surrounding areas of Mirpurkhas District.

Table 7-2: Number of Livestock

Sr. No.	Livestock by Category	Total Livestock Population of District	Total Livestock Population of Town
1	Cattle	202,000	935
2	Buffalos	234,000	4,357
3	Sheep	68,000	400
4	Goats	666,000	2,100
5	Camels	3,000	15
6	Asses	15,000	150
Source: Livestock Department Mirpurkhas			

7.2.2 Veterinary Service

The services for veterinary in district Mirpurkhas are deficient because District Mirpurkhas 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. The Livestock is served by 10 veterinary Hospitals, 50 centres, 17 doctors and 23 Paramedics.

Table 7-3 Veterinary Service

Sr.	Items	Numbers
1	Veterinary Hospital	10
2	Veterinary Centers	50
3	Veterinary Doctors	17
4	Veterinary Paramedics	23
a	Vaccinated	303,422
b	Treated	46,292
c	Castrated	4,532
Source: Sindh Development Statistics/ Livestock Department Mirpurkhas 2018		

Other veterinary services include; Veterinary Dispensary Kot Ghulam Mohammad, Veterinary Dispensary Digri, Veterinary Dispensary Tando Jan Muhammad, Veterinary Dispensary Tando Jan Muhammad, Veterinary Center Sher Khan Jarwar, Veterinary centre Khair M. Laghari and Veterinary Center Ghulam Mustafa Jarwar.

7.2.3 Issues

- 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
- Usage of livestock produce i.e. meat. Hides and milk products in appropriate manner in a sustainable way.

7.2.4 SWOT Analysis

S. .	STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
	Livestock			
1	1. Animal population of district is high as compare to other neighboring districts 2. There are total 240 Dairy Farms in the district Mirpurkhas 3. Local skills and vet services available 4. Favorable environment is available for livestock growth (Pasture) and poultry farming in surroundings of city	1. Large scale breading has not developed 2. Lack of facilities to industrialize livestock based products 3. Livestock in the district suffers in particular from shortage of high quality feed	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)

7.2.5 Need Assessment

The services for veterinary in district Mirpurkhas are deficient because District Mirpurkhas 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.The Livestock is served by 10 veterinary Hospitals, 50 centres, 17 doctors and 23 Paramedics.

7.2.6 Strategic Development Plan

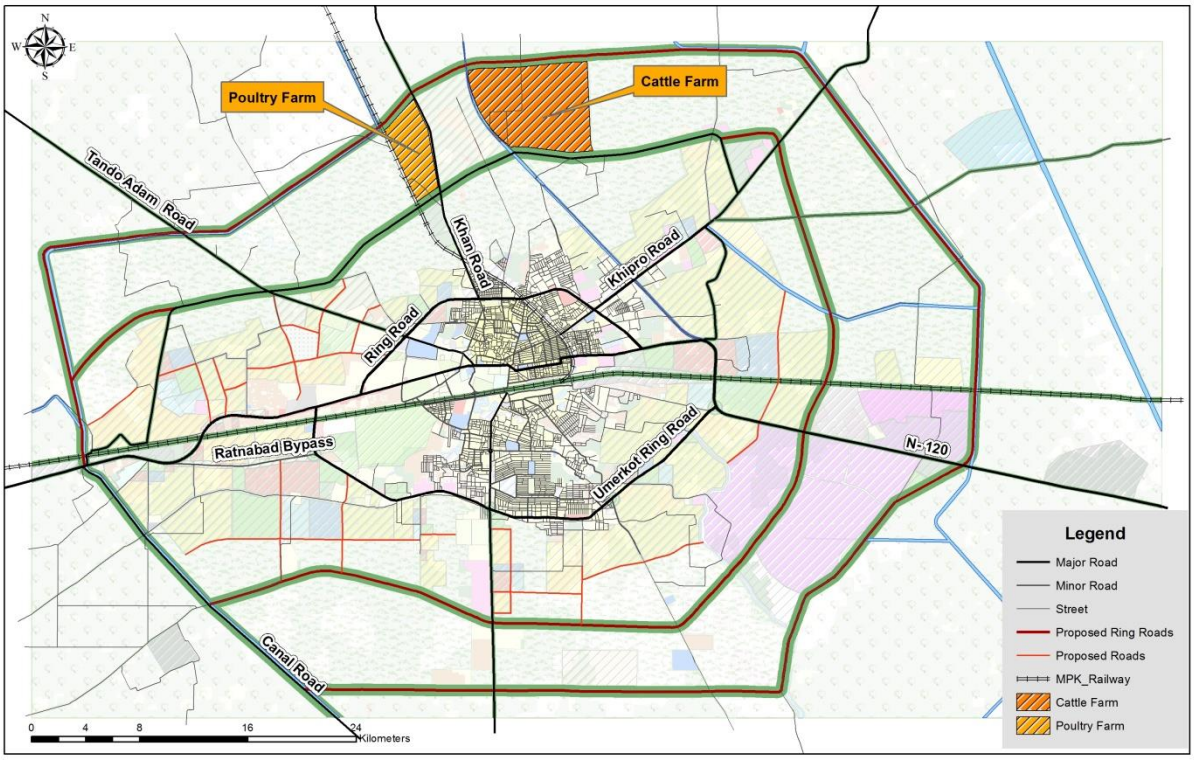
- Establishment of model livestock farms linked with improved supply chain and value addition.

- Establishing new cattle & dairy farms that lead to increase in number of cattles and quantity of milk.
- Provision and Expansion of Veterinary Services.
- 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.

7.2.7 Salient Features of Planning

- The cattle and poultry areas are proposed in the northern direction in between two Ring Roads, to limit the town development further and it will also benefit the population of nearby villages and other settlements.

Proposed Livestock Landuse for Mirpur Khas Town



7.3 Fisheries

7.3.1 Existing Situation

There are 44 Fish production farms on private land and 4 private fish production farms are in district Mirpurkhas. The number of Dhandhs (Ponds) in district are 235 and the annual fish production is 26 M.Tons in Mirpurkhas.

Table 7-4 Annual Fish Production		
Fisheries-Water bodies, Fish farms & Production (M.Tons)		
1	Annual Fish Production (M.Tons)	26.00
2	Number of Fish Farms	44
3	Dhandhs	235
4	Number of Boats	10
5	Number of Private fish ponds	4
6	Number of Fishermen	88
Source: Fisheries Department Mirpurkhas 2017		

7.3.2 Issues

- Lease of fishing rights, conservation, management and promotion of fisheries
- Training through open training schools
- Local publicity and awareness
- 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

7.3.3 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

- Lease of fishing rights, conservation, management and promotion of fisheries
- Local publicity and awareness
- Enforcement of fisheries enactment in their respective domain
- Fish seed stock replenishment in natural water bodies in their respective domain
- Aquaculture development activities through modern techniques
- Collection of statistical data of fish and fish resources in their respective domain

7.3.5 Recommendations for Livestock & Fisheries

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 for increasing number of livestock and dairy farms to meet the requirement of meat and milk. Similarly new fish farms and poultry farms in the districts need to be established to generate production and income of the people engaged in this business.

7.4 Industries

7.4.1 Existing Situation

Industries in Mirpurkhas are mainly associated with agriculture. The famous among these are the sugar mills since sugarcane is cultivated on large scale in this district. In the census of manufacturing industries 2000-01, 18 industries were reported in this district with a total asset value at 1.6 billion rupees in that year. These industries reported a daily employment of 2,899 persons in 2000-01. Most of these industries are situated in Mirpurkhas taluka. These include sugar mills, cotton factories and flour mills.

There are four Sugar Mills in Mirpurkhas District of which one is situated in the District Headquarter Town. The Sugar cane requirement of the mill is, therefore, being fulfilled by procuring Sugar cane within the district itself.

Table 7-5: Sugars Mills with Production

S. No	Industry Sugar Mills	Sugarcane Crushed	Sugar Production
1	**Digri Sugar Mills**	417,009	42,954
2	**Al-Abbas Sugar Mliis**	560,786	58,730
3	**Mirpurkhas Sugar Mills**	616,716	66,573
4	**Tharparker at Kot Ghulam Mohd**	307,767	29,134

A limited area of 14,907 hectares was brought under Sugar cane cultivation. The field production of 910,603 tonnes at 58.8 tonnes yield per hectares happens to be one higher side in terms of intensity. The Sugar Cane requirements of the mill are therefore being fulfilled by procuring Sugar cane within the district itself.

One Industrial Estate is established under Sindh Small Industries Corporation in Mirpurkhas district which is located in District Headquarter Mirpurkhas. There are 8 small Industrial Units functioning as self-employment schemes and 132 units are functioning under small Industrial Estates.

i. Types of Industries

Mirpurkhas is primarily an agro-based as well Industrial based district and the industrial base in this district is dependent on the agriculture. This district has established industries which are related to the agriculture i.e. the raw material, for these industries, is provided by the agriculture sector. Besides, this district is the largest Mango Farming in Pakistan. Besides there are sugar mills, flour mills, in this district, the list of industry is given bellow:

Table 7-6: List of Industries in Mirpurkhas with Employment

Sr. No	Industry Name	Capacity	Employment
1	**Amol Cotton Factory**	140 Bales/8 8Hour	120
2	**Basu Mal Wadhu Mal Cotton Factory**	120 Bales/8 8Hour	70
3	**Bhittai Cotton Factory**	70 Bales/ 8 hour	50
4	**Chandija Roller Flour Mill**	400 Bags/8Hour	20
5	**Digri Sugar Mill**	4000mt	350
6	**Hinglaj Cotton Factory**	130 Bales/8Hour	110
7	**Ishwarabad Cotton Factory**	130 Bales/8Hour	100
8	**KK Cotton Factory**	80 Bales/8 Hour	70
9	**Lal Cotton Factory**	70 Bales /8 Hour	60
10	**Majeed pumps**	-	20

ii. Occupation

The main occupations of the people of District Mirpurkhas are agriculture, trade, labour / skilled labour, prominent educationist, agriculturist, professionals like engineers, doctors, technical experts especially in the field of sugar industry, oil exploration, lawyers, planners, housing experts are playing their prime role in the development / economical activities of the district. The occupational involvement in industry is also overwhelming. A considerable segment of society adopts government / private service as their occupation. Other Industries Include:

Table 7-7: List of Industries in Mirpurkhas		
S. No.	**Name**	**Type**
1.	Mirpurkhas Sugar Mill	Food, Beverages & Tobacco
2.	Najam Sugar Mill	Food, Beverages & Tobacco
3.	Tharparkar Sugar Mill	Food, Beverages & Tobacco
4.	Mehran Cotton Factory	Metal & Metal Products
5.	Memon Cotton Factory	Metal & Metal Products
6.	Pursana Cotton Factory	Metal & Metal Products
7.	Pehlu Mal Moti Ram	Metal & Metal Products
8.	Sattari Cotton Factory	Metal & Metal Products
9.	S.L.D Cotton Factory	Metal & Metal Products
10.	Sultan Abad Model Cotton Factory	Metal & Metal Products
11.	Zaminndar Cotton Factory	Metal & Metal Products
12.	Memon Roller Flour Mill	Food, Beverages & Tobacco
13.	Noor Shah Roller mill	Food, Beverages & Tobacco
14.	Siddiqi Flour Mill	Food, Beverages & Tobacco
15.	Sindhri Roller Mill	Food, Beverages & Tobacco
16.	Thar Roller Flour Mill	Food, Beverages & Tobacco
17.	Majeed pumps	Metal & Metal Products
18.	Shareef Soven Plant	Food, Beverages & Tobacco

iii. Industrial Zone

One Industrial Estate is established under Sindh Small Industries Corporation in Mirpurkhas district which is located in District Headquarter Mirpurkhas. There are 8 small Industrial Units functioning as self-employment schemes and 132 units are functioning under small Industrial Estates.

7.4.2 SWOT Analysis

S. No.	STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
	Industrial			
1	1. Mirpurkhas is primarily an agro-based and the industrial base in this district is dependent on the agriculture	1. Less job opportunities for other sectors 2. Less job employment in agriculture sector	1. Reliable environment is present for establishment of export industries 2. Based on the success story of present industries, more	1. Isolated economy 2. Uneducated social group 3. Air pollution

S. No.	STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
	2. There are 3 Industrial Areas and a Sugar Mill located in Mirpurkhas District Headquarter 3. Sugar cane production is substantial & more people are employed in industrial sector		industries can be installed in future 3. By increasing the quality of present industrial products the industrial sector can be enhanced.	4. Water contamination to Canals

7.4.3 Need Assessment

- Vocational training to Women force should be encouraged for establishing cottage industry in the district.
- Small industrial zone need to be extended

7.4.4 Strategic Development Plan

- Sufficient market infrastructure to ensure optimal value addition
- Development of Industrial Estates / Apparel Park / Special Economic Zone in District
- Customized lending and micro financing to small industries
- Heritage saving through empowerment of artisans for development of handicrafts
- Provision of vocational training and employable skills to the unemployed youth of the district
- Paradigm shift from industrial agriculture to diversified agro ecological Systems
- Establishment of new industrial estates/Zone

I. Long Term Plan

- Provision of infrastructure for establishment of new industries.
- Enhancement of colonization in SIEs through provision of missing facilities
- Physical revival of existing oil fields and their expansion
- Enhancing Crop Productivity through adoption of new technologies.
- Extension of Sindh Industrial Estate and warehouses
- Support industrial development.
- Modernize and revitalize the service sector.

II. Short term plan

- Support industrial development and Investors.
- Construction / Extension of Industrial Estates to meet the additional demand.

- Modernize and revitalize the service sector.
- Construction / increase storage capacities of cold storage / warehouses for agro products.
- Streamline procedure for setting-up Small & Medium scale industries.
- Encourage Foreign Direct Investment (FDI) with one window operation.
- Simplify collection of taxes and government dues.

7.4.5 Priority Projects

i. Revitalization of Industrial Estate of Mirpurkhas (Digri –Mirpurkhas Road)

- **Project Justification**

  At the present, Mirpurkhas is providing sufficient employment through its industrial estate, the district has established industries which are related to agriculture i.e. the raw material, for these industries, is provided by the agriculture sector. Besides, there are cotton factories, sugar mills, flour mills, and rice mills in this district. Industrial Estate which Established in 1985-86. The total area designated for estate is 51.2 Acres. Currently, estate is lacking necessary Facilities i.e. shortage of Power and Water, there are 177 Plots. There will be a need to take actions with basic aim to retain the situation and attract the future investments.

  While revitalizing the Industrial Estate of Mirpurkhas, the industrial zone must be bifurcated through green belts as buffer zone to limit the adverse impacts of industrial pollution on adjoining residential areas.

- **Project Benefits**

  Increase industrial activity with significant employment generation and overall assistances to the city's economy.

- **Implementing Authority –** Sindh Industrial Development Board. Mirpurkhas Chamber of Commerce and Industry, District Government.

- **Estimated Cost: 256.00** Million Approx. (Short Term

Project Name	Sector	Short Term	Area in Acres	Preliminary Cost in million	Justification
Revitalization of Industrial Estate of Mirpurkhas (Digri – Mirpurkhas Road)	Sindh Small Industrial Development Board.	Short Term	51.2 Acre	256.00	Per acre cost @ 5.0 Million / per Acre

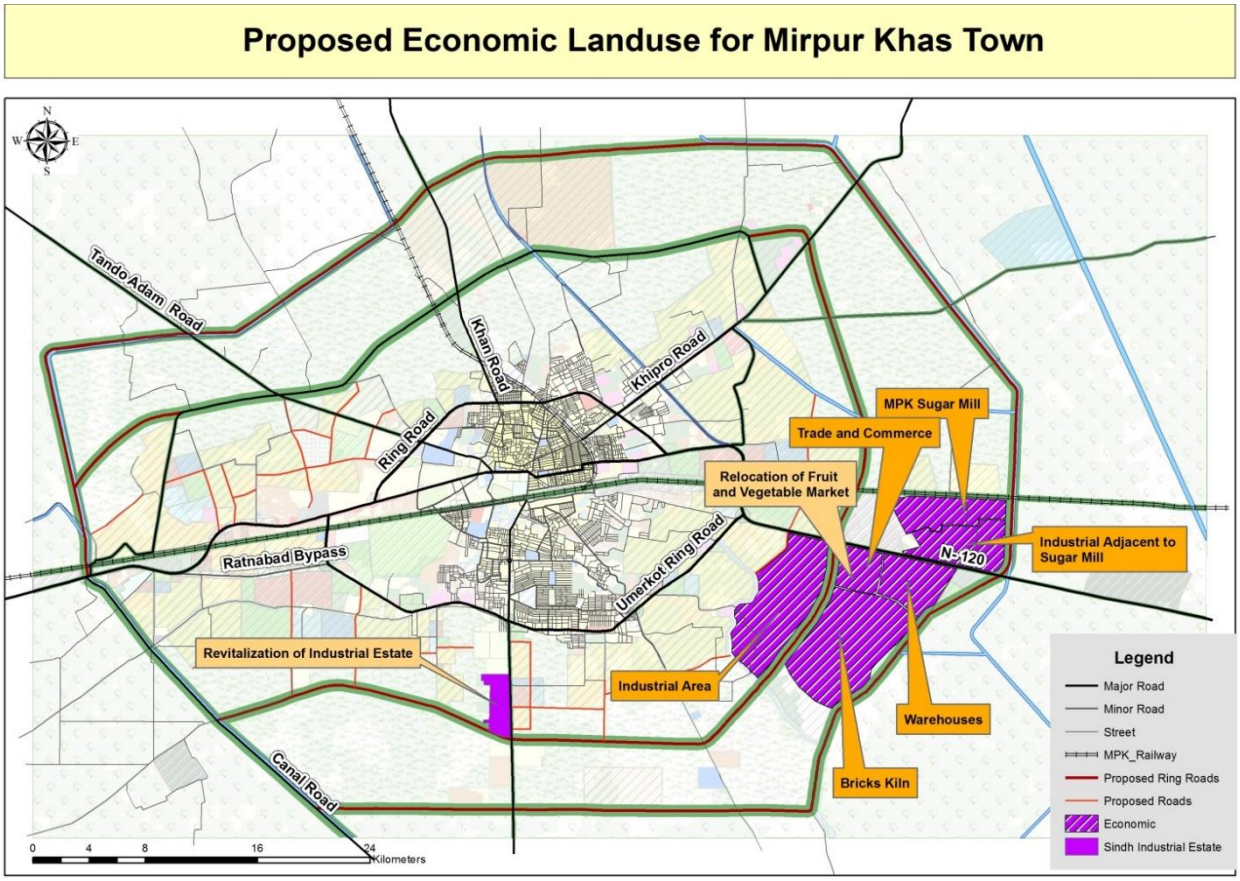


Figure 7:2 : Proposed Economic *Landuse for Mirpurkhas DHQ Town*

7.4.1 Salient Features of Planning

New Industrial Area, Trade and Commerce, Warehouses and Dry Port are placed along Umerkot Road with respect to existing Sugar Mill area along same road. Moreover a much larger area for Brick Kilns is also proposed in between Ring Roads to gather scattered brick production activities for better environment.

7.5 Trade and Commerce

7.5.1 Existing Situation

Mirpurkhas's commercial area is count as 2nd largest market after Hyderabad Sindh. Commercial area of MirpurKhas is serving almost entire region of south Sindh. Different type of markets are part of this main CBD area like; wholesale markets, Traders, traditional embroidery shops (topi ajrak), Gold Smith Auto Shops, schools, clinics and general stores etc. main Hyderabad road covers almost all main institutional buildings, security offices and banks etc.

Along Mohammad Ali Jinnah Road there is communication shop (Mobile customer care center), administrative buildings (District and Session Court Mirpurkhas) and lots of food restaurants and vendors .Most importantly along this road there is Shahi bazaar near Jamia cloth Market and Baldia Shopping Centre and Baldia parking Centre. The above activities will improve trading, economic and allied businesses which will ultimately create employment and improve living standard of local and regional residents. Along ring road there are various banks such as National Bank of Pakistan and Summit Bank etc. There is Meat Market Nai Para close to Chaki Paraa Kho Bazaar again forming a congested site.

7.5.2 SWOT Analysis

Trade & Commerce			
STRENGTH	**WEAKNESS**	**OPPORTUNITY**	**THREAT**
1. Availability of financial institutes 2. 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 trading Hub 3. Large number of local skilled artisans available 4. Strong local retail	1. Demise of local agriculture market 2. Un-planned local business activities	1. More opportunities for public private partnership 2. Led Support to local economy 3. Home grown handicrafts can be promoted through proper exposure to export market 4. Large number of business interest groups	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

7.5.3 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. Revitalization of Industrial Estate of Mirpurkhas (Digri –Mirpurkhas Road)

➢ **Project Justification**

At the present, Mirpurkhas is providing sufficient employment through its industrial estate, the district has established industries which are related to agriculture i.e. the raw material, for these industries, is provided by the agriculture sector. Besides, there are cotton factories, sugar mills, flour mills, and rice mills in this district. Industrial Estate which Established in 1985-86. The total area designated for estate is 51.2 Acres. Currently, estate is lacking necessary Facilities i.e. shortage of Power and Water, there are 177 Plots. There will be a need to take actions with basic aim to retain the situation and attract the future investments.

While revitalizing the Industrial Estate of Mirpurkhas, the industrial zone must be bifurcated through green belts as buffer zone to limit the adverse impacts of industrial pollution on adjoining residential areas.

Industrial estate can combine a mix of production, transportation and storage facilities in the same area. For example this can includes chemical plants, plastics manufacturers, food and beverage processors and steel/iron products manufacturers evolves within the facility. Revitalization includes the rehabilitation of facilities within the present situation to cater the users demand like public facilities, walkways and industrial estate users to accommodate better use of facility with all ease of product making to market it (start to end). Revitalization of Industrial Estate covers repair and rehabilitation of existing basic infrastructure and facilities i.e. Road, Sewerage Lines, Oxidation Pond, Raw Water Channel, Gas, Grid Station for Electricity and Telephone.

➢ **Project Benefits**

Increase industrial activity with significant employment generation and overall assistances to the city's economy.

Implementing Authority – Sindh Industrial Development Board. Mirpurkhas Chamber of Commerce and Industry, District Government.

Estimated Cost: 256.00 Million Approx. (Short Term

MIRPURKHAS - INDUSTRIAL ESTATE						
REHABILITATION OF INDUSTRIAL ESTATE Rehabilitation Required Area wise or job wise cost (PKR)						
S.No	Industrial Area	Area (acre)	Cost in PKR million.			
			Street / Road / Parking	Utility infrastructure	Public Facilities	Security
1	Mirpurkhas Industrial Estate	**51**	46.08	148.48	25.60	35.84
Total PKR Rs. Million			**256.00**			

Note:
1. Industrial Estate should be enlisted in Govt. Agency for all services of Trade, Retail, Marketing, Sale etc.
2. All industrial areas services are associated with combine effort of manufacturing goods.
3. Industrial area accessibility for daily users / commuters and marketers should be well define with ease.

II. Relocation of Fruit and Vegetable Market for Mirpurkhas (Along Umerkot Ring Road)

- **Project Justification**

As towns expand, the relocation of wholesale markets to the fringes becomes imperative. Ordinary retail shops for vegetables and fruits are located on the main roads & causes traffic congestion & garbage issues. Provision of new fruits & vegetables market shall resolve issues i.e. congestions & road side waste generation etc. In order for this major operation to be successful, it is necessary to provide good level of access and infrastructure in the reception area. Close linkages with bus and truck stands must be ensured.

Area reserved for trade & commerce, approximately 10 acres out of total land is reserved for fruit & vegetable market within this zone of Trade and Commerce along Umerkot Ring road. This planned market shall provide an easy access and the existing Commercial area shall not face traffic congestion and other related problems. Fruit and vegetable market area is considered to be part of trade and commerce zone for future up gradation of Mirpurkhas DHQ town with respect to its use in future and giving ease to the present user of existing market. Market involves the amalgamation of heavy food processing truck loading and unloading area with fruits and vegetable stalls along with shops for

whole sale and trade processing along with the public services for the ease of market users at the facility provision of single facility use with all services. Need to plan and develop on basis of services will include on provision of project implementation and on users requirement.

- **Project Benefits**

  It will increase the employment with in the town and reduce the traffic congestion on the major road.

- **Implementing Authority**

  Mirpurkhas Municipal Committee and Private Investors.

  Estimated Cost: 175.00 Million approx.

Project Name	Sector	Short Term	Area in Acres	Preliminary Cost in million	Justification
Relocation of Fruit and Vegetable Market for Mirpurkhas	*Economic Development* (Trade & Commerce)	Short Term	10 acre	175.00	10 acre = 435,600 sft, at the rate of 3000/- PKR per sft construction cost with all infrastructure cost. (considered 50% as Built up Area)

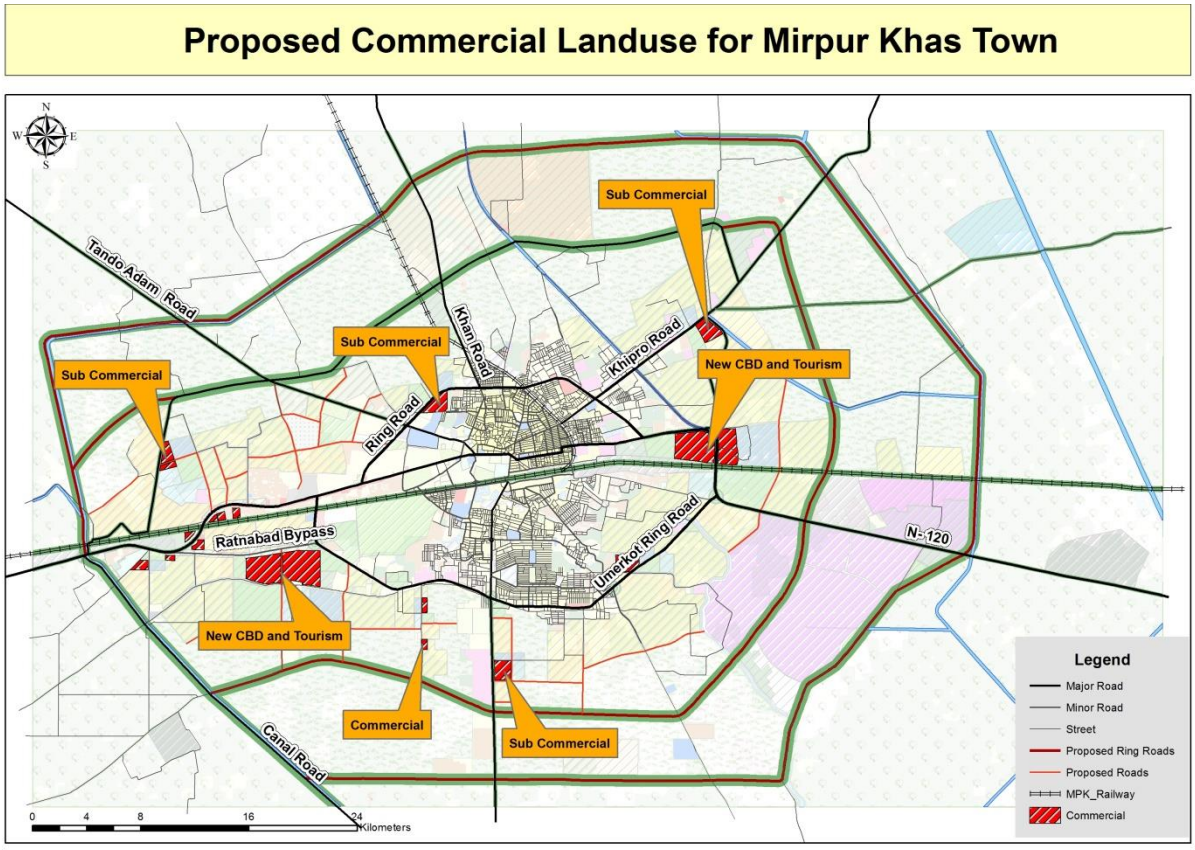


Figure 7:3 : Proposed *Commercial Landuse for MPK DHQ Town*

7.5.5 Immediate Action Plan for Core Urban Area

- **Trade and Commerce**

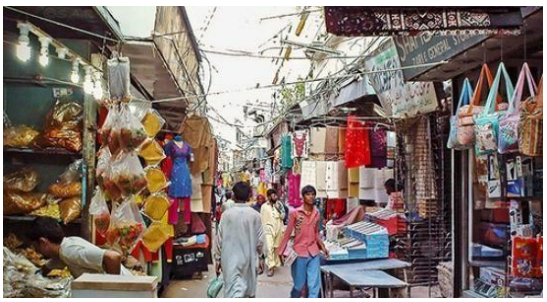


The core town area is the oldest and the most congested part of the Mirpurkhas town. And facing lot of problems i.e. unavailability of footpaths, outdated sewerage system, encroachments, illegal rikshaw / Taxi stands etc. main CBD is thriving trade and popular retail businesses; narrow streets and high density housing in low rise buildings occupied by population belonging to various income groups. The proposed projects for core urban area of Mirpurkhas consists on; Removal of encroachments from town center and bazaars, created by the shopkeepers and hawkers; Rehabilitation & Beautification of main Bazar area i.e Shahi Bazar & Baldia Shoping Centre located along main hyderabad & Station Road.

Modernization of Commercial Activity in the Core Urban Area)

MirpurKhas commercial area count as 2nd largest market after Hyderabad Sindh. Commercial area of MirpurKhas is serving almost entire region of south Sindh.

Different type of markets are part of this main CBD area like; wholesale markets, Traders, traditional embroidery shops (topi ajrak), Gold Smith Auto Shops, schools, clinics and general stores etc. main Hyderabad road covers almost all main institutional buildings, security offices and banks etc. Municipality old shops & markets are rented on least amount of rent, municipality can generate revenue if rent increased. Land encroachers grabbed few municipality properties and not paying any Rent/fares charges.





Repair of Bazar Roads & Provision of pedestrian facility in main CBD area i.e. GPO Chowk, Baldia Shopping Centre Area & Jama Cloth Markets

- Repair & Rehabilitation of old Grain Market Road, M.A Jinnah Road, Station Road, Jama Cloth Market Road, Sarafa Road & Station Road to Chandni Chowk road
- Banned heavy vehicles during peak hours
- Removal of encroachments



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

Table 7-8: Rehabilitation of Main Commercial Area – Activity wise cost in Millions

S. No	Area / Locality / Address	Area (acre)	Cost in PKR million.			
			Street, Road & Parking	Utility infrastructure	Public Facilities	Security
1	**Rehabilitation of Main Commercial (CBD) Area.** Rehabilitation/upgradation of - Main Bazar area - GPO Chowk, - Baldia Shopping Centre Area - Jama Cloth Markets - old Grain Market Road - M.A Jinnah Road, S - Station Road - Sarafa Road - Station Road to Chandni Chowk	**81.15**	40.58	3.25	60.86	20.29
Total PKR Rs. Million			**124.97**			

Note:

- Commercial areas should be enlisted in Govt. Agency for all services of Trade, Retail, Marketing, Sale etc.
- All commercial areas security services are associated with combine effort of commercial trade union and local Govt.
- Commercial areas accessibility for daily users and marketers is well define with ease.
- Provision of pedestrian facility in the Bazaar area
- Banned heavy vehicles during peak hours
- Removal of encroachments

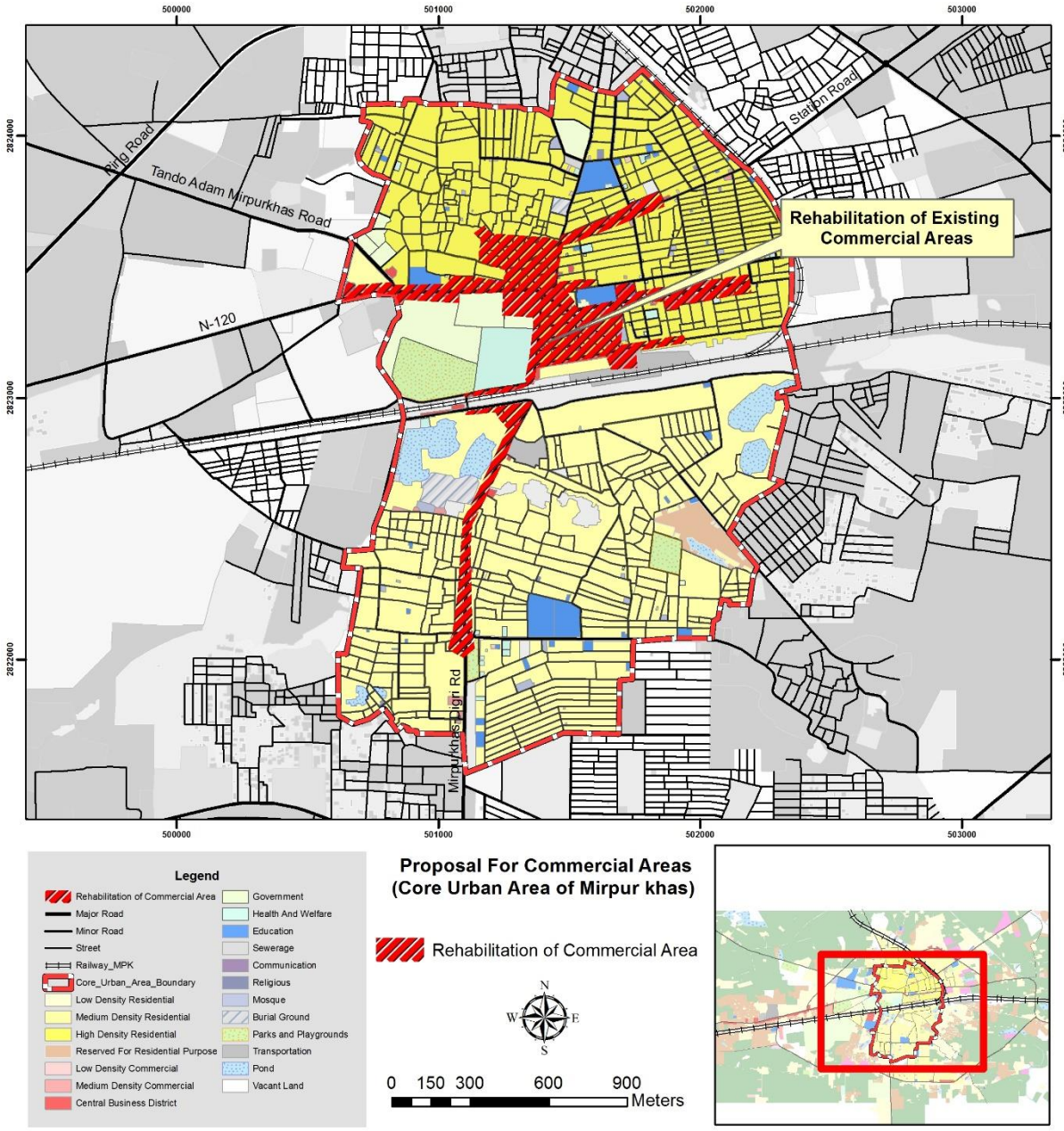


Figure 7:4 : *Rehabilitation of Existing Commercial Area*

7.6 Economic Development Plan for 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).

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.

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

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.

i. 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:

- Industries & Commerce Department
- Local Govt. Department
- Works & Services Department
- Transport Department
- Planning & Development Department

ii. 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 income, build assets, and reduce their vulnerability during periods of economic hardships

8 BASIC UTILITIES

8.1 Water Supply

8.1.1 Existing Situation

The lower Indus Platform Basin is bounded to the north by the Central Indus Basin, to the northwest by Sulaiman Fold Belt Basin and the Kirthar Fold Belt Basin in the south west of Indus River. The water supply requirement of Mirpurkhas depends on the availability of raw water from irrigation canals. This is presently sourced from east and west jamro canal, Mirpur minor and Jarwari canals. Jamrao Canal is located at an elevation of 11 meters (33ft) above mean sea level. Jamrao Canal is divided into two main branches i.e. West Branch and East Branch.

8.1.2 Water Intake Works

Mirpurkhas city relies solely on surface water from irrigation canals that traversed its vicinity. Availability of raw water to the four schemes supplying the city is not the same throughout, as besides water shortages due to canal closure, both Mirpur minor and satellite town schemes are also subject to low flows during prolonged drought (Wara Bandi). Whereas both west & east Jamrao however, have rarely exhibited reduction in flows. Irrigation & farming was revitalized after the Jamrao Canal was built in 1900s.

8.1.3 Water Treatment Works

There are 04 filtration plants, but none of them perform filtration and no chlorination of water is taking place, only the procedure of sedimentation is going on which the District Management and Municipal Authorities claim as filtration of water. At filter plant neither the clarifier are in working condition nor the filter beds, the reservoir of water of the filter plant from where the water is being supplied has never been cleaned. The Jarwari minor used for taking drinking water is full of filthy water and in it municipal waste is being poured from the buildings built on its banks.[33]

I. Ground Water Quality

Consultants has conducted real-time ground water quality assessment on 11 November, 2017 and collected a grab sample from a hand pump located near Teen Talwar Chowrangi (25 31 27.1 N 69 00 49.0 E).

it is observed during chemical assessment of water, that the water is not fit for human consumption and is contaminated with heavy metals like Cadmium, Mercury, Manganese and Barium. Also the water is bacteriologically contaminated and do not contain sufficient amount of residual chlorine.

II. Surface Water Quality

[33] *HANDS international "Touching lives".*

Consultants has conducted real-time water supply quality assessment (which is used for drinking purposes) on 11 November, 2017 and collected a grab sample from the tap of Civil Hospital located in Mirpurkhas City (25 31 31.6 N 69 00 45.6 E).

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

8.1.4 Current Water Supply and Demand

The water supply requirement of Mirpurkhas depends on the availability of raw water from irrigation canals. This is presently sourced from east and west jamrao canal, Mirpur minor and Jarwari canals. Jamrao Canal is located at an elevation of 11 meters (33ft) above mean sea level. Jamrao Canal is divided into two main branches i.e. West Branch and East Branch. Water supply with start of summer season is falling short and the residents are facing lot of problems in getting drinking water from irrigation canals. The people were compelled to get water through hand pumps where the ground water has already declared unfit for human consumption. As alternative arrangement they have also started fetching water from wells. The water supply system cannot cope with the present population. The water is dirty and contaminated by sewage which is a main cause of diseases. Results of bacteriological analyses on water samples collected by consultant indicate total colony counts and total coliform levels far in excess of recommended values. Artificial shortage of water is predominant due to negligence of O&M system

More than 50% respondents were dissatisfied with the water supply. The main cause of dissatisfaction was poor water Quality as per Socio- economic sample survey. The water supply operation is not cost-recoverable. Water quality of Hand-pumps is poor. Between 22% of households use hand-pumps (inside and outside of houses) is as an alternative source of water during emergencies. The majority of the households do not apply any method for water treatment within their houses. Only 11% water by boiling in urban area was reported. The majority of respondents from the urban area would prefer a piped supply.

The present supply as reported by PHED is 9.6 mgd. Currently there is no gap between demand & supply. On the basis of NRM (National Reference Manual), the daily water consumption to be over 30 gallons per capita per day or 136 liters / capita / day. On this basis, the present water demand is likely about 7.2 million gallons per day. It is expected that in next 20 years, the population of Mirpurkhas will be as 291,704 by the end of 2037. Estimated water demand for the period to 2037 is shown below:

Table 8-1: Current Water and Water Demand Projections

Source	Population	Present Water Supply in MGD	Present Need in MGD	Present Water Gap
Census 2017	**233,916**	**9.6**	**7.2**	**There is no Gap b/w Demand & Supply**

Source: Population Census 2017 and Consultant's Projection

8.1.5 Issues

The following are issues of water supply in Mirpurkhas Town:

- Water quantity is available but aging infra-structure, which need to be rehabilitated
- Weak institutional arrangements with overlapping of roles and responsibilities
- High proportion of non-revenue water
- There are 04 filtration plants, but none of them perform filtration and no chlorination of water is taking place, only the procedure of sedimentation is going on which the District Management and Municipal Authorities claim as filtration of water.
- Contamination of fresh canal water by raw sewerage that is dumped into it at several locations. This is particularly precarious for populations using canal water downstream, since groundwater is brackish in most areas and not suitable for drinking purposes.
- The secondary survey illustrates that the technical capability for water supply, sewerage and drainage lies in PHED while administrative capacity lies with local government. At present O&M functions to be executed by Mirpurkhas MC and financing for this is being provided by government. However, coverage does not equate with quality of service, water quality **is poor** and supplies are intermittent.

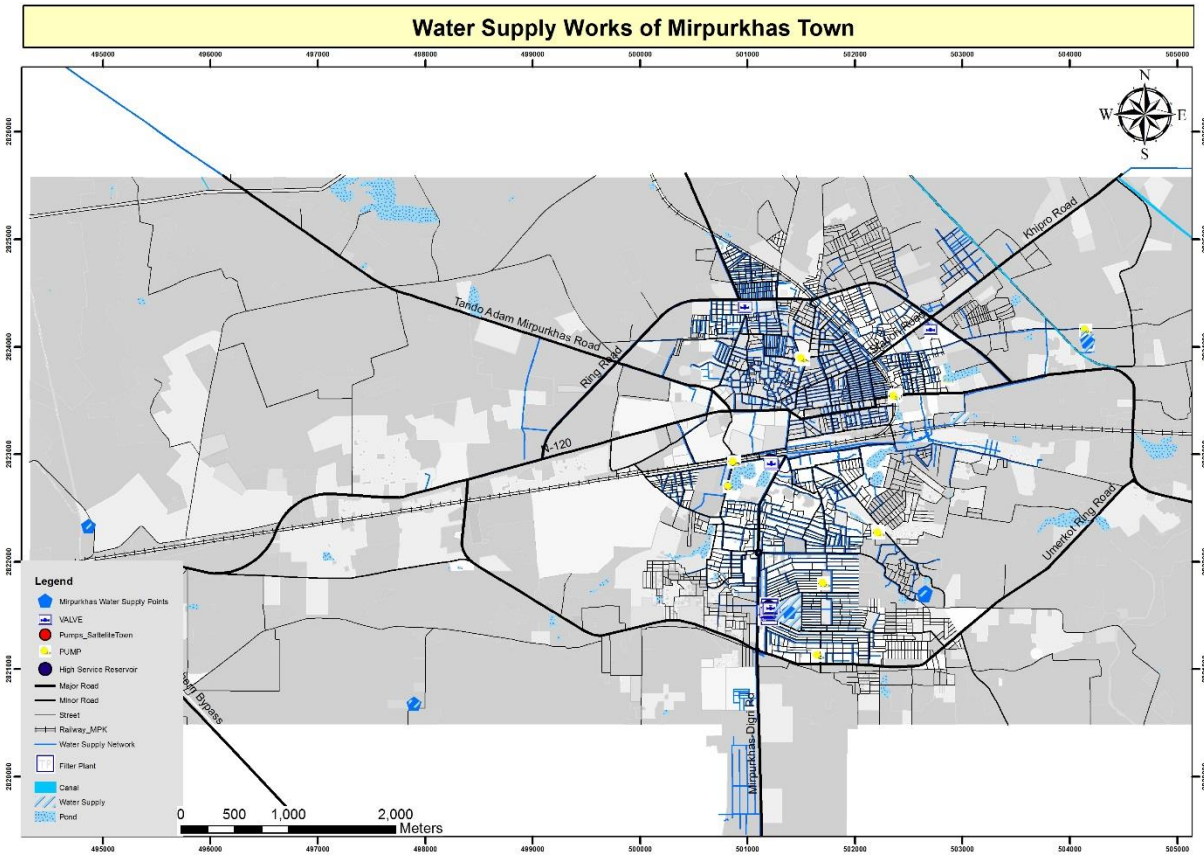


Figure 8:1: Water Supply Works of Mirpurkhas

8.1.6 SWOT Analysis

S. No.	STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
	Water Supply & Distribution			
1	1. Intake sources are available 2. Most of the town is having hand pumps and less than half of town is covered by pipe supply 3. Overhead tank for water supply and storage.	1. Absence of systematic water supply system and treatment plant 2. Poor administrative setup for water supply management and distribution 3. Water is saline 4. Shortage of clean and portable water	1. Adequate water resources available for water supply system development 2. PPP in service delivery	1. Water quality causes negative externalities on human and plant health 2. Depletion of water quality due to drought 3. Intake sources of water are getting dry 4. Shortage of Water

8.1.7 Future Need Assessment 2037

According to the accepted standards estimated daily water demand per capita is over 30 gallons per day per capita. On this basis, the present water demand is likely to be about 7.2 million gallons/day. Therefore the projected water demand for Mirpurkhas town works out to be 8.75 million gallons/day by 2037. The major source of supply will remain the surface water/canal water supplied through piped network.

Table 8-2: Future Water Demand Upto 2037

Source	Present Water Need @ 30 Gallon /Day	Projected Population 2037	Water Demand up to 20 years (MGD)	Additional Water Demand up-to 2037 (MGD)
Projected 2037	7.2	291,704	8.75	There is no Gap b/w Demand & Supply up to 2037

Source: Population Census 2017 and Consultant's Projection

8.1.8 Sindh Drinking Water Policy 2017[34]

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.

[34] Sindh Water and Sanitation Policy 2017

8.1.9 Strategic Development Plan

A variety of policy instruments and strategies will be used to achieve the objectives of the Strategic Development 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.
- Priority for water supply and sanitation will be accorded to un-served, under-served areas, and disadvantaged areas.
- 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.
- 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.

I. Long Term Plan

- 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.
- Feasibility Study for identification of new water sources for town

II. Short Term Plan

- Provision of Safe and Clean Drinking water for drinking purpose to entire population Mirpurkhas.
- Rehabilitation existing water supply network of Whole Town
- 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

8.1.10 Priority Projects

i. Improvement of Water Intake Works

➢ **Project Justification**

The purpose of the proposed project is a safe water solution for the water intake from present source for Mirpurkhas. The intake point is Jamrao Canal and other sources of water supply. The wastewater is discharged into the canal through the pumping station which has been constructed by HDA/WASA without considering that canal water is being used for drinking purposes by the local people downstream of this canal. There is no zoning system of distribution and no water meters are installed. Distribution network

improvement (DNI) is essentially required for equitable distribution. Existing water distribution network is old, which need to be improved. Improvements in water intake works cover below components;

- Construction of intake structure adjacent to Canal which will comprise of screens, pipe, valve chamber
- Construction of Wet well and pump room
- Installation of Pumps based on solar power
- Construction of Reservoir

➢ **Project Benefits**

Mirpurkhas people are using harmful drinking water. After implementation of this project, the source of water intake will be safe.

➢ **Implementing Authority -** Mirpurkhas MC, Government of Sindh

➢ **Estimated Cost: 100.00 Million PKR Approx.**

ii. Repair & Rehabilitation of Water Supply Network 75%

➢ **Project Justification**

Almost all the network of Water Supply in Mirpurkhas is in poor condition and most of it is damaged (especially in the old town area). More than 25% of areas of town have no proper Water Supply Network. This project will help to supply water in those areas where the network is not available and the existing network is damaged.

Population	233,916
Total Urban Area	5,635.5
75% of Total Urban Area	4,226.6
Core Urban Area	857.41
Proposal for Repair & Rehabilitation of Existing Water supply scheme shall help to supply safe potable water to 75% population of Mirpurkhas town. One Million per Acre = 3,369.22	3,369.22

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

  As already discussed above that Mirpurkhas MC have not a proper supply of clean Water & also old water Supply network is present in most of the areas. So after implementing this project, the Potable water will easily supply to the people.

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

  Estimated Cost: 3,369.22 Million PKR Approx. (Short Term).

iii. Provision of New water supply network for remaining 25% of Mirpurkhas MC (Approx. 551.47 Acres)

- **Project Identification & Justification**

Mirpurkhas MC Population	233,916
Total Urban Area in Acres	5,635.5
25% of Total Urban Area in Acres	1408.88
Core Urban Area	857.41
Installation of New water supply scheme is proposed to cater rest 25% population / Area of Mirpurkhas town @ Rate of 3.0 Million Per Acre	551.47

  Almost All the network of Water Supply in Mirpurkhas is in poor condition and most of it requires repair & rehabilitation. According to socio economic survey results approx. 25% of the population of Mirpurkhas 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 Mirpurkhas DHQ town.

- **Implementing Authority -** Government of Sindh- PHE Department Mirpurkhas
- **Estimated Cost:** 1,654.41 Million PKR Approx. (Short Term)

iv. Rehabilitations of OH Tanks

- **Project Justification**

  At present, three over-head reservoirs are having a capacity of 45,000 gallons each. These three overhead tanks are presently nonfinctional , the rehabilitation of all non-functional existing over-head reservoirs of Mirpurkhas is required to fullfil the present requirement.

  Overhead tanks components

  - Inlet and outlet
  - Overflow Pipe

- Drain
- Vent
- Level Indicator

➢ **Project Benefits**

This project will help to provide required water supply to people of Mirpurkhas town through reserving sufficient water.

➢ **Implementing Authority -** Government of Sindh, Mirpurkhas MC and PHE Department

➢ **Estimated Cost: 75.00 Million PKR Approx.**

v. Repair and Rehabilitation of Existing Water Filtration Plants (04 No.s)

➢ **Project Justification**

There are 04 filtration plants, but none of them perform filtration and no chlorination of water is taking place, only the procedure of sedimentation is going on which the District Management and Municipal Authorities claim as filtration of water. At filter plant neither the clarifier are in working condition nor the filter beds, the reservoir of water of the filter plant from where the water is being supplied has never been cleaned. So there is need to rehabilitate these four Plants for caring out the filtration work.

Water filtration plant components are;

Clarifier/Multi Media Filtration skids consisting of either a clarifier vessel or a train of multimedia vessels to treat water containing high suspended solids for use as a pre-feed to Chemical dosing skids consisting of dosing pumps, controllers, process analytical instrumentation, chemical storage tank and bund.

Components covers the water filtration units are;

- Collection
- Screening and Straining
- Chemical Addition
- Coagulation and Flocculation
- Sedimentation and Clarification
- Filtration
- Disinfection
- Storage
- Distribution

➢ **Project Benefits**

Mirpurkhas is suffering from various disease like diarrhea due to Un-filtered water supply, this project will provide filtered water supply to the people of Mirpurkhas Town.

➢ **Implementing Authority**

Government of Sindh- PHE Department Mirpurkhas.

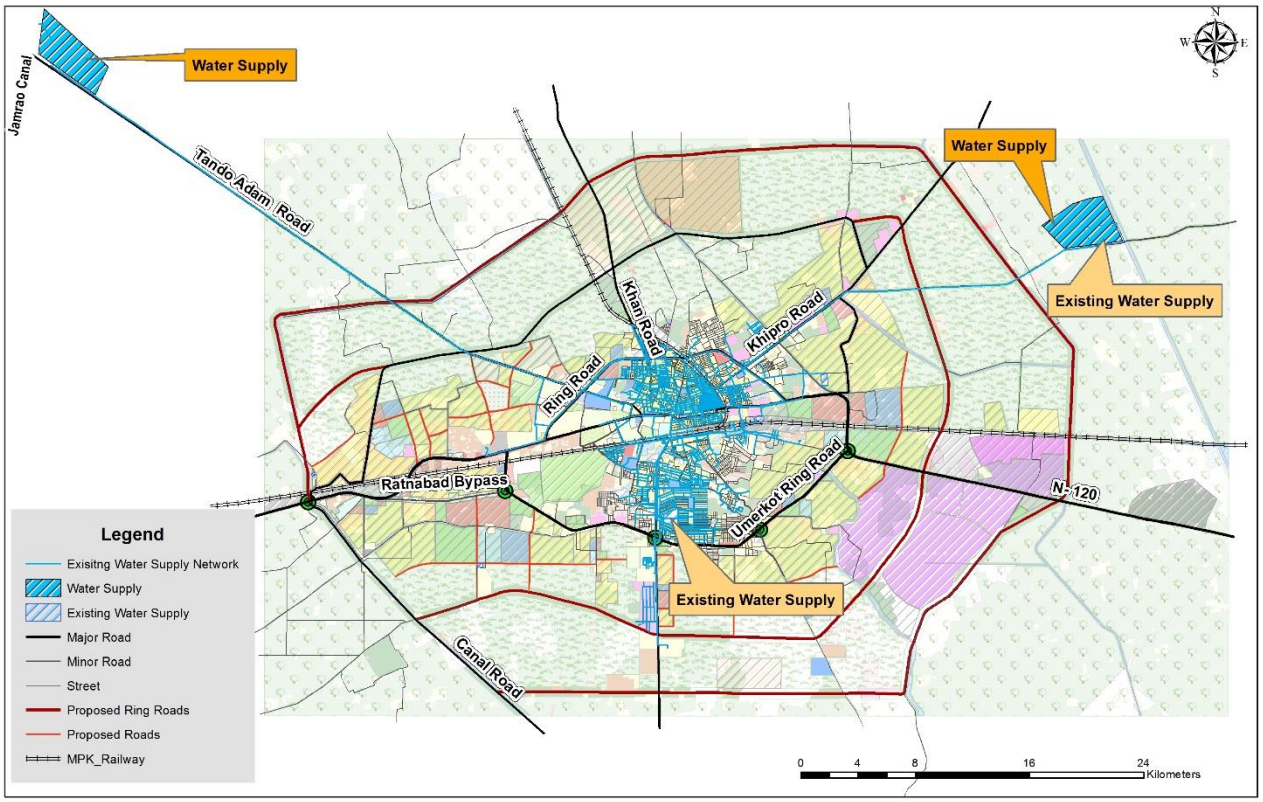
- **Estimated Cost: 100.00 Million PKR Approx.**

PROPOSED PRIORITY PROJECTS WATER SUPPLY						
S. No	**Project Name**	**Estimated Cost In Millions**	**ADP**	**Non ADP**	**Status**	
					Short Term	**Long Term**
WATER SUPPLY						
1	Improvement In Water Intake Work at three different sources.	100.00	-	Non ADP	Short Term	-
2	Repair & Rehabilitation of existing Water Supply Network 75% (3,369.22 acres) except core urban area.	3,369.22	-	Non ADP	(Phase Wise)	-
3	Provision of New water supply network for remaining 25% (551.47 Acres) except core urban area.	1,654.41	-	Non ADP	(Phase Wise)	-
4	Rehabilitations of OH Tanks *(Non-functional overhead tanks only)*	75.00	-	Non ADP	(Phase Wise)	-
5	Rehabilitation of Existing Water Filtration Plant ***(04 No.s)***	100.00	-	Non ADP	(Phase Wise)	-

8.1.11 Immediate Action Plan for Core Urban Area

Existing water supply scheme of core town area has passed ages and became outdated, core area of Mirpurkhas is counted as densely populated area of DHQ town, residents of core town area are complaining regarding the quality of water supplied to residents. Mixing of drainage with fresh Water is major issue observed during survey. So therefore it is proposed to repair & rehabilitate existing water supply network of core town area.

Proposed Utilities and Services Landuse for Mirpur Khas Town



Rehabilitation of Existing Water Supply Network of Core Urban Area Mirpurkhas				
S. No.	**Name**	**Area (acre)**	**Per acre cost (PKR) million**	**Cost (PKR)**
Total Core Urban Area : 857.41 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).	***857.41***	***1.0 million Per acre***	***857.41***
			Total Cost (PKR). Million	**857.41**
Note: *Water supply system renovation includes supply pipe networks, pumping machinery and equipment's for more efficient and effective supply of water.*				

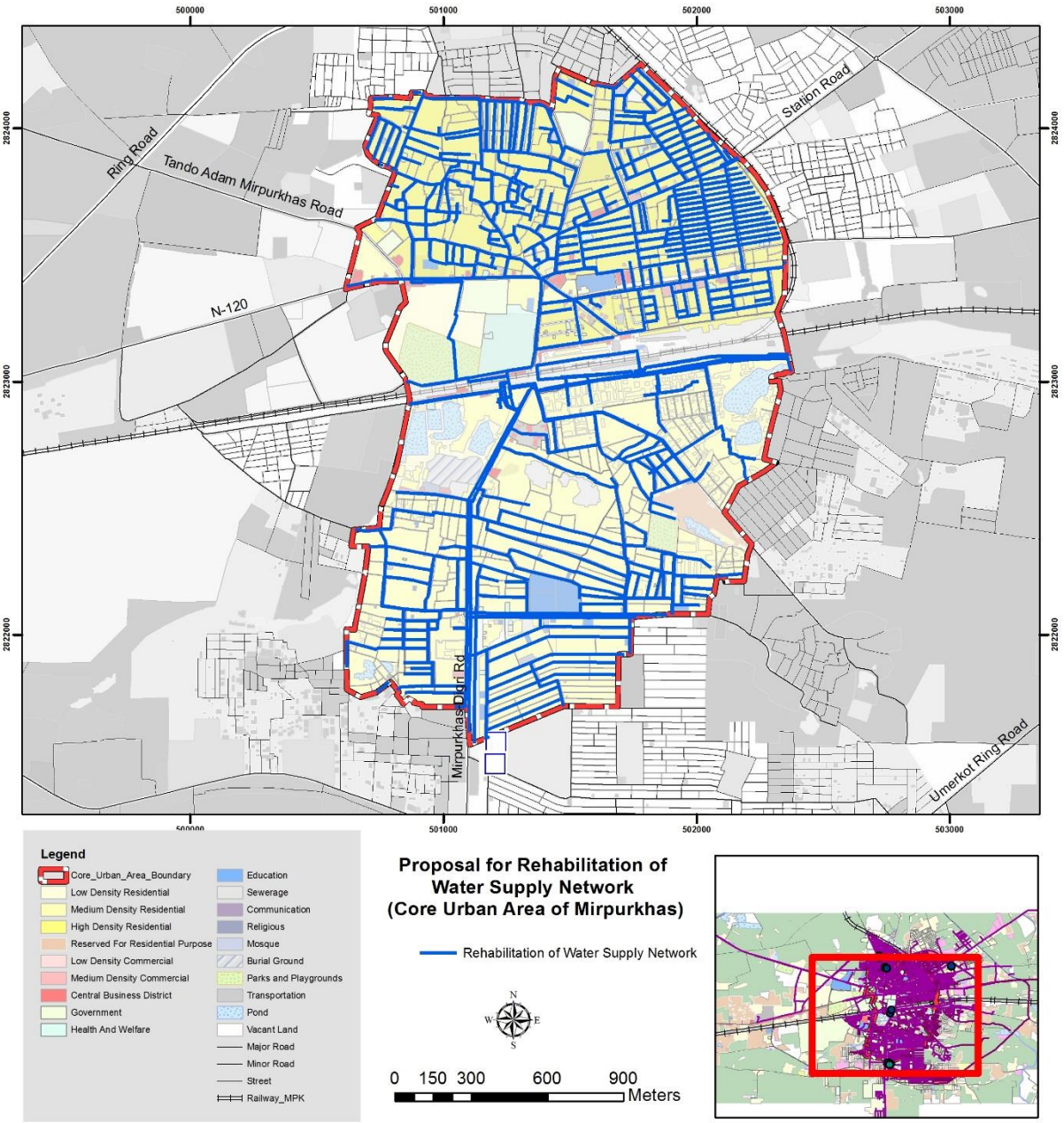


Figure 8:2: Rehabilitation of Existing Water Supply Network of Core Urban Area Mirpurkhas

8.2 Sewerage and Drainage

8.2.1 Existing Situation

Drainage system of the Mirpurkhas city is partially covered while in sub-urban areas and rural areas, the covered drainage system does not exist. The sewage water from homes is drained in shallow open channels, which leads to open land and nearby canals. This causes pollution of sub surface and surface water bodies and canals. The sewerage and drainage system of Mirpurkhas town consist of a combination of underground pipe sewers constructed in various phases.



Over flowing drains

8.2.2 Distribution Network/Disposal system

The sewerage/wastewater gravitates to the collector wells (Wet Well) of 10 disposal pumping stations discharge in open Nala is pumped through 10 HP pumping units at each pump house discharged into the natural drains and canals. Sewerage of the city is being brought at a point namely SLD and then pumped to Puran Dhoro, the natural drain, which ultimately ends up in a creek.



8.2.3 Waste Water Treatment facilities:

The drainage system is in poor condition, with open smelly drains and sewers. There is no sewerage treatment, and untreated sewerage collects in ponds/swamps or discharged in to Nala. Drains are blocked by garbage and vegetation. About 70% of respondents from sample survey were dissatisfied with the current sewerage system. Sewerage is mainly disposed of in roadside drains and Nalis.

It was claimed that entire sewerage of the city is discharged into 04 Nalas viz. Umerkot Nala, Sindhiri Nala, Khan Nala and Jamnadas Nala was being brought at a point namely SLD and then pumped to Puran Dhoro, the natural drain, which ultimately ends up in a creek.[35]

8.2.4 Current Waste Water Generation

The present amount of waste water cannot be measured, as it contains both sewage and storm water. According to Consultant's estimates against present water demand, about 4.91 million gallons per day is estimated as the present waste water generation on the basis of 70%.

[35] *Ref. Judicial Commission*

Therefore it is assumed that by 2037 sewage water discharge in the city will reach to 6.13 million gallons per day approximately.

Table 8-3: Estimated Wastewater generation for the period 2037			
Present Population (Census 2017)	**Current Waste generation (mgd)**	**Projected Population 2037**	**Sewerage Flows @ 70 % Water supply (MGD)**
233,916	**4.91**	**291,704**	**6.13**

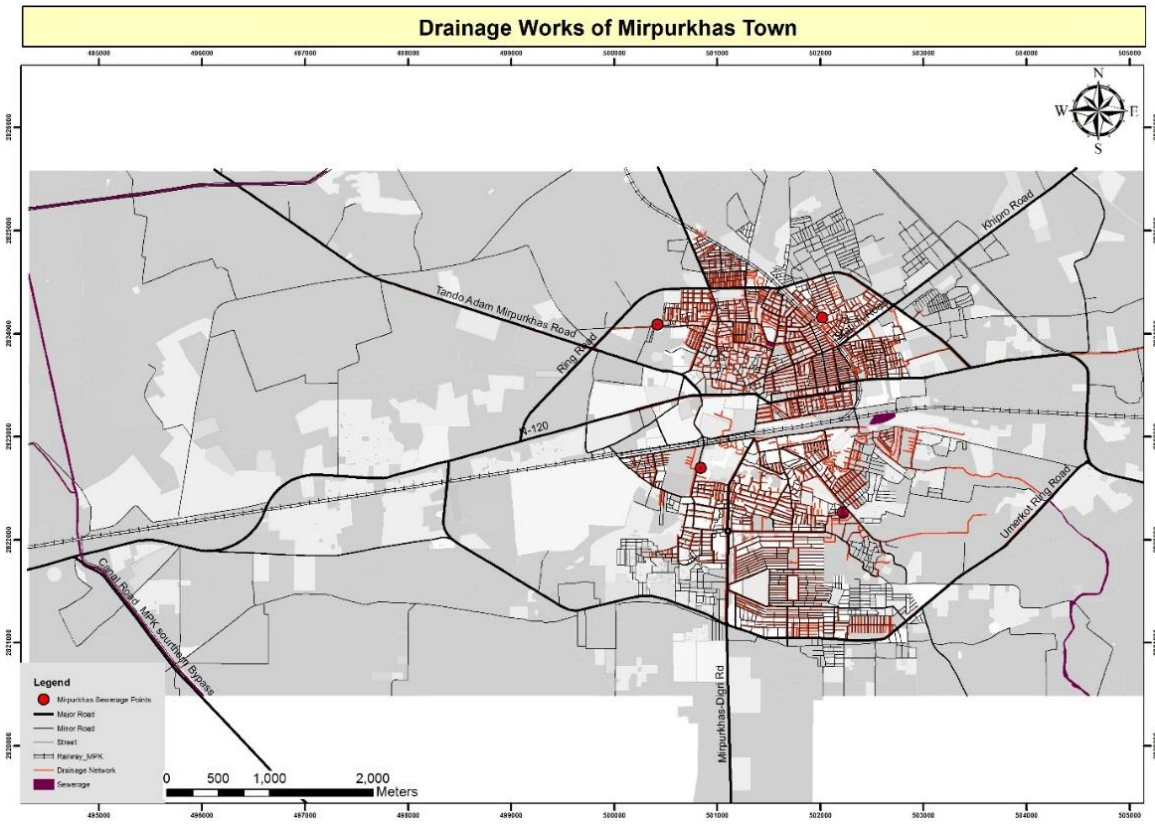


Figure 8:3: Drainage Works of Mirpurkhas Town

8.2.5 Issues and Problems:

The drainage system and structures are in poor condition with open & partially covered smelly drains and sewerage treatment and untreated sewage collects in ponds / swamps or directly discharged in to irrigation canal. Majority of resident's dis-satisfied with current practice. The main reasons causing all these visible problems are given as below;

- Lack of Limited budget allocation for maintenance of sewerage facilities
- Improper operation and maintenance and repairing
- Large financial liabilities of salaries and payments
- Short fall of primary workers
- Absence of services tariff system
- Inefficient record of operation and maintenance works including machinery and equipment available for cleaning drains / sewers – in the same manner, little information in written form is available on the performance of pumping facilities such as flow rates, operation hours, water qualities, facility failures and repairs and so forth.
- Absence of operation and maintenance SOPs (Standard Operating procedures) – manuals for operation and maintenance of sewerage facilities are not available.
- Absence of stabilization ponds and reuse of treated effluent is practiced at many places.

8.2.6 SWOT Analysis

S. No.	STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
	Water Supply & Distribution			
	1. Availability of sewerage network 2. Sufficient land for disposal sites is available	1. Poor maintenance condition; garbage enters into sewers, which requires desisting 2. Drain water is disposed of untreated into ponds 3. Open drains 4. Outdated and disconnected network 5. No treatment before disposal 6. Mixing of solid waste disposal into Sewerage 7. Poor quality of construction 8. Absence of Master Plan	1. An appropriate sewerage system plan could be implemented 2. Improvement of general hygiene/ public health by cleaning sewerage system 3. Development of well-designed trunk sewerage network with less number of disposal station 4. Job opportunities for skilled staff for proper maintenance 5. Revenue can be generated through charging services for cleaning 6. PPP in service delivery	1. Storm water flooding/ over flow of sewers 2. Environmental degradation 3. Funding & policies 4. Removal of encroachment 5. Land grabbers

8.2.7 Need Assessment

Estimated Wastewater generation for the period 2037

Town		2017	2022	2027	2032	2037
Mirpurkhas	**Water Supply (mgd)**	7.02	7.42	7.84	8.28	8.75
	Sewage generated @70 % Water supply (mgd)	**4.91**	**5.19**	**5.49**	**5.80**	**6.13**

8.2.8 Sindh Sanitation Policy 2017

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

8.2.9 Strategic Development Plan

- Improving standards of public health through provision of improved services supported up by legal, regulatory and binding framework.
- To raise living standards of community by providing improved drainage and Sewerage services.
- Special focus on need based interventions in sanitation sector
- 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 MC in coordination with all other agencies involved in sanitation.
- The plan will focus mainly on the details of the trunk sewers, treatment and disposals and re-use options
- 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.

I. Long Term Plan

- 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.
- Land acquisition of at least 10 acres at this stage for stabilization pond is recommended.

II. Short Term Plan

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

8.2.10 Priority Projects

i. Construction/Rehabilitation of Sewerage and Drainage Network

- **Project Justification**

  Almost All the drains in Mirpurkhas are in poor condition and most of it are open drains. More than 70% of areas of Mirpurkhas have no proper drainage system. Most of the houses has septic tanks in their houses for storage of sewage. This project will help to proper dispose of sewage water of Mirpurkhas town in to LBOD which is passing through Mirpurkhas city. The drains are needed to rehabilitate and where the drains are not available there should be provided.

  Rehabilitation of storm water and sewerage works will include the following components

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

- **Project Benefits**

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

- **Implementing Authority -** Government of Sindh- PHE Department Mirpurkhas
- **Estimated Cost: 840.00 Million PKR Approx.**

ii. Construction of new drainage network for remaining 30% (270 acres) except core urban area

- **Project Justification**

  According to socio economic survey results 30% 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 DHQ town on priority basis covering an area of 270 acres excluding core town area.

- **Project Benefit**

  After the implementation of this project, the inhabitants can easily drain the sewerage water in the drains (Municipal system) provided by the Municipal committee.

- **Implementing Authority-Government of Sindh, PHED Mirpurkhas and Mirpurkhas MC.**

Estimate Cost: 270 million approx.

iii. Construction of Waste Water Treatment Plant

- **Project Justification**

  At the present, wastewater of Mirpurkhas town directly dispose to the Jamrao canal without any treatment, Wastewater is not treated. Final disposal of effluent is mostly to irrigation canals, which in many cases are the main water supply source for towns downstream—this pollution of water supply sources leads to widespread waterborne diseases. After WWTP implementation water that is no longer needed or is no longer suitable for use – into bilge water that can be discharged back into the environment. It's formed by a number of activities including bathing, washing, using the toilet, and rainwater runoff. Wastewater is 99.9% water and 0.1% waste. The capacity envolves around 06 to 07 MGD water treatment. Everything that goes down the drain or the toilet makes up wastewater. In order to understand wastewater treatment, it is important to know the various components that challenge out wastewater treatment processes, like total suspended solids, biochemical oxygen demand and contaminants. To treat this water the WWTP consists of following parts/components;
  - Preliminary screens.
  - Tanks and mixers.
  - Chemical dosing skids.
  - Sludge pump skids.
  - Catwalks & maintenance platforms.
  - Controls & instrumentation.
  - Sludge dewatering.

- **Project Benefits -** This project is expected to improve health conditions of the whole population.

- **Implementing Authority -** Government of Sindh- PHE Department and Mirpurkhas MC
- **<u>Estimated Cost</u>: 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 30% (833.24 acres one million per acre) except core urban area.	840.00	-	Non ADP	**Short Term**	-
2	Construction of new drainage network for remaining 30% (270 acres) except core urban area.	810.00	-	Non ADP	**Short Term**	-
3	Construction of WWTP for 06 MGD to 07 MGD water treatment capacity.	200.00	-	Non ADP	**Short Term**	-

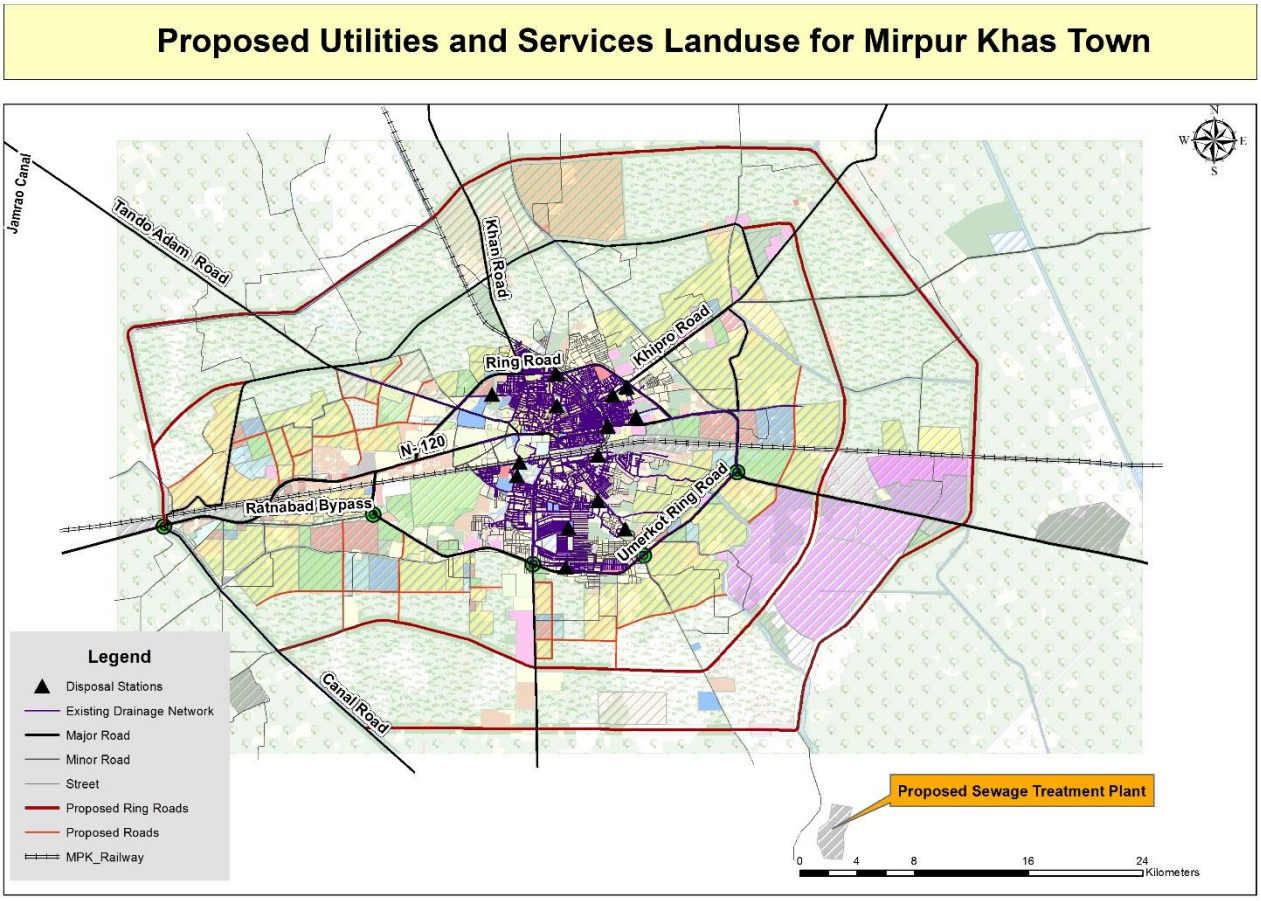


Figure 8:4: Proposed STP

8.2.11 Immediate Action Plan for Core Urban Area

i. Repair & Rehabilitation of Sewerage and Drainage Network Core Town Area

During the survey the residents complained that, the design of existing drainage network is not fulfilling the present demand. And old sewerage line which had burst several times within one year. So therefore it is proposed to repair & rehabilitate existing sewerage & Drainage network of core town area.

S.No	Name	Area (acre)	Per acre cost (PKR) million	Cost (PKR)
Total Core Urban Area : 857.41 Acre				
1	Sewerage System	**857.41**	**2.0 million Per acre**	**1714.82**
2	Storm Water Drain System			
			Total Cost (PKR). Million	**1714.82**

Note:

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

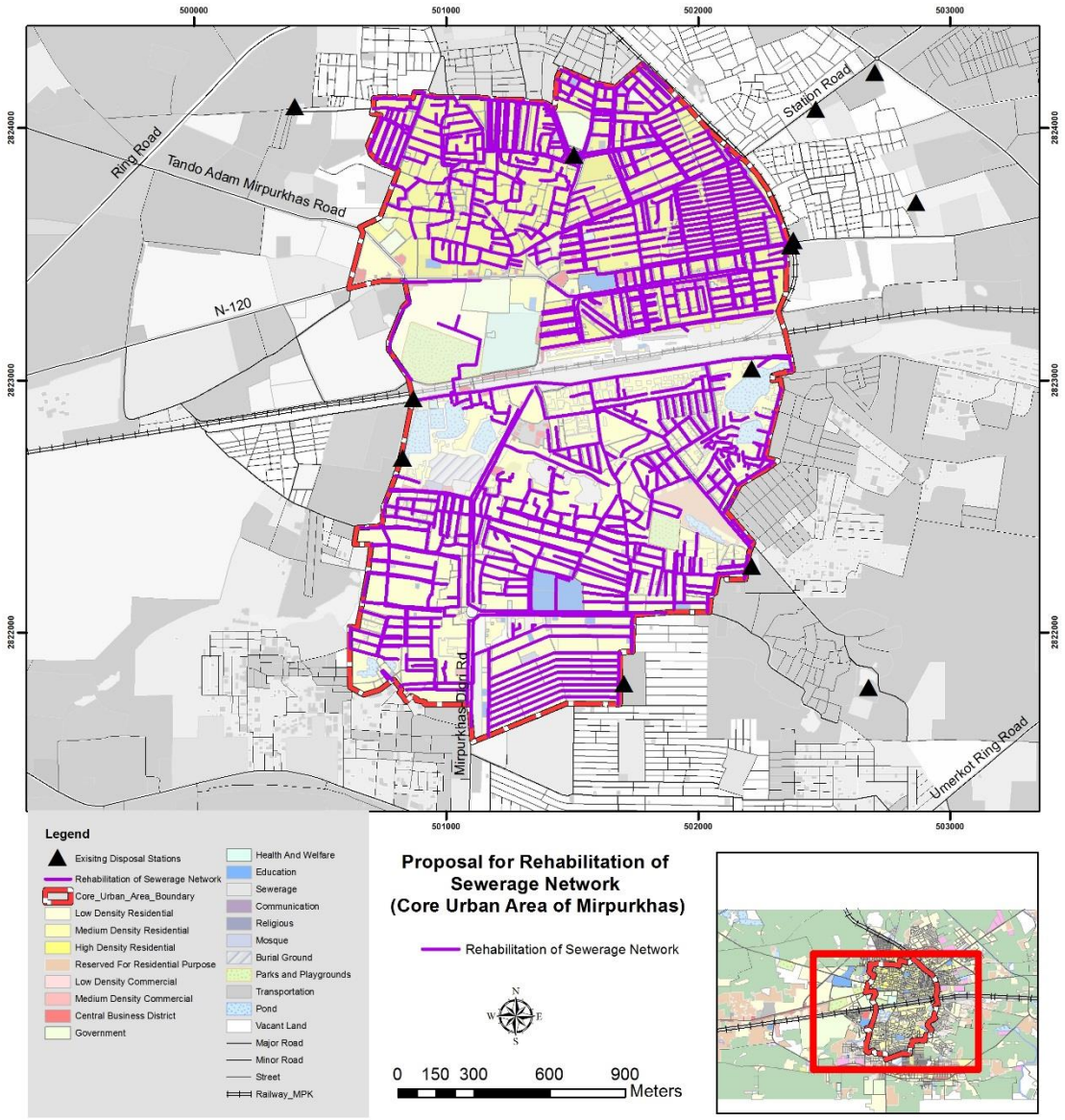


Figure 8:5: Rehabilitation of Sewerage and Drainage Network Core Town Area

8.3 Solid Waste Management

8.3.1 Existing Situation

Mirpurkhas Municipality is responsible for collection of solid waste and its disposal. However, the Mirpurkhas Municipality does not have enough human or financial resources to carry out the responsibility. Currently, Municipality has 384 sweepers out of 570 sanitary staff. Shortage of sanitary staff results full of garbage along roads and even streets are not swept for days. Currently Mirpurkhas Municipality don't have any designated dumping site. On immediate basis landfill site is required to manage solid waste operations of town. The principal MSW collection vehicles are tractors, trolleys, mobile equipment and ancillaries.

The list of solid waste management vehicle, machinery and equipment presently in possession i.e. Two Tractor/ loader, One Refuse van, Four Tractor Trolleys, One Garbage Trolley, One Silage Trolley, One Silage Water Tanker and sixteen Chingchi / Rickshaws.

8.3.2 Collection Points

There are more than twenty designated secondary collection points in the town having no permanent structures rather marked by empty places or vacant areas that have been turned into secondary collection points and may disappear with the clearing of spaces till are reclaimed for construction or cultivation purpose. In addition, every local community has developed number of throw away sites in the form of depressions, empty areas, cuttings areas etc. These non-designated points, if conveniently fall in the collection route, are then often served by the MC staff or left non-served due to shortage of human and infrastructure resources. MSW of all UCs of Mirpurkhas city is finally dumped at empty space along railway crossing near City Railway Station. The waste is ultimately burnt from time to time by MC staff to reduce its volume.

8.3.3 Disposal Point

Around fifteen disposal points are present in town area. Almost all reusable items like, glass, paper, PET bottles, metal pieces and other usable items are segregated and picked up by unauthorized trash collectors from door to door bins & secondary collection points.

8.3.4 Identification of Disposal 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 or usually avoided due to shortage of time and resources constraints. These are not permanent structures but rather empty corners or vacant places. Following is the list of collection points for solid waste in Mirpurkhas municipal committee.

- Haji Shoukat Khar Para
- City Thana
- Khan Road area near Pir Aftab Hussain Shah Bungalow
- Mohajir Colony ground

- Dawn School
- Lal Building point and Mir ka plot near Haji Faqeer Mohammad shop
- Jhulay walla point Mir ka plot
- Subzi mandi chowk Hirabad
- Jamandas colony No. 1
- Old Bakra piri point
- Taxi stand
- Ali Medicare Hospital point
- Nut Para
- Khipro bus stand
- Old Power house
- Chandi Chowk satellite town
- Tanga Stand satellite town
- Munshi Chaki satellite town
- Satellite town ground No. 2
- Qureshi Pumping station
- Adil School
- Tower Gulshan Colony
- Seven other collection point in city area

8.3.5 Sanitary Staff

The municipality has total sanctioned strength of 570 of which there are 514 employees (permanent field sanitary workers) with sanitary inspectors who are responsible for carrying out daily street sweeping, collection of waste using hand trolleys (two wheeler) and other manual means for transferring the street waste to nearby secondary collection points specifically there are 384 sweepers and cleaners employed in the municipality.

8.3.6 SWOT Analysis

STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
Solid waste Management			
1. Availability of Municipal Committee for operating mechanism for solid waste management 2. System in place with improving efficiency, there is a slight improvement in garbage collection and allocation	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	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.	1. Improper sanitation 2. Poor public health 3. Outdated drainage system 4. Threats to plants and animal life

STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
of landfill site to dispose of toxic waste 3. Recycling by scavengers	aware with disposal procedures.	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	

8.3.7 Need Assessment

Considering waste generation rate for design purpose as 0.45 kg per capita per day with the current (2017) population of the municipal committee of Mirpurkhas as 233,916 the total municipal solid waste load arising in the municipality is approx. 105,265 kg or 105.3 tons per day. It is estimated that out of which merely 55 tons is collected, transported and dumped or previously used to reach dumpsite at Mirpurkhas – there are no designated landfill site(s) in Mirpurkhas, presently garbage is being dumped in outside limits of the city where low lying areas are found.

Table 8-4: **Estimated Solid Waste generation for the period 2037**

Present Population (Census 2017)	Current Solid Waste generation (M. Tons) @ 0.45kg/ pcpd	Projected Population 2037	Solid Waste generation (M. Tons) up to 2037 @ 0.45kg/ pcpd
233,916	105	291,704	131.3

Based on National Reference Manual (NRM): on population of 10, 000, one acre of landfill area is required. So for the population of 233,916 in 2017, landfill area of 23.39 acre is needed and for the projected population in 2037 of **291,704**, landfill area of approx. 29.17 acre is required.

8.3.8 Policy Guidelines[36]

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

Principle

- Develop integrated solid waste management system.
- Conduct a study on wastewater and solid waste to develop town level profiles (including Infrastructure, equipment and staffing)

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

- 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.

8.3.9 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.

- The collection and disposing of solid waste is the responsibility of the Mirpurkhas MC. The mechanism for solid waste management is not available in Mirpurkhas so therefore a detailed feasibility is proposed to develop an efficient solid waste management in Mirpurkhas town.
- The collection system needs to be made more effective and efficient.
- MC has already initiated some work on biomedical-waste management. It should immediately start segregation practice for biomedical waste collection system.

I. Long Term Plan

- 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.

- 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.
- 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 Plan

- 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.
- 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.

8.3.10 Priority Project

i. Feasibility Study for Solid Waste Management Mechanism

- **Project Justification**

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

- **Estimated Cost: 60 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).	40.00	-		**Short Term**	-

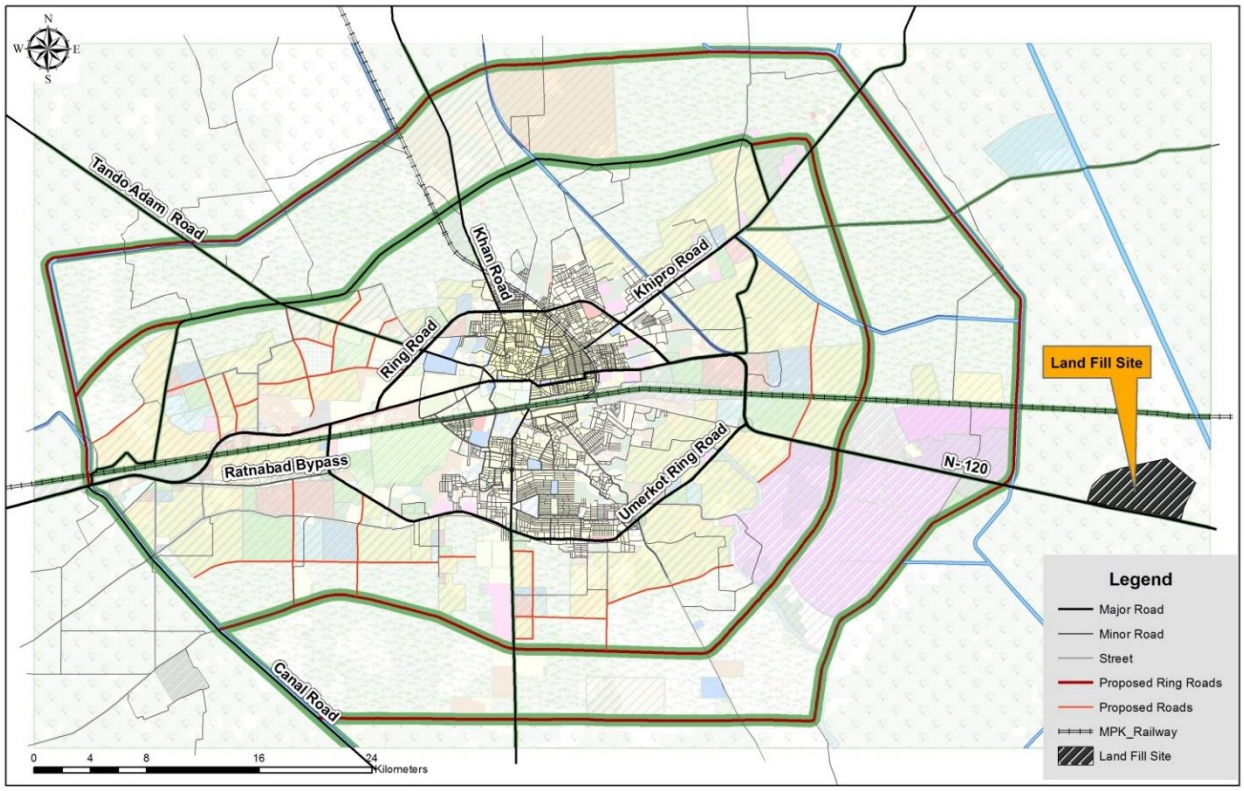


Figure 8:6: Sample of Solid Waste Segregation Bins for Core Urban area Mirpurkhas

8.3.11 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 Municipal Committee. Waste generated by the market of the core urban area should be picked on daily basis.

Shopkeepers can pay a small amount on monthly basis to the sweepers say 250rs/month and domestic consumers availing this facility can pay a small amount on monthly basis say 100rs/month.

By assuming solid waste generation at the rate of 0.45 kg per capita per day (as per NRM), it is estimated that currently Mirpurkhas town generates **105** tons solid waste per day, which require **24** acres landfill site to accommodate disposal in four layers for the present load. While in future, there is a need of 30 acres landfill site to accommodate **131.3** tons disposal in four layers over a period of 20 years. Sanitary landfill site is required to be allocated away from any residential area.

The overall efficiency of the waste management system is less than 55% of the generated solid waste, which is collected and disposed-off through municipality's resources, leaving 45% solid waste unattended / uncollected. At the disposal site, waste is burnt intermittently by municipality staff to reduce its volume.

The overall physical composition of municipal solid waste in terms of its constituent components remains the same as with other towns of Sindh i.e. ORGANICS (food waste, bones, green waste), RECYCLABLES (variety of plastics, paper & cardboard, metal pieces, wood pieces, glass, textile pieces & rags, fraction of rubber), INERT (dust and small stones, building waste and ceramics, etc.)



Figure 8:7: Garbage collection vehicles and equipment in possession of MC Mirpurkhas

- **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 or vacant corners. 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 or usually avoided due to shortage of time and resources constraints.

Solid Waste Management System (Solid Waste Garbage Collection Containers)				
S.No	**Name**	**Containers Nos.**	**Cost / Container**	**Cost (PKR)**
Total Core Urban Area : 857.41 acre				
1	Placing of Garbage Container at different sites/locations in core town area	150	520,000.00	**78,000,000.00**
			Total Cost (PKR). Million	**78.00**

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.

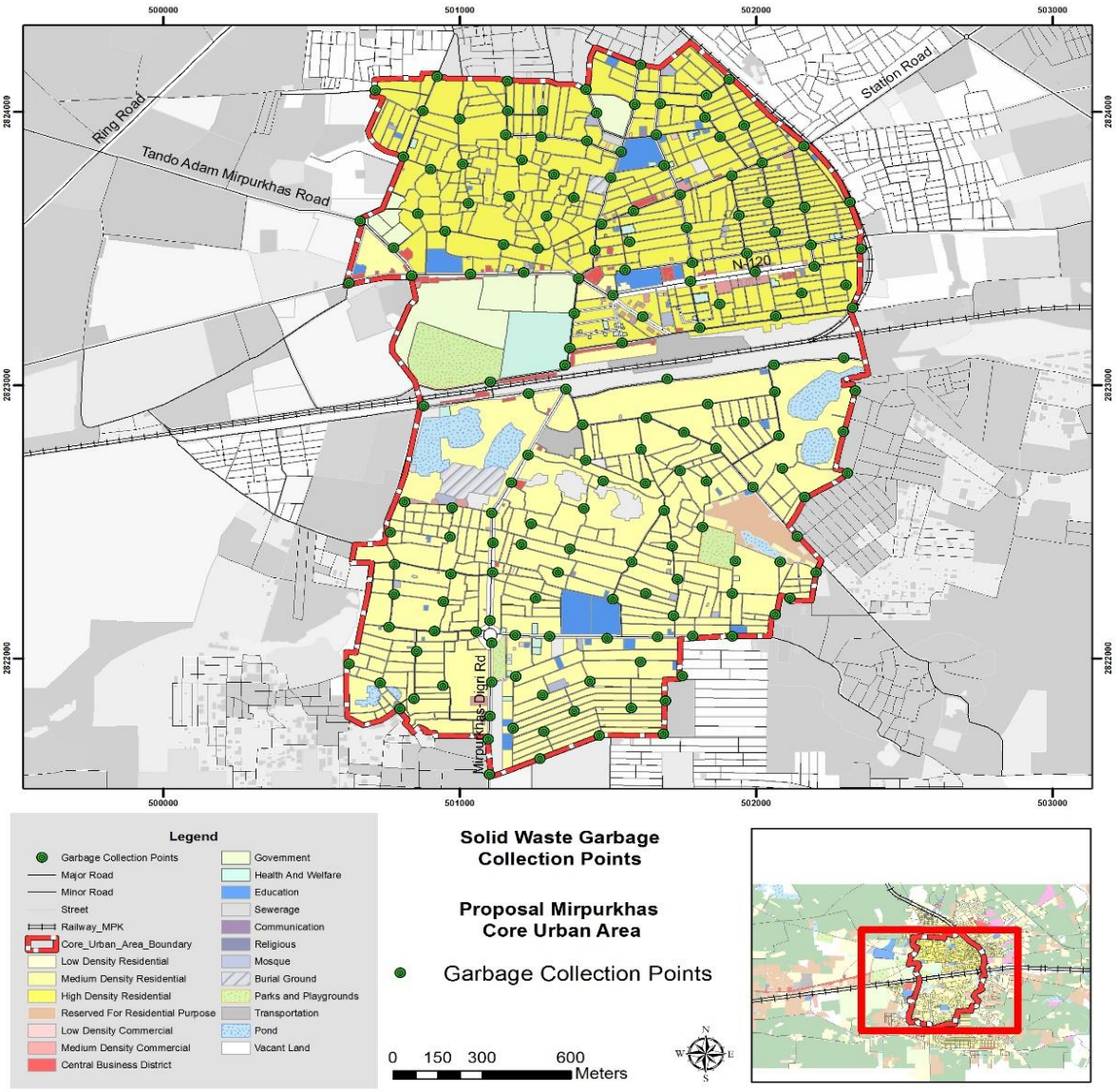


Figure 8:8: Proposed Garbage Collection Points Core Urban Area Mirpurkhas

8.4 Firefighting

8.4.1 Existing Situation

Currently there is one fire brigade station situated in Mirpurkhas with 23[37] firefighting staff and three functional firefighting vehicles. The Municipal committee has no separate budget for firefighting and no vehicle maintenance facility in the station.

8.4.2 Need **assessment**

As the current total population of Mirpurkhas Town is 233,916, which will be 291,704 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 is one vehicle available with municipal committee. So five more vehicle is needed for DHQ 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

[37] MC office Mirpurkhas

9 INFRASTRUCTURE

9.1 Transportation

9.1.1 Regional Connectivity (Air, Rail, Road)

- **Road**
  Mirpurkhas has significant connectivity with surrounding towns as well as other parts of the country through the regional road network. Mirpurkhas district covers an area of 2,925 square kilometres yet it has only 716 kilometres of good quality roads, which are grossly inadequate for the area and its population. A Provincial Highway connects Hyderabad with Mirpurkhas via Sultanabad, Tando Allahyar and Tando Jam. The district headquarter of Mirpurkhas is linked with its Taluka Headquarters of Digri and Kot Ghulam Muhammad through metaled roads. Most of the Private transporters run passenger buses and vans on all the regional and national routes.
- **Airport**
  Sindhri Airport is located at Tando Gondal near Sindhri, a town in the Mirpurkhas District. Presently it is not in use by any passenger airline, due to some technical reasons Sindhri Airport is now closed for commercial traffic. Travel time from Mirpurkhas to Sindhri airport is approx: 26 Km which is 40 minutes.

- **Railway Station**
  The City is also linked with the national network of Pakistan Railways through Karachi railway line via Karachi-lahore lane. Mirpurkhas railway station junction is located in middle of the District Headquarter Town, on Hyderabad - Khokhrapar branch railway line. Mirpurkhas railway station is counted as the oldest railway stations in Pakistan. Currently railway traffic is limited due to its operational cost, but long route trains are running on tracks to facilitate the public.

9.1.1 Local Road Network

- **Condition of Road**
  Mirpurkhas district covers an area of 2,925 square kilometres yet it has only 716 kilometres of good quality roads, which are grossly inadequate for the area and its population. A Provincial Highway connects Hyderabad with Mirpurkhas via Sultanabad, Tando Allahyar and Tando Jam. The district headquarter of Mirpurkhas is linked with its taluka Headquarters of Digri and Kot Ghulam Muhammad through metaled roads. 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. Occasional institutional and religious gatherings (Urs etc.) are also one of the major reasons for traffic congestion.

9.1.2 Issues and Problems

- Majority of town population resides in rural setting having less means of public transportation services.
- Highway is not equipped to accommodate full functioning mass transit service.
- Tertiary and Secondary Roads are in very poor condition
- No formal Bus Terminal
- Traffic Congestion at intersections
- Unavailability of Traffic signals and street furniture
- Bad condition and shortage of Public Transport
- Unregularized Qinqui system
- Drainage and parking issues

9.1.3 SWOT Analysis

STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
TRANSPORTATION			
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 inter and intra city transportation 5. Appropriate road space available for street furniture installation in most locations 6. Bus stops are available for intra region trips	1. Unplanned street network 2. Absence of public transport 3. Ribbon type commercial development 4. Poor traffic management Lack of opportunities for integrated transport provisions 5. Lack of coordination between different transport operating agencies 6. Less provision of parking & street furniture 7. Haphazard on street parking 8. Poor maintenance of railway station 9. Poor administration and management control 10. Encroachments around railway land sites	1. Promotes compact development 2. Opportunities in the form of wide roads available for mass transit system development 3. Adequate space available for street furniture installation 4. Proper management can promote public transport services 5. removal of encroachments bringing adequate space for traffic signs, lane markings and foot paths 6. A new transport terminal for goods transport will facilitate timely supply of industrial goods	1. Encroachments 2. Congestion 3. On street parking (paid/unpaid) 4. Reduced flow of traffic (low speed) 5. Security issues 6. Economic losses due to transporters strikes 7. Inconvenience due to traffic congestion

9.1.4 Policy Guidelines

- Plan to decrease private vehicles, especially during peak hours and in CBD areas.[38]
- Measures to facilitate decrease in traffic delay.[20]
- Involvement of private sector in transportation infrastructure and services projects.[20]
- Infrastructure development and up-gradation.[21]
- Integration of public transport services and networks.[21]
- Modernize goods transport and freight facilities.[21]

9.1.5 Sindh Empowerment of 'Persons with Disabilities' Act, 2018 [39]

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

[38] Sustainable Urban Transport Policy-Sindh 2016

[39] 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)

tra-c signals must detect and serve a diversity of users including bicycle operators in the roadway and pedestrians using crosswalks.

iii. Accessible surfaces:

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

iv. Crossable Roadways:

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

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

9.1.6 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:

- 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.
- Promotes compact development.
- Wider road space can be used to facilitate multiple transport activities by implementing road space design standards
- Proper management can promote public transport services.
- After removal of encroachments adequate space available for traffic signs, lane markings and foot paths if properly administrated and space utilized, could promote smooth flow of traffic on nearby corridors.
- Rural infrastructure and trade related capacities for improved market access (Farm-to-market road concept)
- Proper mechanism should be addressed for maintaining sustainable traffic flow.
- A new transport terminal for goods transport will facilitate timely supply of industrial goods.

ii. Short Term Plan:

- Develop and implement modern route permit renewal and issuance system for public transport services.
- Improve road design to make safer roads.
- Prevent encroachments on footpaths through litigation.
- Environmental Impact Assessment (EIA) should be mandatory for all transportation projects.
- Reduce traffic growth and congestion by achieving a mode shift.
- Satisfy mobility needs via integration of existing and planned routes, services and Infrastructure.
- Enhance institutional efficiency to improve service delivery.
- Implementation of Axle Load Management.
- Dualization of main arteries.
- Improvement of existing roads geometry.
- Undertaking improvements in road design and specifications.

9.1.7 Priority Projects:

i. Rehabilitation and Improvement of Major, Minor and streets (excluding the Core Urban area Roads).

- **Project Justification**

There is an unplanned & haphazard street network & absence of quality public transportation system in DHQ Town. Major roads & junctions i.e. National Highway N-120, Tando Adam Road, Khipro Road, Umerkot Ring Road, Public School Road, Station Road, Fruit Farm Road, and Ratnabad Road needs repair rehabilitation with allied missing facilities. 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

- **<u>Estimated Cost</u>: 500.00 Million PKR Approx.**

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

- **Project Justification**

  Most of the Streets of Mirpurkhas are without street lights in over all the town 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 -** Mirpurkhas MC, Government of Sindh

- **Estimated Cost: 550 Million PKR Approx.**

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. 96.41 Km @ rate of 4500 per running meter) 450.00 Million • Repair & Rehabilitation of Streets, Major & Minor Roads i.e. National Highway N-120, Tando Adam Road, Khipro Road, Umerkot Ring Road, Public School Road, Station Road • 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**	550.00	-	Non ADP	**Short Term**	-

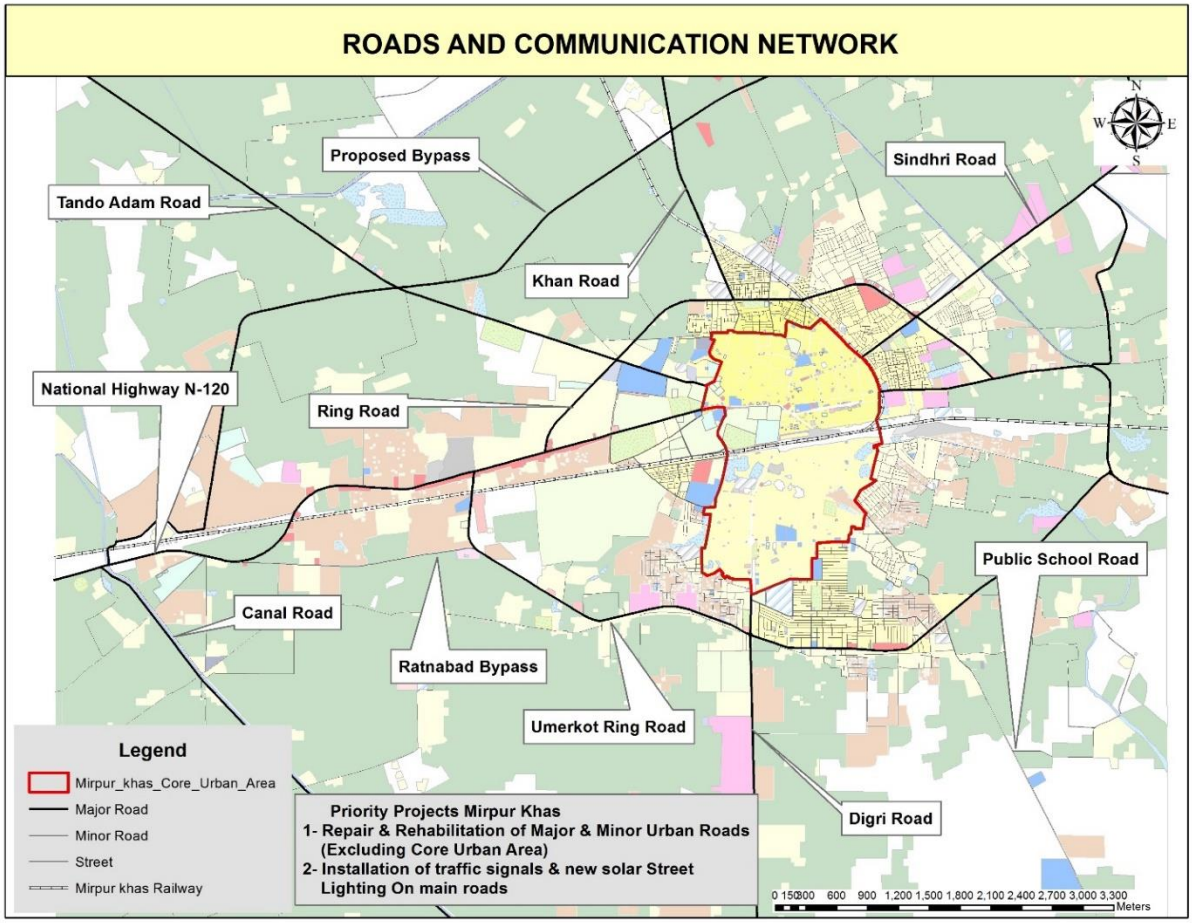
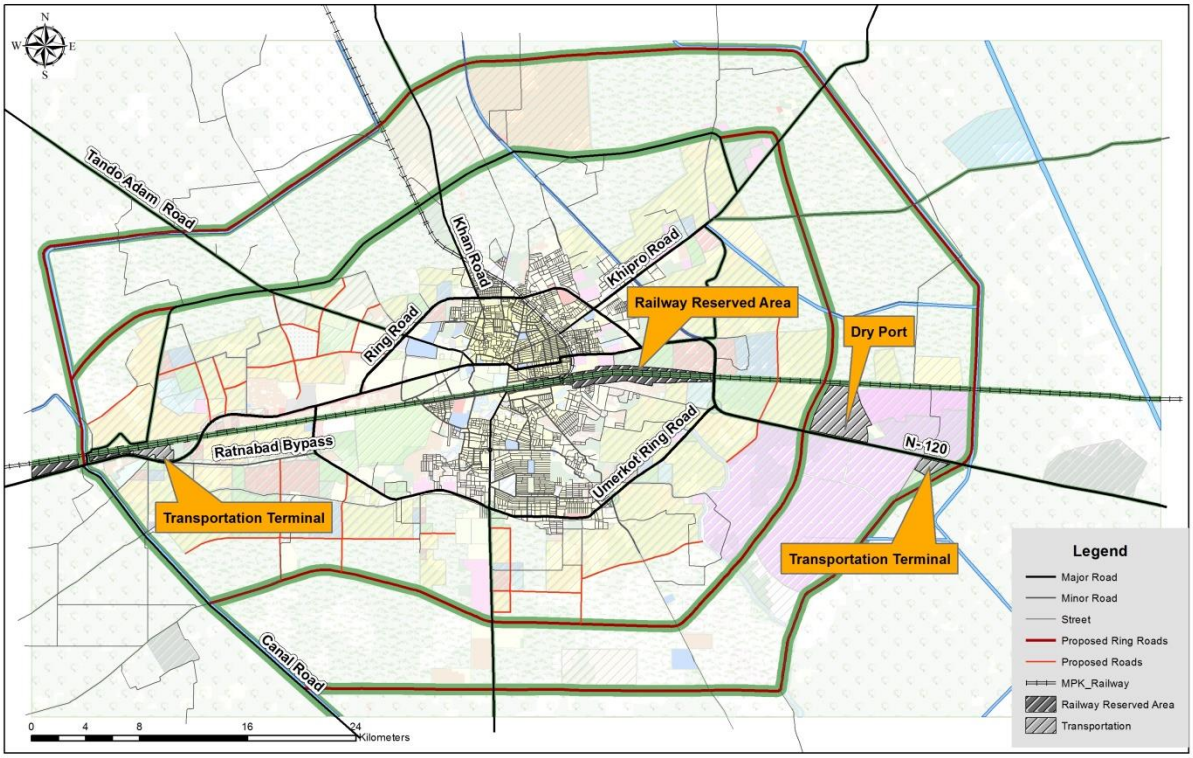


Figure 9:1 : Roads & Communication Network *Mirpurkhas DHQ Town*

Proposed Transportation Landuse for Mirpur Khas Town



Salient Features of Planning

- Two transport hubs are designated along N-120 in west and east directions. The reservation for railway land with buffer area is also suggested. Regarding air connectivity, it is recommended to improve the accessibility from Khipro Road to Sindhri Airport.

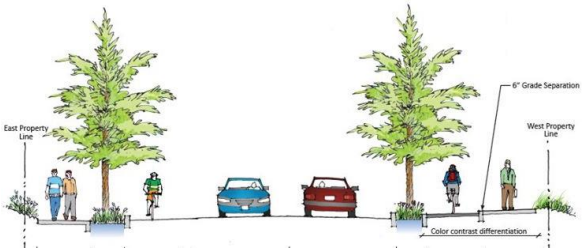
9.1.8 Immediate Action Plan for Core Urban Area

- **Dualization & Rehabilitation of Existing Roads**

Repair & Rehabilitation of M A Jinnah Road, D.C Office Road, Civil Hospital Road, Shahi Bazar Road, Chotiari road, shahdadpur road & Nawabshah 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. Immediate Action Plan for core urban area in Mirpurkhas requires that the right of way of roads should be restored by removing all encroachments along the CBD roads & road pavements will be improved.



- Repair & rehabilitation of major, Minor & streets as shown in proposed map.
- Removal of existing old bus stop located along Mirpurkhas-Digri road.
- Conversion of Old bus stop into charged Parking area.
- Major roads includes National Highway – 120, Mirpurkhas Digri Road, Mirpurkhas Umerkot Road, Mirpurkhas Tando Adam Road, Sir Syed road, Railway Quarters Road, Shahi Bazar & Library Road.
- Minor Road includes Tourabad Road, Captain Dr. Nazir Ahmed Siddiqui Road, Walkert Road, Old Power House Road, Rahim Nagar Road, Comprehensive School Road, Fruit Farm Road & Jamil Shaheed Road & Khan Road etc.



Figure 9:3: Concrete Pavers for Streets



Figure 9:3: Model of Parking

MIRPURKHAS - CORE TOWN AREA						REHABILITATION OF ROADS		
S.No	Area / Locality / Address Major Roads	LENGTH (km)	LENGTH (m)	Width (feet)	Width (m)	Area (sq.m)	Per sq.m cost (PKR)	Total Cost (PKR)
1	National Highway - 120	1.87	1870.00	40.00	12.20	22,804.88	4,500	102.62
2	Mirpurkhas Digri Road	1.36	1360.00	40.00	12.20	16,585.37	4,500	74.63
3	Mirpurkhas Umerkot Road	0.6	600.00	40.00	12.20	7,317.07	4,500	32.93
4	Mirpurkhas Tando Adam Road	0.28	280.00	40.00	12.20	3,414.63	4,500	15.37
5	Tourabad Road	0.79	790.00	40.00	12.20	9,634.15	4,500	43.35
6	Sir syed road	1	1000.00	40.00	12.20	12,195.12	4,500	54.88
7	Captain Dr. Nazir Ahmed Siddiqui Road	0.75	750.00	40.00	12.20	9,146.34	4,500	41.16
		6.65						
							Total PKR Rs. Million (A).	**364.94**
Minor Roads								
1	Railway Quarters Road	1.01	1010	30	9.15	9,237.80	4,500	41.57
2	Walkert Road	1.14	1140	30	9.15	10,426.83	4,500	46.92
3	Old Power House Road	0.83	830	30	9.15	7,591.46	4,500	34.16
4	Rahim Nagar Road	0.41	410	30	9.15	3,750.00	4,500	16.88
5	Comprehensive School Road	0.51	510	30	9.15	4,664.63	4,500	20.99
6	Shahi Bazar Road	0.76	760	30	9.15	6,951.22	4,500	31.28
7	Khan Road	0.62	620	30	9.15	5,670.73	4,500	25.52
8	Library Road	0.61	610	30	9.15	5,579.27	4,500	25.11
9	Fruit Farm Road	0.5	500	30	9.15	4,573.17	4,500	20.58
	Jamil Shaheed Road	0.85	850	30	9.15	7,774.39	4,500	34.98
	Widening and Pavement of Streets	16.81	16810	20	6.10	102,500.00	2,500	256.25
		24.05						
							Total PKR Rs. Million (B).	**554.24**
							Total PKR Rs. Million (A+B).	**919.18**

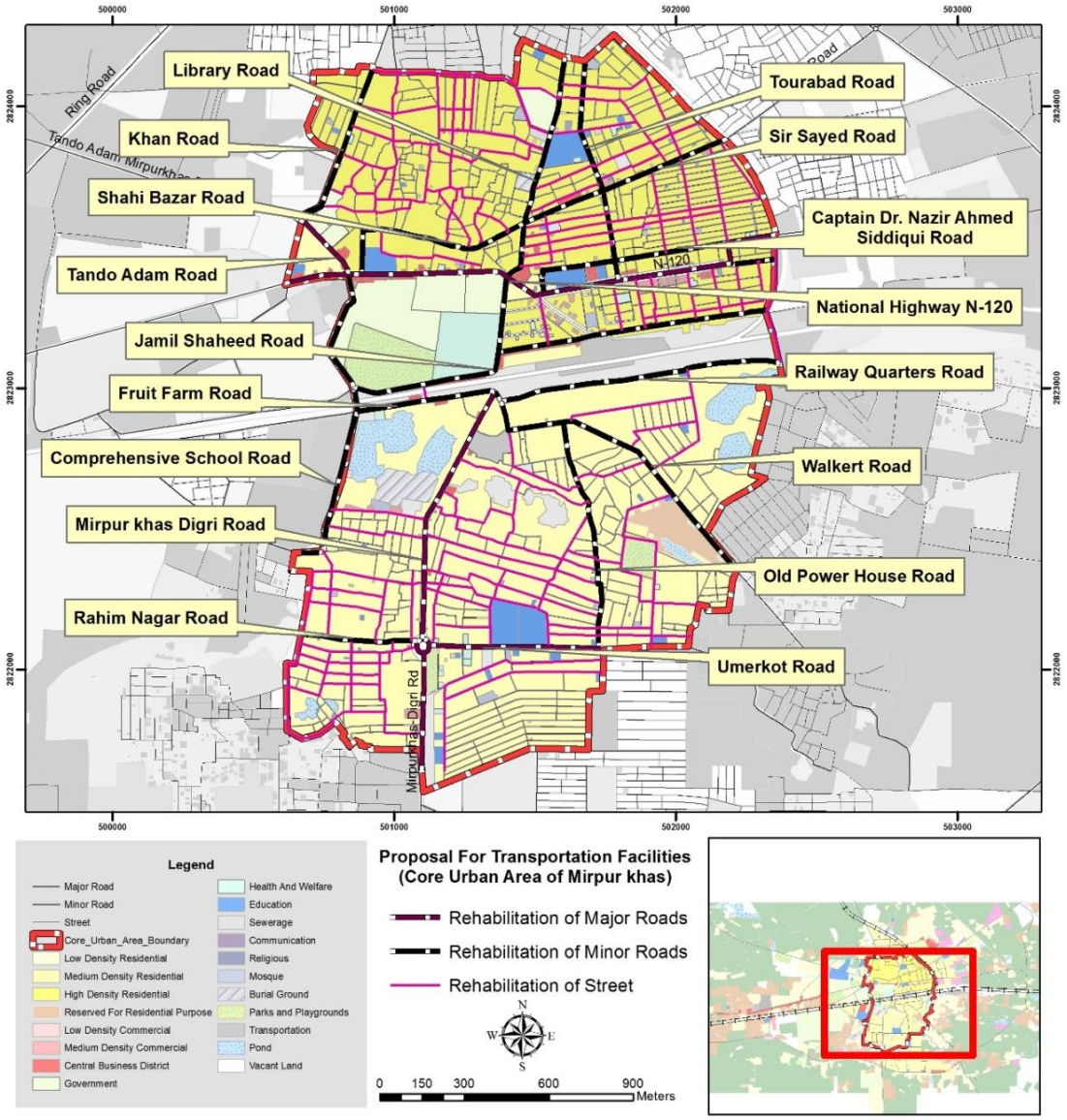


Figure 9:4: Proposal for Transportation Facilities for core urban area Mirpurkhas.

9.2 Energy

9.2.1 Existing Situation

The Power Supply to Mirpurkhas (MC) is through Hyderabad Electric Supply Company (HESCO) WAPDA via 132 KV Grid station feeding district by 11 KV feeders. As per the secondary data received from divisional office Mirpurkhas has 18 grids stations, 6,200 transformers ranging from 10 to 750 KVA. There are 203,692 power connections provided to various consumers in the area.

In Mirpurkhas there are street lights in almost all main areas and markets assessing about 60 KMs, the poles are made of steel as well as concrete. It is also realized that there are no street lights in small slum area and narrow lines, which require immediate attention of distribution company .The maintenance is required in order to keep lights working.

9.2.2 Need Assessment

The Electric Power consumption (KWH per capita) in Pakistan was reported at 472 in 2014, according to the World Bank collection of development indicator, compiled from officially recognized sources. This household load projected to 2017 at the rate of 5.4% annual which comes round 552 KWH, and if we multiply by number of households which is 24,042 and convert to megawatts it comes to 14.731 MW. It means there is shortage of about 4.476 MW. This shortage of power is maintained by periodic load shedding of the feeders supplying electricity to different zones. Average power per capita calculated according to formula: Power per capita=Total Population electricity consumption KHW per year x 1000/ (365.25 x 24)/ population.

If load is further projected up to year 2037, with average increase from 63 W (2017) to 80W per person, the additional increase of load will be as shown in below table:

Year	Population	Yearly Upsurge of Load Subject to Development & Standard of Living
2017	233,916	14.731
2037	291,704	30.198
Source: Consultant's estimation		

9.2.3 Issues and Problems:

- Advocacy efforts have not been made to promote efficient fuel use; consequently, there is little public awareness about fuel conservation measures,
- Alternative fuel sources are scarce and expensive

9.2.4 SWOT Analysis:

Power Supply & Distribution			
Strength	**Weakness**	**Opportunity**	**Threats**
1. The power supply is through HESCO-WAPDA transmission system 2. Electricity supply network for urban area 3. Almost whole urban area gets coverage of electricity 4. There are good local potential for electricity generation	1. Shortage of electricity & power supply 2. Poor maintenance of electricity supply infrastructure 3. Power shortage due to non-payments of bills 4. Line losses and power theft. 5. Outdated network in old town areas 6. Existing capacity of electricity supply is short to meet the growing demand of utility 7. 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. Licensing and legal issues. 6. Electricity theft

9.2.5 Strategic Development Plan

- Greater emphasis should be laid on alternative energy like solar, wind and biogas.
- Solar energy should be immediately applied for street lighting and tube wells.
- The distribution system will be needed to be extended to the new areas absorbing future urban growth.

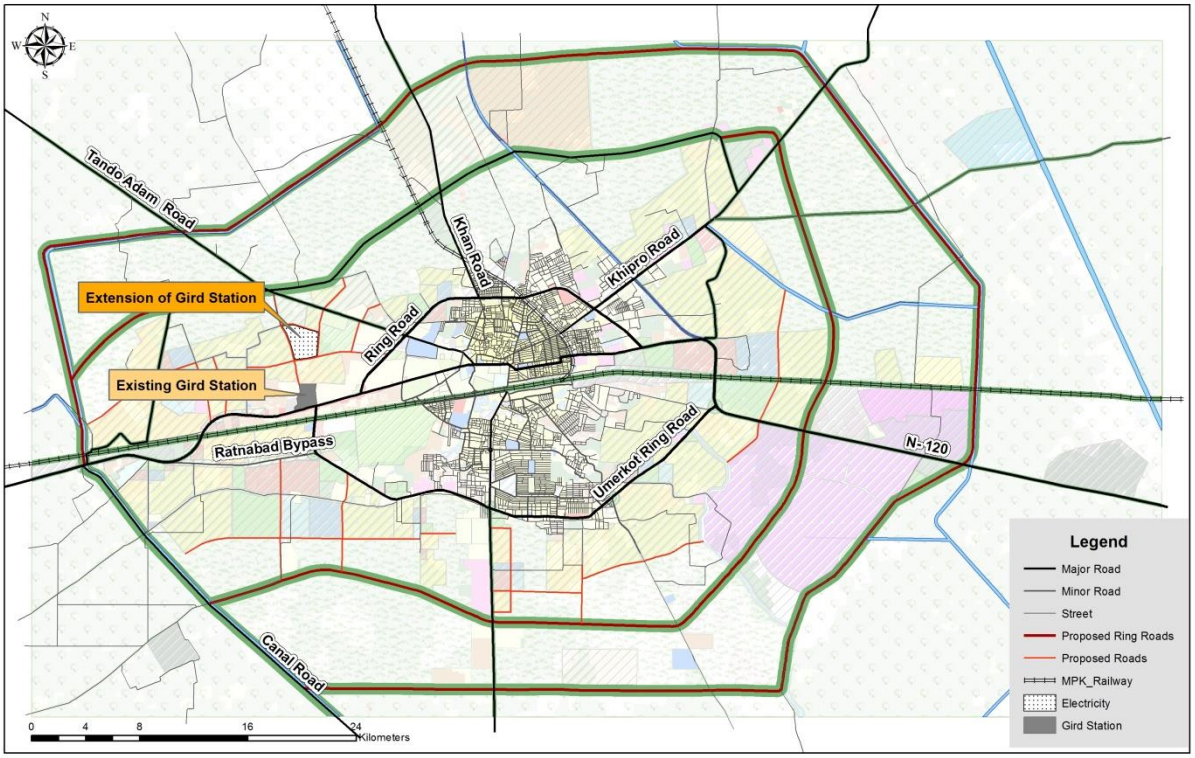
I. Long Term Plan

- Success in achieving fuel efficiency, adopting new technologies and altering existing fuel-use
- Encourage energy efficient building construction

II. Short Term Plan

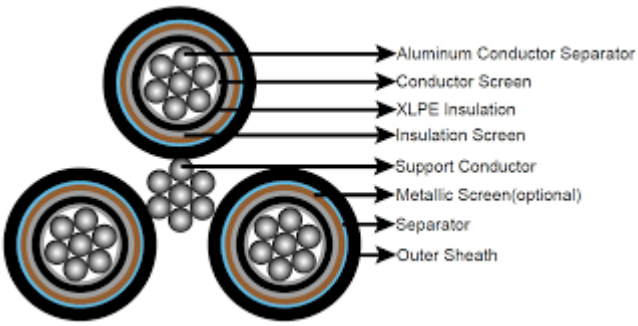
- Reduce power theft and enhance existing power supply for project area.
- Addition of sub stations as per requirement

Proposed Utilities and Services Landuse for Mirpur Khas Town



9.2.6 Immediate Action Plan for Core Urban Area

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.



- **Arial Bundle Cable wires**

  In present circumstances it is suggested that Arial Bundle Cable wires should be used to avoid short circuits and thefts issues. This will also increase the aesthetics and 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-streets 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

Proposed wall mounted street lights				
S. No	**Name**	**Length (km)**	**Length (m)**	**Cost (PKR)**
1	Proposed wall mounted streets lights.	46	46,000	3 7,729,660.00
			Total Cost (PKR). Million	37.73

Note:

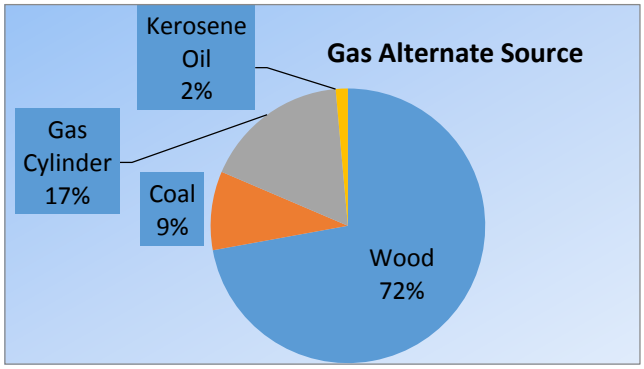
- ✓ Wall mounted street lights approximately should be placed on distance of 20 feet apart.
- ✓ Each wall mounted street light cost (Rs. 10,000/-).
- ✓ As per total length of Streets for this proposal 2,280 Nos. of wall mounted streets should be placed in core town area.
- ✓ Operation and maintenance is the 1st priority to ensure after installation of all equipment's and machinery and kept under strict control of TC office for proper usage of facilities.

9.3 Gas Supply

9.3.1 Existing Situation

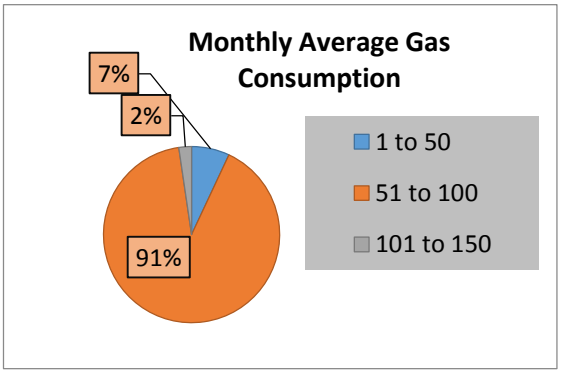
A maximum of 761 house residents had responded to the questions asked on availability of Gas. As given in the Table below, 646 houses had the gas available to them, while the gas was not available to 115 houses. Therefore about 85% households have the gas supply by SSGC and 15% were using alternate source of fuel for their daily household needs.

S. No	Availability of Natural Gas	No. Respondents	Percentage
1	Available	646	85%
2	Not-available	115	15%
Total		**761**	**100%**
Source: Consultant's Survey, July 2017			



Households not having Natural Gas provided by SSGC are dependent of alternate sources. 115 out of 761 respondents not having gas availability are using following alternate resources which includes 72% wood, 9% coal, Gas Cylinder 17% and Kerosene Oil 1%.
Other than natural Gas which is 87% and used by the majority of the respondents, 16% are using wood whereas 6% uses LPG, Bio gas and coal as fuel.
The table below shows the monthly average gas consumption as provided by only 43 houses due to lack of awareness. Unit of gas consumption is Cubic Meters (CMS)

Monthly Average Gas Consumption		
UNITS (CMS)	**No. OF HOUSES**	**%**
1 to 50	3	7%
51 to 100	39	91%
101 to 150	1	2%
Total	**43**	**100%**
Source: Consultant's Survey, July 2017		



- **Sufficiency of Gas Pressure**
  The Table below shows the sufficiency of gas pressure as provided by 731 houses. Around 39% of the households suffer with low gas pressure whereas

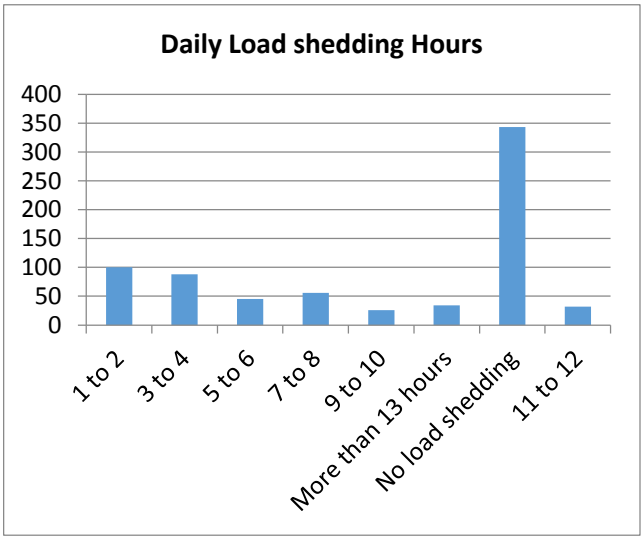
Sufficient Gas Pressure	Number of Houses	%
No	286	39%
Yes	445	61%
Total	**731**	**100%**
Source: Consultant's Survey, July 2017		

61% of the households are satisfied with the Gas pressure.

- **Sui gas Load Shedding issues**

Survey results also reveal that 47% of the households do not have gas load shedding. While only few of the household's complaints that 5-6 hours gas load shedding is being done in their area on daily basis. Following table depicts the overall results.

Daily Load shedding Hours	No. of houses	Percentage (%)
1 to 2	100	14%
3 to 4	88	12%
5 to 6	45	6%
7 to 8	56	8%
9 to 10	26	4%
More than 13 hours	34	5%
No load shedding	343	47%
11 to 12	32	4%
Total	**724**	**100%**
Source: Consultant's Survey, July 2017		



9.3.2 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

9.4 Communication

9.4.1 Telephone, Mobile, Internet

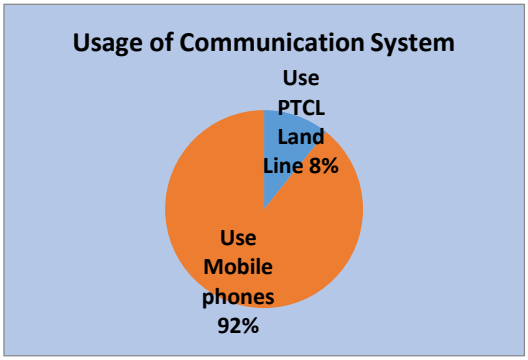
The epicenter of growth in mobile phone services in Mirpurkhas is gradually covering to semi-urban and rural areas localities. Remote areas have started showing growth, led by the expansion in cellular networks, increasing awareness of the usage of voice and data connections and availability of mobile handsets at affordable prices. A significant rural population uses phones to remain connected with their outstation relatives and friends, who have gone there for education and in search of livelihood.



Communication Tower

However, the usage of internet in Mirpurkhas is slightly different from that in the urban cities. Most of them use internet to enjoy audio and video songs and to watch movies. Information and communications technology expert say that mobile phone internet usage was increasing as all new SIMs being issued to the subscribers were 3G-enabled.

The PTCL offices are located at many places in Mirpurkhas. The present-day situation of Mirpurkhas falls in the developed urban area; as per the survey there are about 8% households using PTCL land line out of 756 households surveyed. Others 92% household use public call offices in the area or cell phone.



9.4.2 Internet/ Wi-Fi Access

Mobile phones and televisions rank as two of the most commonly owned consumer electronic items in Pakistan. The difference in mobile phone ownership between urban and rural areas is not significant (94.7% compared to 83% respectively). However, the difference in percentage of households that have an internet connection is notable, with 17.4% of urban homes having access to internet compared to 1.3% of rural homes.



- The second most commonly owned electronic consumer item on the list was the television, found in 60.2% of households nationwide.
- At present the internet usage is limited to educated families, and it is by the pace of time increasing with the decline of illiteracy rate.
- As per survey about 141 numbers of households i.e. 18% are using internet and remaining 624 or 82% are still without using this new technology, the users are increasing day by day.

10 ENVIRONMENT

10.1 Existing Situation

District Mirpurkhas is situated in the lower Indus basin. The area of the district has been formed by the alluvial deposit of the river Indus. It has a good agricultural and irrigated area and vast stretches of vegetation lined up in many places with avenue of trees.

The soils around the DHQ are of recent alluvial origin and are basically suitable for irrigated agriculture. Although, stratification is complex, the majority of soils are within the range of fine sandy loam to silty clay loams with the latter being most common.

The district has a well-established canal irrigation system. With the construction of Jamrao canal in the British era, the importance of this district increased significantly. Jamrao canal originates from the right bank of Nara canal and serves an area of about 935,000 acres. Two major canals i.e., Jamrao canal, West Branch Canal, and their distributaries irrigate district Mirpurkhas.

In summers, water availability in the River and associated canals gets reduced thereby putting pressure on the farmers to maintain water supply for the agricultural activity and daily activities. To meet this shortfall in water availability, local farmers in the project area also extract groundwater. For this purpose, most fields in the area have a tube well. The main source of groundwater recharge is the irrigation channels flowing through the area.
Groundwater in the area is generally shallow, and is significantly affected by the irrigation system, which consists of canals fed by the Indus. The groundwater depth has been found to vary during recent times when the Indus flow has reduced to its extensive use upstream.

- **Flora:** Due to extensive agricultural activity, most of the natural flora in the macro-environment is replaced by agricultural field and does not support rare or threatened plant species. Major crops in the area include banana, rice, cotton, sugar cane, wheat, and maize. Most of the plant species present in the site are cultivated.
- Fauna

- Wildlife

  Mammals found in the project area are mainly jackal (Canis aureus) and rabbit (Lepus nigricollis). Porcupine (Hystrix indica) and wild boar (Sus scrofa) are common in the plains of Sindh. Squirrel (Funambulus layardi) and Mouse (Mus musculus) are the basic rodents found in the area.

  Birds Important resident bird species/avifauna found in the project Area of Sindh are house sparrow (Passer domesticus), common crow (Corvus splendons), kite (Elanus caeruleus), dove

(Streptopelia decaocto), Hoopoe (Upupa epops), Quail (Cortunix cortunix) Common Myna (Acridotheres tristis), desert lark, cattle egret etc.

- **Reptiles**

  The area provides a suitable habitat for a number of reptiles. Reptiles include snakes and small sized lizards, which are a common sight in the area. Toad (Bufo bufo) and Frog (Rana tigrina) are commonly found in the project area.

- **Livestock**

  Locals also maintain stocks of cattle, cows, goats, sheep and poultry as a second source of livelihood after agriculture. Livestock and ruminants include: Domestic Goat (Capra hircus); Domestic Sheep (Ovis aries); Domestic Cattle (Bostaurus); Domestic Donkey (Equusasinus).

10.1.1 Issues and Problems:

- **Water logging and Salinity**

The major factor contributing to water logging in cultivated areas is excessive percolation from the canal system, which builds up the ground water level. Human activities can also aggravate water ogging problems through actions which include the following:

- cultivation of high delta crops on highly or moderately permeable soils
- obstruction of natural drainage channels through construction of buildings and roads
- improper alignment and poor maintenance of artificial open drainage system
- Inefficient disposal of excess rain water, etc.

- **Wind erosion**

Land degradation by wind erosion is quite common in the sandy deserts of Thal, Cholistan, and Tharparkar. Erosion is significant in areas around habitations and watering points trampled by livestock. High velocity wind storms cause severe movement of sand dunes, depositing thick layers of sand on roads, railway tracks and croplands, ultimately threatening village inhabitants.

- **Loss of Biodiversity**

Due to the ever-increasing human and livestock population there is enormous pressure on natural vegetation in almost every agro-ecological region of the country. Aridity and prolonged drought in arid lands have affected the vegetation cover in these areas. All these factors have contributed towards the loss of biodiversity in various regions of the country. As a result of natural habitat degradation and illegal hunting, 31 species of mammals, 20 species of birds and 5 species of reptiles are listed as endangered species in the country.

- **Water erosion**

Sedimentation of canal irrigation system decreases water and land use efficiency. Some 40 million tons of soils are brought into the Indus basin each year, which shortens the life span of major reservoirs and reduces their efficiency. The upstream riverside infrastructure is

destroyed and top soil is washed away declining productivity of the area. In downstream, the sedimentation reduces the efficiency of hydropower generation and irrigation systems.

10.1.2 **Other Issues Include:**

- Water Contamination
- Low quality of surface water that is not fit for drinking
- Seismic Risk

10.1.3 **SWOT Analysis**

STRENGTH	WEAKNESS	OPPORTUNITIES	STRENGTH
ENVIRONMENT			
Land			
1. Flat fertile land suitable for development 2. Rural rich fertile agriculture land that produces quality crops 3. Soil of Mirpurkhas is very fertile	1. Unplanned land uses 2. Limited availability of govt. land for future spatial growth 3. Incomplete development of agricultural land parcels (scattered agricultural growth) 4. 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. Slum formation 3. Contamination of land in un-irrigated areas
Fresh Water Bodies			
1. Huge irrigation canal based network available 2. Inland fisheries water ponds exists 3. There are 44 fish production farms in Mirpurkhas district	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. 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 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 4. Affect agricultural production 5. Water logging

STRENGTH	WEAKNESS	OPPORTUNITIES	STRENGTH
Climate			
1. Suitable for producing crops 2. Summer climate which bring rich fruits and vegetables, while winter brings a good and suitable weather for the inhabitants 3. Favorable climate conditions for agriculture	1. Rainfall shortages affect the efficiency of canal system 2. Hot winds blow from May to August from south to north which disturb the inhabitant's life very badly	1. Agricultural practices can be changed in accordance with weather condition for maximum production	1. Droughts 2. Heavy rains Climate change affects agricultural production
Air			
1. Air quality in the rich agricultural belt is good for human health, and also keeps ecological balance in atmosphere	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 2. In future the town can be planned as Green City	1. Air pollution 2. Respiratory diseases
Urban Area & Areas Suitable for Urban Development			
1. Land available for future development within town urban boundary 2. The land use analysis indicates that almost 40% of total Town area is in use of urban purpose only where as 55% of the area is covered by agriculture 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	• Land grabbing • Slums • Unplanned growth • Threat to agricultural land • Private sector may increase the cost of services.

STRENGTH	WEAKNESS	OPPORTUNITIES	STRENGTH
Drainage & Flood Control			
1. Most of the town is served by drainage network system	1. Open drain on street. 2. Improper channelization of drains 3. Over flow of storm water drains 4. Poor administrative control for operating existing drainage system of the town 5. Depression areas causing permanent ponding. 6. Reliance on sewer for flood/storm water	1. The city's old drainage system needs revival & cleaning 2. Construction Of Pacca Flood protection embankments 3. Development of surface drainage network with easy disposal to canals/ LBOD 4. Completely removal or treatment of land where temporary ponds have been formed in main town area	1. Left Bank Outfall Drain (LBOD) is a constant threat to the district people 2. Medium level flood disaster threat to local communities living near to main course of River Indus 3. Open and overflowing drains have impact upon human health and give birth to epidemic diseases

10.1.4 **Policy Guidelines**[40]

- Enhancing role of local governments in sustainable management of natural resources
- Conservation of biological diversity, protection and sustainable use of indigenous flora and fauna
- Sustainable Management in Reserved, Protected, Flora and Fauna
- Management of irrigated and linear plantations
- Promotion of indigenous species
- Increase the efficiency of surface drainage.

10.1.5 **Strategic Development**

- Ensuring environmental sustainability
- The setting up of a National Environment Council (NEC) to coordinate the Formulation of environment related policies and plans;
- Need of Permits to discharge waste and pollutants into the environment;

[40] National Forest Policy 2010

- The requirement for Environment Impact Assessments to be binding on all parties including government;
- Restoration and maintenance to preserve ecological cycles, functions and services of environment
- Measures to be taken to remove the problem of water logging and salinity.
- Reduce Water Contamination
- 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

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

- To reduce co2 emissions with plantation of trees, viable with local climate to achieve safe and healthy environment.
- zero deforestation

10.1.6 Priority Projects

- Rehabilitation of Irrigated plantation
- Enhance Rangeland production and planting fodder trees for farmer community
- Afforestation of Blank Reaches along Important Highways

11 DISASTER RISK MANAGEMENT

11.1 Existing Situation

Mirpurkhas is the main city and DHQ of Mirpurkhas District in Sindh, Pakistan. Mirpurkhas is on the left bank of the river Indus. The region is swampy, fertile, and suitable for growing rice and famous for the production Mangos in Pakistan. Mirpurkhas had been hit by 2011 rains/floods. The relative severity of floods was marked medium for district Mirpurkhas by NDMA.[41] The river water which have been received from 5 tributary rivers level went up more than danger level and caused floods in the northern and southern parts of Sindh province.

- **Floods / Rains.**
  - District Mirpurkhas was hit by 2011 and 2012 rains /floods. River Indus, after receiving water from 5 of its tributary rivers, causes floods in the northern and southern parts of Sindh province.
  - District Mirpurkhas was among severely hit areas by rains/floods in 2011. The district fell under the category of medium risk districts, as declared by the PDMA Sindh. But in 2011 rains/floods, the extent of damage was not moderate at all as assessments showed that 3,178 villages/settlements of 46 union councils, in all the 7 talukas were affected. A population of 705,151 persons was affected and there were 61 casualties and 230 injuries. In total, 200,000 houses were damaged. Geographically the whole district (all talukas and their UCs) was inundated and 94 percent of the sown area was affected due to these rains/floods.

11.1.1 Earthquakes

The Mirpurkhas district does not exist in earthquake disaster zone area of Pakistan. The Pakistan hazard maps highlights district MirpurKhas position in the category of safe zone.

11.2 Impacts of Floods

11.2.1 Food Security

Mirpurkhas is considered to be a food insecure district. Floods of 2011 worsened the existing situation of the population and the indicators of food security i.e. availability, access, utilization and stability showed dismal situation in this district.

District Mirpurkhas is agro-based and majority of the households are engaged in agriculture farming and livestock rearing activities with still others in non-agriculture activities/casual labor. 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.[42] Many individuals of this flood affected district lost their homes (118,110 houses were damaged), their crops (171,522 Acers of crop area affected) and heads of livestock (12,280 livestock died). Due to the lack of an adequate 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 labor.
Through the destruction of roads, transport and market infrastructure, the floods had a significant negative impact on the commodity market. As a result, the functioning capacity of markets (transporters, processors, wholesalers and retailers) was decreased with upward movement of transaction costs and shortage of food commodities. This phenomenon hindered the socio-economic access to food in the district.[43]

The losses to crops and livestock along with the poor functioning capacity of the markets significantly educed the expected income of the population of this district. Thus the floods and rains affected people of the district MirpurKhas had to face a number of key challenges to recover their livelihoods, directly affecting the food security situation.

11.2.2 Health Sector

In 2011 floods, total 28 BHU's were identified in district, out of which 19 had been completely destroyed. The same had been reported for RHC's, where one out of five RHC found destroyed by flood water.
An organization named as HANDS accommodated 16 union council of district with Antenatal, Post Natal and regular health services to affected local communities. The 2011 and 2012 Flood affected 13,400 children with moderate acute malnourished (MAM) and 8,114 children with severe acute malnourished (SAM). For women, there were 12,294 pregnant and lactating women (PLW) identified displaced. Whereas, only 2,623 MAM children, 1,340 SAM children and 2,245 PLW were facilitated with emergency medical services. According to 2012 flood statistics, initial rapid assessment demonstrates that no damage was reported to any health facility caused by flooding.

11.2.3 Education Sector

Due to the floods/rains of 2011, 539 school facilities were damaged. Out of which 281 were fully destroyed and 224 were partially damaged. 34 schools were 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 43,120 students was affected (Girls: 18,542, Boys: 24,578). Teachers numbering 1,437 were also affected.

[42] *Ibid*
[43] Civil Society Flood Situation Report , Prepared and Released by People Accountability Commission on Floods (PACF)
http://www.pacfpakistan.org/Civil_Society_Flood_Situation_Report/9th%20CSFSR_Concern%20voiced%20over%20deteriorating%20health%20of%20rain%20victims.pdf

While keeping in view the loss to education sector caused by floods. A cluster based planning approach for the establishment of temporary learning centers comprising 318 TLC's had been establish to continue the process of education for those affected by flood. The formation of said cluster also helped to re-construct 224 partly damaged schools.

11.2.4 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.

11.3 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.

- **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).
- **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.

- **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.

- **Identification of Land uses for Potential Terrorists Attack**

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

Table 11-1 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

11.4 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.

I. Possible Terrorist Intensity Places of DHQ Town Mirpurkhas

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

II. Planning to Counter Potential Terrorist Threat

It is aimed at those places where there may be a risk of a terrorist attack by nature that they are crowded places. It is accepted that the concept of absolute security is almost impossible to achieve in combatting the threat of terrorism, but it is possible, through the use of this guidance, to reduce the risk to as low as is reasonably practicable.

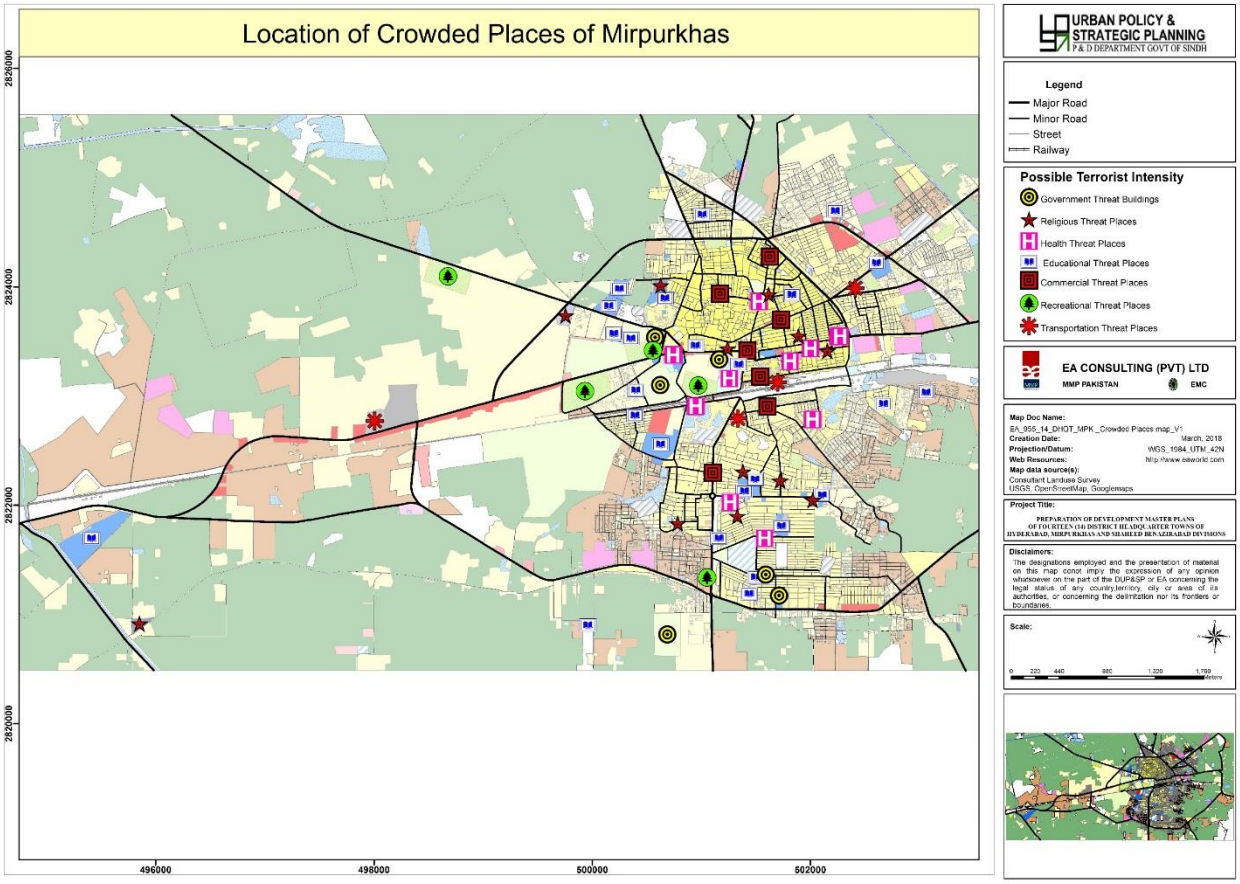


Figure 11:1 Crowded Places of DHQ Town Mirpurkhas

Proposed Strategy to Counter Potential Threat Measures

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

a) 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.

b) 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.

c) 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.

d) 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 incident

11.4.1 Issues and Problems

- Low level of disaster risk awareness among various stakeholders and general public
- Limited financial resources for DRM operations
- Poor logistic support for DRM operations
- Lack of strategic policy framework for the preservation of natural resources
- Lack of effective policy framework for emergency response and evacuation
- Lack of coordination between DRM stakeholders
- Lack of communication services between relief agencies
- Less participation of local communities in mitigation process
- Incapability of stakeholders to cope with disasters
- Incapability of emergency services to cope with disasters.

- Poor enforcement of disaster risk management laws & regulations
- Population influx, local migration from rural to urban areas
- Poorly planned land uses

11.4.2 Policy Guidelines[44]

- Provide training and awareness courses to district, municipal 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
- Arrange and conduct need assessments of damages / losses.
- Ensure application of proper mechanism for evacuation and relocation of affected community to safer places.
- Establish Relief Camps with necessary arrangements.
- Initiate relief and rescue activities in their respective areas with the help of all stakeholders which also include provision of shelter, food, medicines etc. to the affected communities as well as to IDPs who are settled in makeshift Relief camps
- Arrange coordination meetings with health units.
- Mobilize entire health network functioning in the district for situation analysis and need assessments.
- Arrange mobile teams / Mobile Medicine Units for pre-medication of affected communities in all near and remote areas.
- Delegate responsibilities for regular inspection and maintenance of irrigation channels and drains.
- Coordinate and communicate with DDMA.
- Identify and strengthen the vulnerable points in the banks of all canals and drains running through the district.

11.4.3 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.

[44] National Disaster Risk Reduction Policy 2013

- 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.

I. **Long Term Plan**

- 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.

II. **Short Term Plan**

- 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.

11.4.4 Priority Projects

- 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 municipal 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.

12 CLIMATE CHANGE EMERGENCY CONTINGENCY PLAN

12.1 District Level Plan

Mirpurkhas district is prone to canal flooding and floods caused by heavy rainfall.

- **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.

12.1.1 Early Warning

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.

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.

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.

12.2 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.

12.2.1 Health Department

a) 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.
- 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
- 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

12.2.2 Education Department

a) 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

b) 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

c) 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.

12.2.3 **Agriculture Department**

a) 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.

b) 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.

c) 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.

12.2.4 **Livestock and Fisheries Department**

a) 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.

b) 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.

c) 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

12.2.5 **Planning and Development Department**

a) 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

b) 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

12.2.6 **Revenue Department**

a) 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.

b) During Disaster

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

c) 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.

12.2.7 **Police Department**

a) 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.

b) 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.

c) Post-Disaster

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

12.2.8 **Civil Defense**

a) 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

b) 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.

c) Post-Disaster

- Identify gaps and make plan to overcome weaknesses

- Assisting District Administration and other Line Departments in Rehabilitation works

12.2.9 **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.

12.2.10 **Scouts**

a) 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.

b) During Disaster

- Trained scouts will be deployed/placed at the disposal of Deputy Commissioner
- The scouts will perform the duties as per training and will report to respective Deputy Commissioner

c) Post-Disaster

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

12.2.11 **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

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

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.

12.3 Implementation and Monitoring

12.3.1 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 indicators46.

12.3.2 Quantitative 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.’’

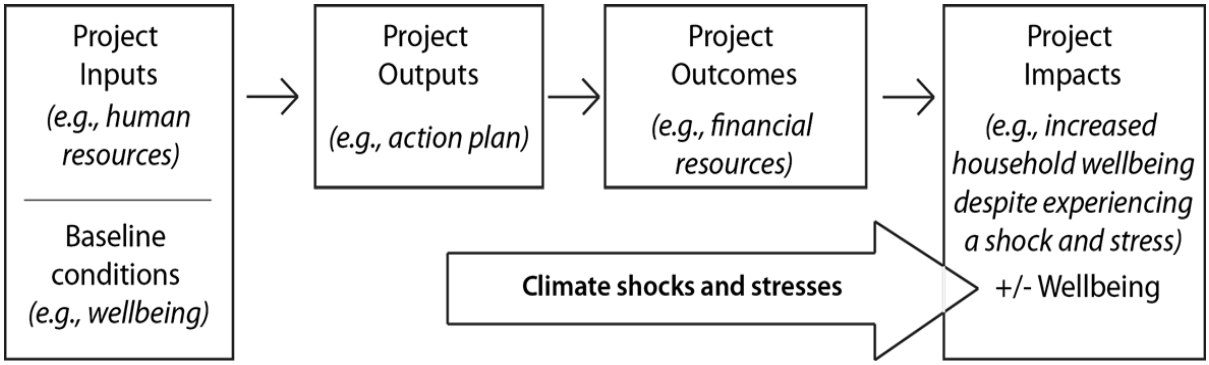


Figure 12:1: Four phases of a resilience initiative, and the timing of baseline and post-shock measurements of wellbeing (Brown, et al., 2018)

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.

[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

12.3.3 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).

12.3.4 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.

12.3.5 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

[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

- 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, website), geographic coverage, level of disaggregation of system information (e.g. district-specific).
- 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.

12.3.6 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

12.4 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

I. 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

[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

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.

II. 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 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.

III. 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.

12.5 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

[49] Williams, A., 2016. Options for Results Monitoring and Evaluation for Resilience-Building Operations, Washington DC: World Bank Group

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.

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 Mirpurkhas, 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 Mirpurkhas

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 / discourage 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.

13.5.1 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%).

13.6 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 Mirpurkhas.

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			
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			

Strength	Weakness	Weakness	Threats
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.

Proposed Public Administration Landuse for Mirpur Khas Town

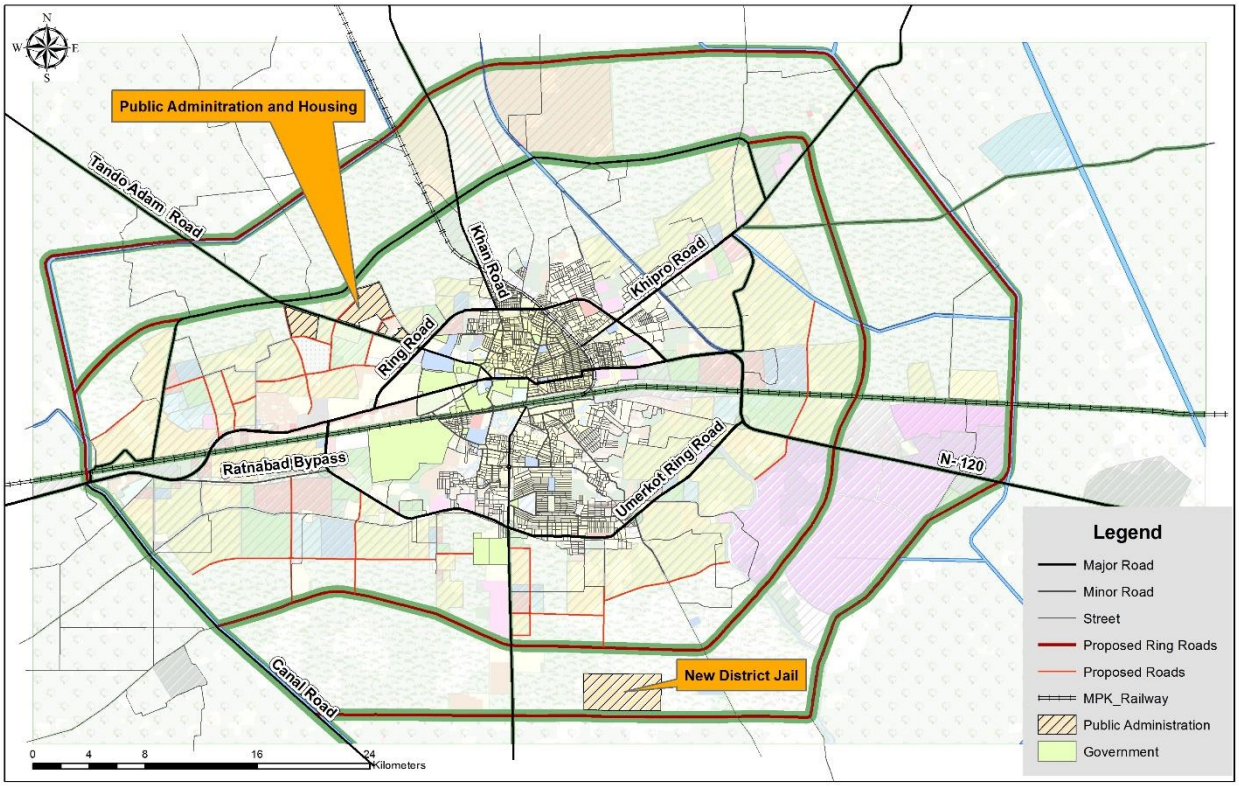


Figure 13-1: Future Administrative Proposal of MirpurKhas

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 Mirpurkhas 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 within 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 Mirpurkhas 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 Mirpurkhas. 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*** **Mirpurkhas *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 municipal 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 Mirpurkhas 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, Municipal Corporation, secretariat of Commissioner and Deputy Commissioner.

The *'Project Management and Implementation 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 Management and Implementation 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 Management and Implementation 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>** **2. <u>Decongestion specially in the Core Urban area</u>** • Development of low density low income housing **3. <u>Development Control</u>** • Amendment in Zoning Bye laws • Restrict the provision of utility services for approved planned areas • Peri-Urban Land use control • Vertical growth options **4. <u>Air Port Road Regeneration</u>** • Zoning master plan for Airport Road Regeneration **5. <u>Circular Road</u>** • Completion of New Ring Road in eastern ward of the city
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:	**Time of Implementation:** Short Term (1 year to 5 Years) Long Term (5 Years to 20 Years)

P & D Department Government of Sindh/ District Government/ Line Departments of local Government /Private Developers	

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 • Encroachment Removal & Relocation Study • On Street & Off Street Parking Feasibility Study • Beautification plan	**Implementation Responsibilities** International Development and Fund Supporting Agencies/Public Sector/ Private developers

Concerned Agencies Provincial Works & Services Department Government of Sindh./ District Highways Department/ Local Municipal 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).
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 (5 Years to 20 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 Municipality (MC)	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (5 Years to 20 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	**Time of Implementation**

Provincial / Local Government/ Public Health Engineering Department Municipality (MC)/ Sindh Solid Waste Management Company SSWMB	Short Term (1 year to 5 Years) Long Term (5 Years to 20 Years)

Strategy: **Improving Efficiency of Municipal Committee's (MC)** • Municipal Committee	**Programs/ Policies** • Acquire the required additional sanitary workers as per requirement. • Make Municipal Committee self sufficient • Strengthening Municipal Committee's Financial Capacity • In long term introduce 4R Solid Waste Management System (reduce-reuse-recycle-reject)
Responsibilities to Plan • Municipal Committee's Progress Assessment Study	**Implementation Responsibilities** Public / Private Sector
Concerned Agencies Provincial / Local Government/ Public Health Engineering Department Municipal Committee (MC)	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (5 Years to 20 Years)
Strategy: **Improving Fire Fighting Capacity**	**Programs/ Policies** • Establishment of two sub-stations to accommodate 8 fire vehicles more. • 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 Mirpurkhas Municipal Committee.	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (5 Years to 20 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.
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	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (5 Years to 20 Years)

• Developers	

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 4,164 beds to achieve the target of 2 beds per 1000 district population • Hiring of 2,402 and paramedical staff to cater future population. • Installation of incinerators.
Responsibilities to Plan • Health reforms	**Implementation Responsibilities** Public Sector and Welfare Agencies
Concerned Agencies State Government/District Health Department. Provincial and District Health Department	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (5 Years to 20 Years)

Strategy: **Education Sector Strategy**	**Programs/ Policies** • Provision of additional classrooms to remove existing burden from existing schools • Repairing of school existing buildings with furniture • Training of teaching staff • Provision of additional classrooms by 2037 • New schools and colleges for estimated population of 291,704.

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 (5 Years to 20 Years)

Strategy: **Improving Recreation Sector**	**Programs/ Policies** • Beautification plan to improve quality of existing recreational facilities and accelerate 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. • Provision of touristic facilities for visitors at Chitori Graveyard. • Provision of Cinemas facilities for public. • Encourage Private Investment in recreational sector • Provide city scale Zoo and Amusement Park/Water Park facilities
Responsibilities to Plan • Provisions of New Recreation sites	**Implementation Responsibilities** Public Sector
Concerned Agencies	**Time of Implementation**

Provincial Government / Culture, Tourism & Antiquities Department/ Government of Sindh/ District / Local Government / MC	Short Term (1 year to 5 Years) Long Term (5 Years to 20 Years)

Strategy:	**Programs/ Policies**
Disaster Risk Management	• 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. • Increase storage capacity of existing cold storage / Godowns to cater disaster effected population.
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) Long Term (5 Years to 20 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 storage capacity of existing cold storage / Godowns to cater disaster effected population. • 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 / Mirpurkhas 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
Mirpurkhas 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	Data Reporting	Financing	Innovation
Mainstreaming SDGs in local development plans and strategies clearly delineating the resource requirements.	Strengthening coordination, reporting and monitoring mechanisms for SDGs	Financing flows increasingly aligned with 2030 Agenda	Supporting integrated and innovative approaches to accelerate progress on SDGs on priority areas.

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 - Mirpurkhas 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]1.2% 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	79% 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 Mirpurkhas DHQ town in the future.	o The total extent of the area included in the overall proposed Mirpurkhas Master Plan is 28,000 acres approx. for a population of 292,000 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.		(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 Mirpurkhas DHQ town is 105 tons per day. Regular	- 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] Municipal Committee Mirpurkhas
[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	collection 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 1.8% (101 acres) out of total 5,635 (22.8 Sq KM[12])acres park area is available in Mirpurkhas	• 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,	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	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.	National Disaster Risk Reduction Policy 2013[14]

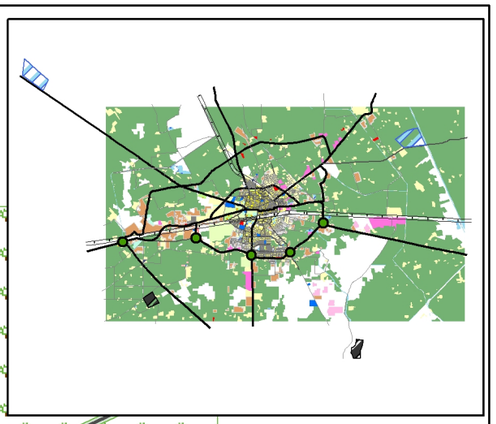
[14] http://www.pdma.gos.pk/new/resources/Sindhidrr-policy.pdf

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels	national and local disaster risk reduction strategies		• 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.	

Annexure – B

Atlas

Proposed Master Plan for Mirpur Khas Town



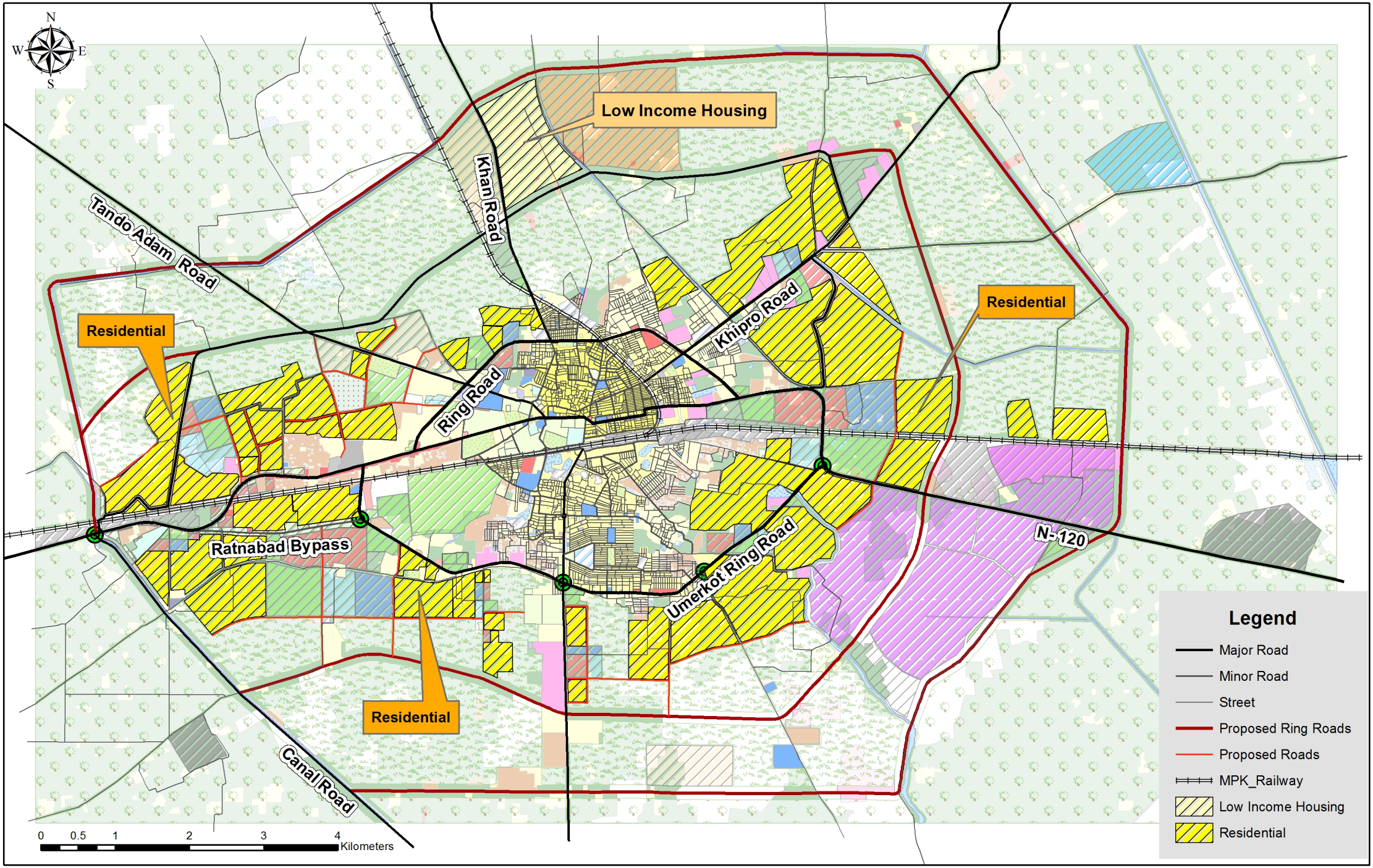
Agricultural Fields
Poultry Farm
Low Income Housing
Cattle Farm
Water Supply
Sub Commercial
Public Administration
Orchards
PCB Ground Extension
Education
Extension Grid Station
Children Hospital Extension
Eidgah Recreational
Education Zone
Railway Reserved Area
Commercial
Medical College Extension
DHQ Hospital Extension
Dry Port
Sugar Mill
industrial Adjacent to Sugar Mill
Existing Horticulture Farm
Transport Terminal
Agricultutal Festival
Trade and Commerce
Warehouses
Land Fill Sit
Health
Green
New CBD
Industries
Residential
Recreational Zone
Health Zone
Bhitai College
Bricks Kiln
Graveyard
Agricultural Reserved Area
STP
Jail Reserved Area

0 0.75 1.5 3 4.5 6 Kilometers

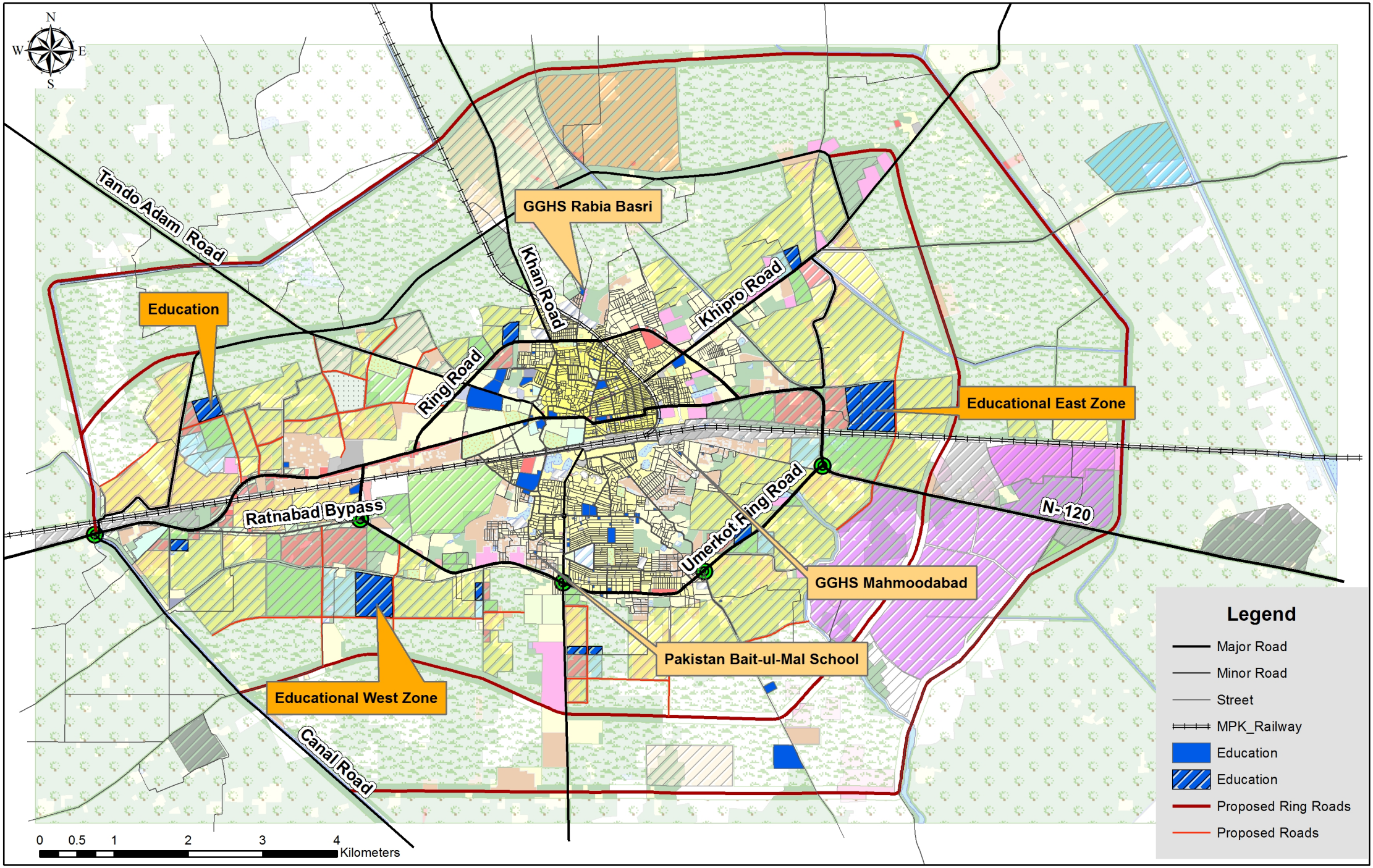
Legend

- Proposed Major Road
- Proposed Streets
- Major Road
- Minor Road
- Street
- MPK_Railway
- Monuments
- Agricultural Fields
- Agricultural Reserved Area
- Commercial
- Education
- Health
- Economic
- Low Income Housing
- Residential
- Recreational
- Cattle Farm
- Poultry Farm
- Public Administration
- Water Supply
- Railway Reserved Area
- Transportation
- Sewerage
- Land Fill
- Religious
- Electricity

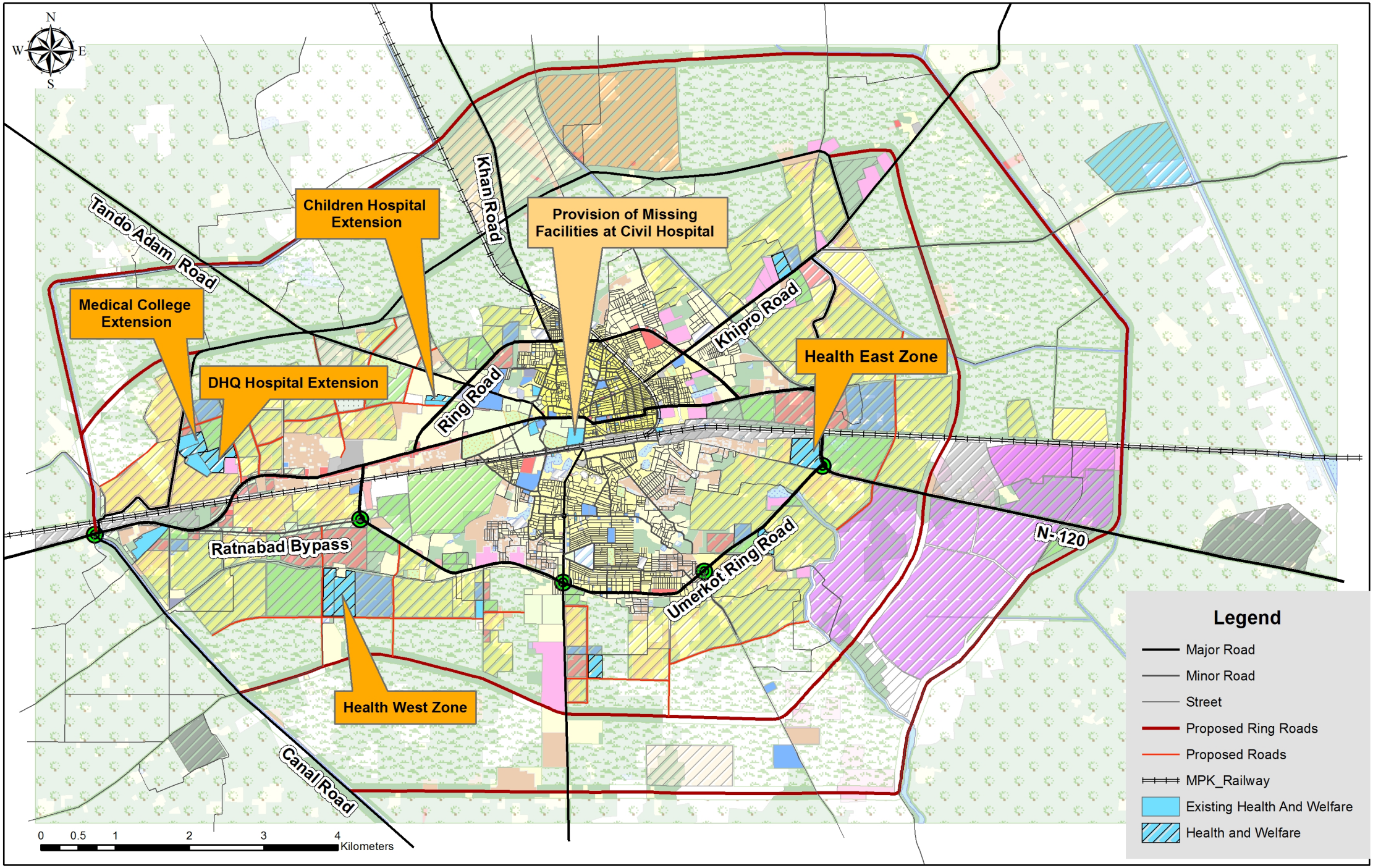
Proposed Residential Landuse for Mirpur Khas Town



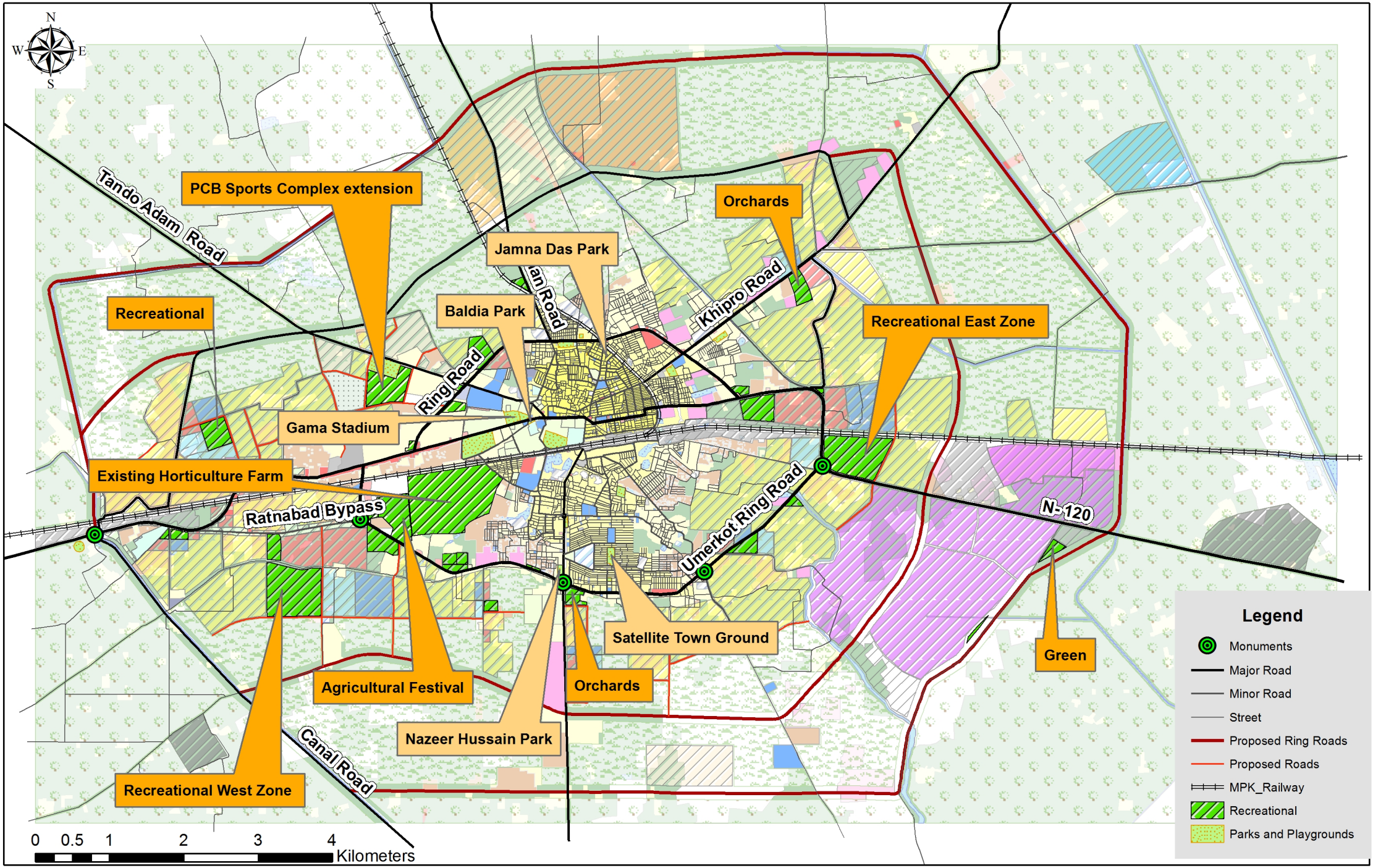
Proposed Educational Landuse for Mirpur Khas Town



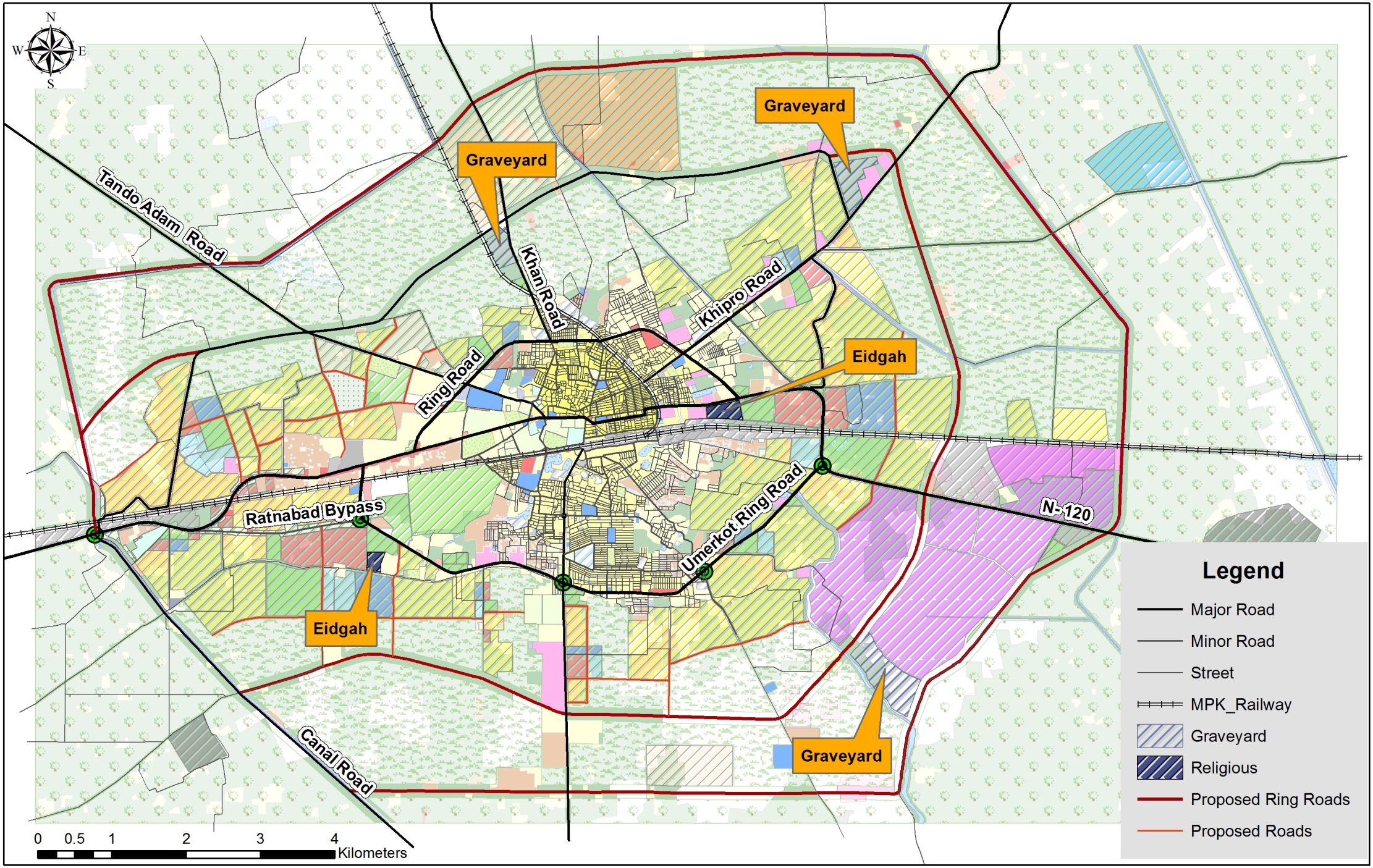
Proposed Health and Welfare Landuse for Mirpur Khas Town



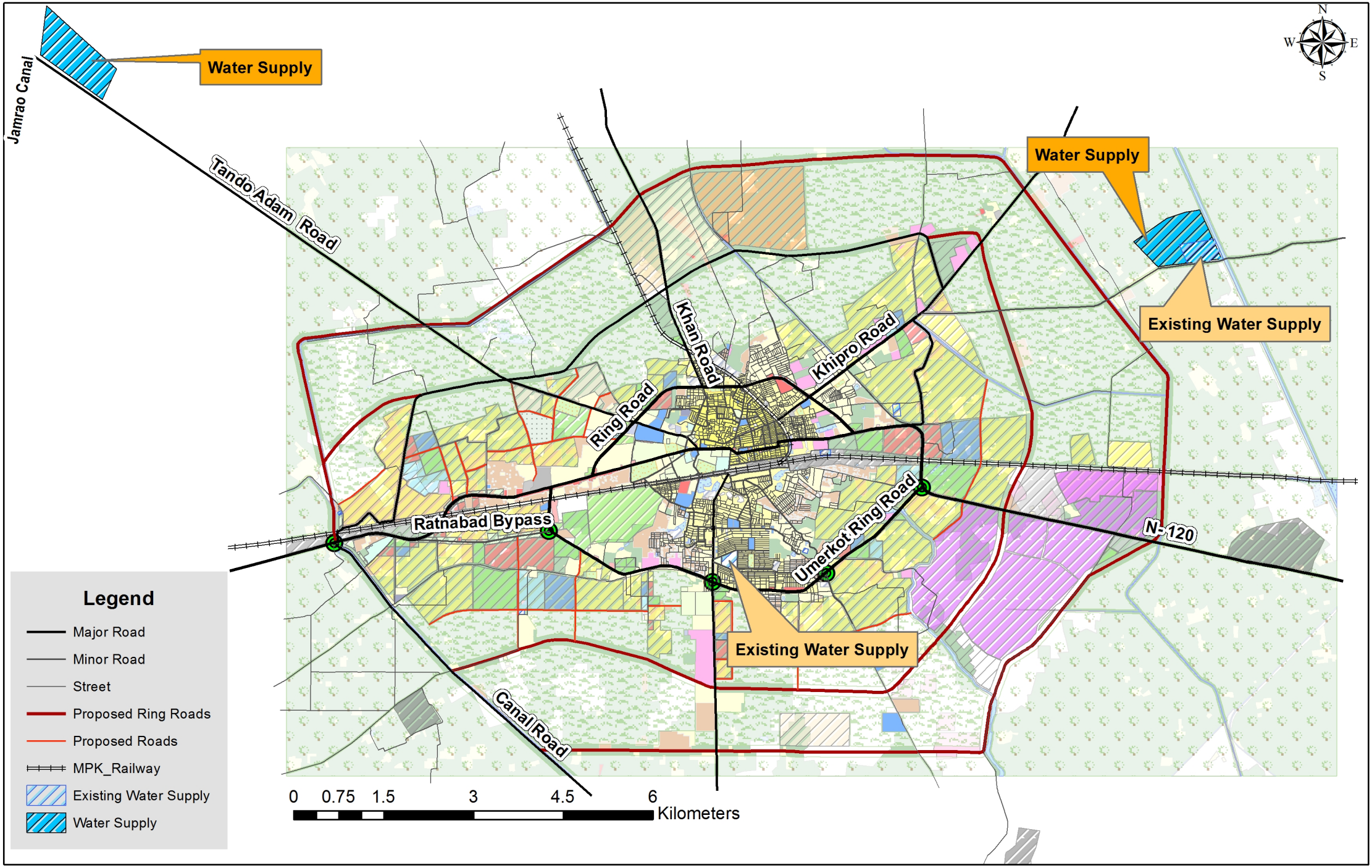
Proposed Recreational Landuse for Mirpur Khas Town



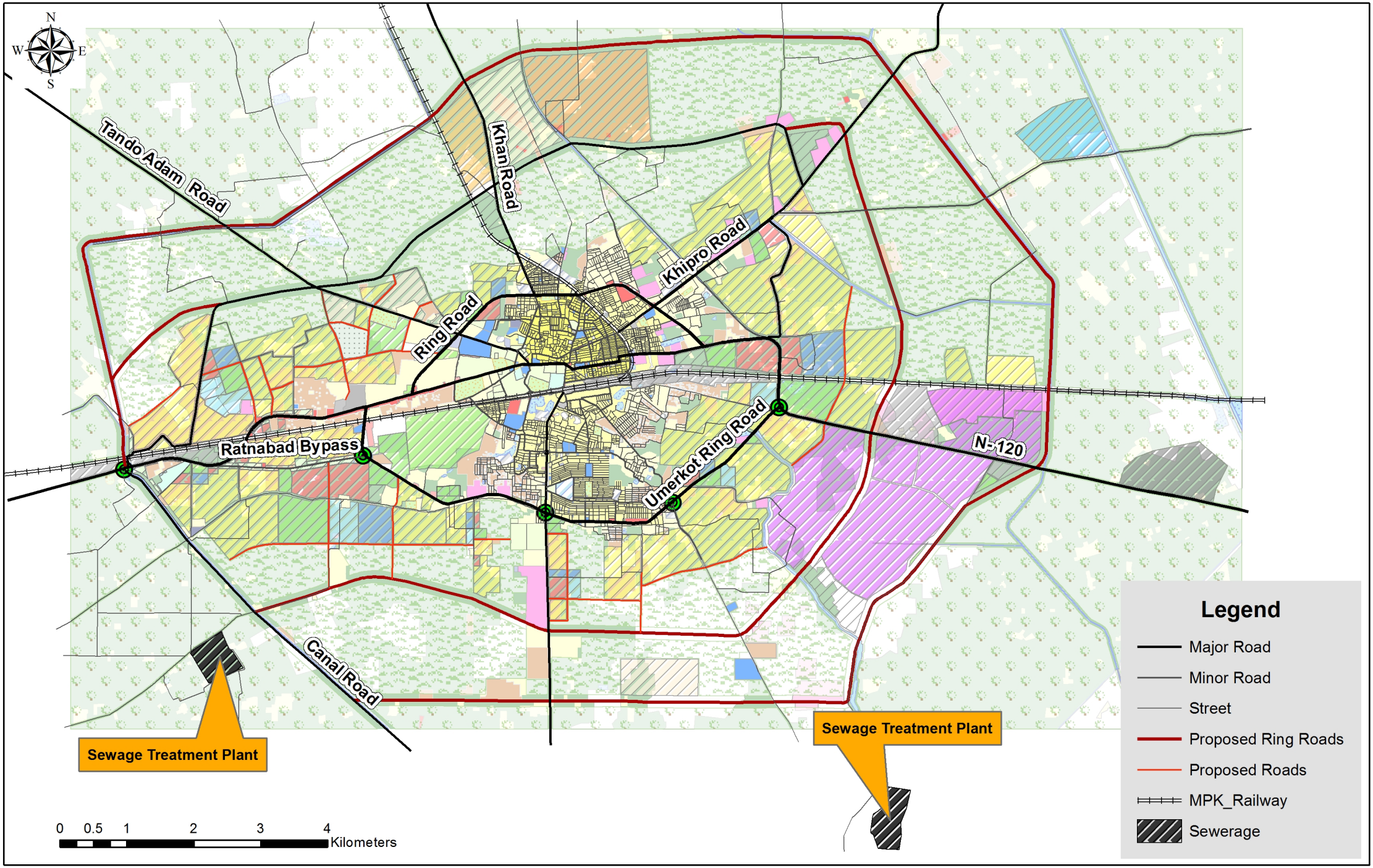
Proposed Religious Landuse for Mirpur Khas Town



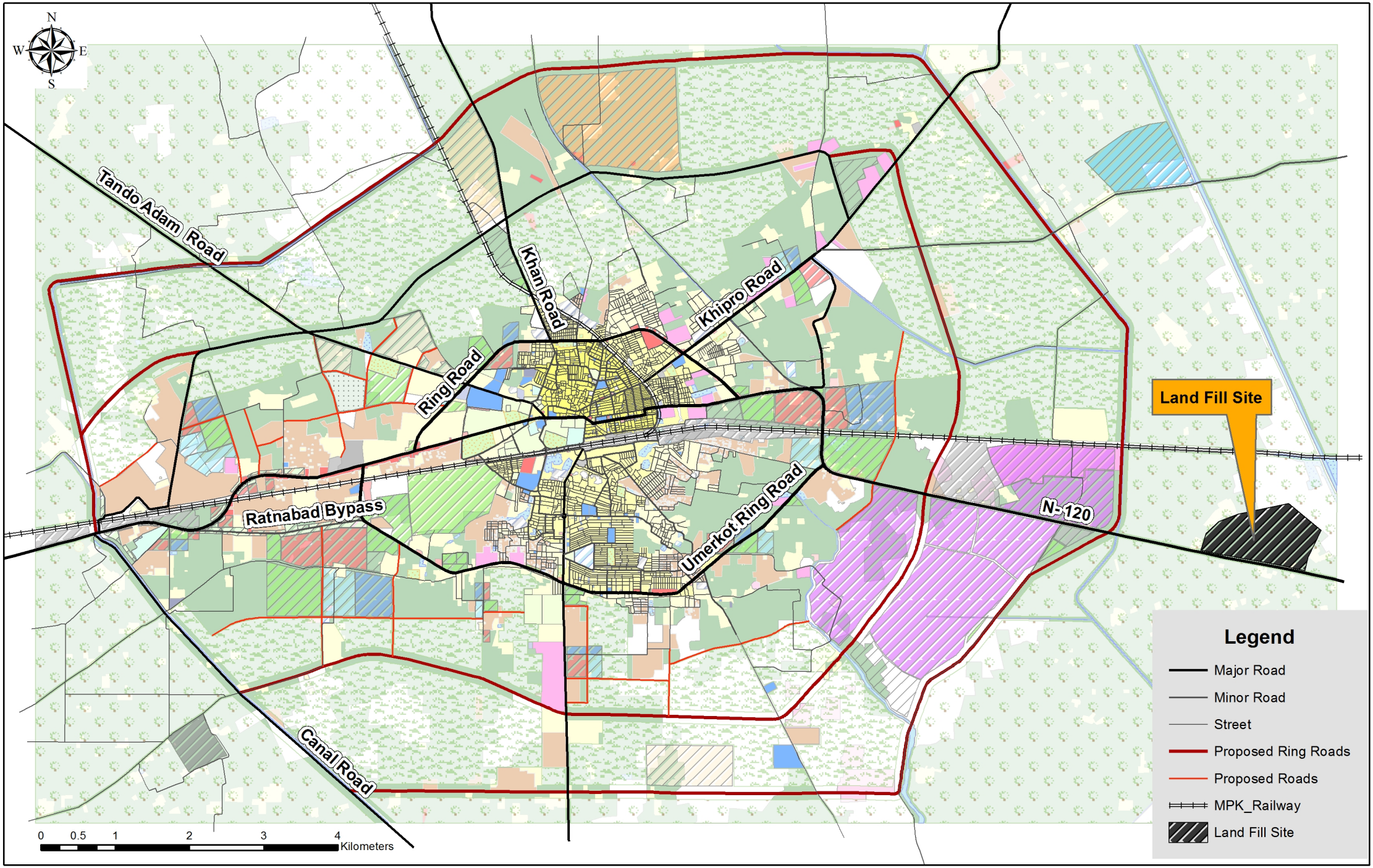
Proposed Utilities and Services Landuse for Mirpur Khas Town



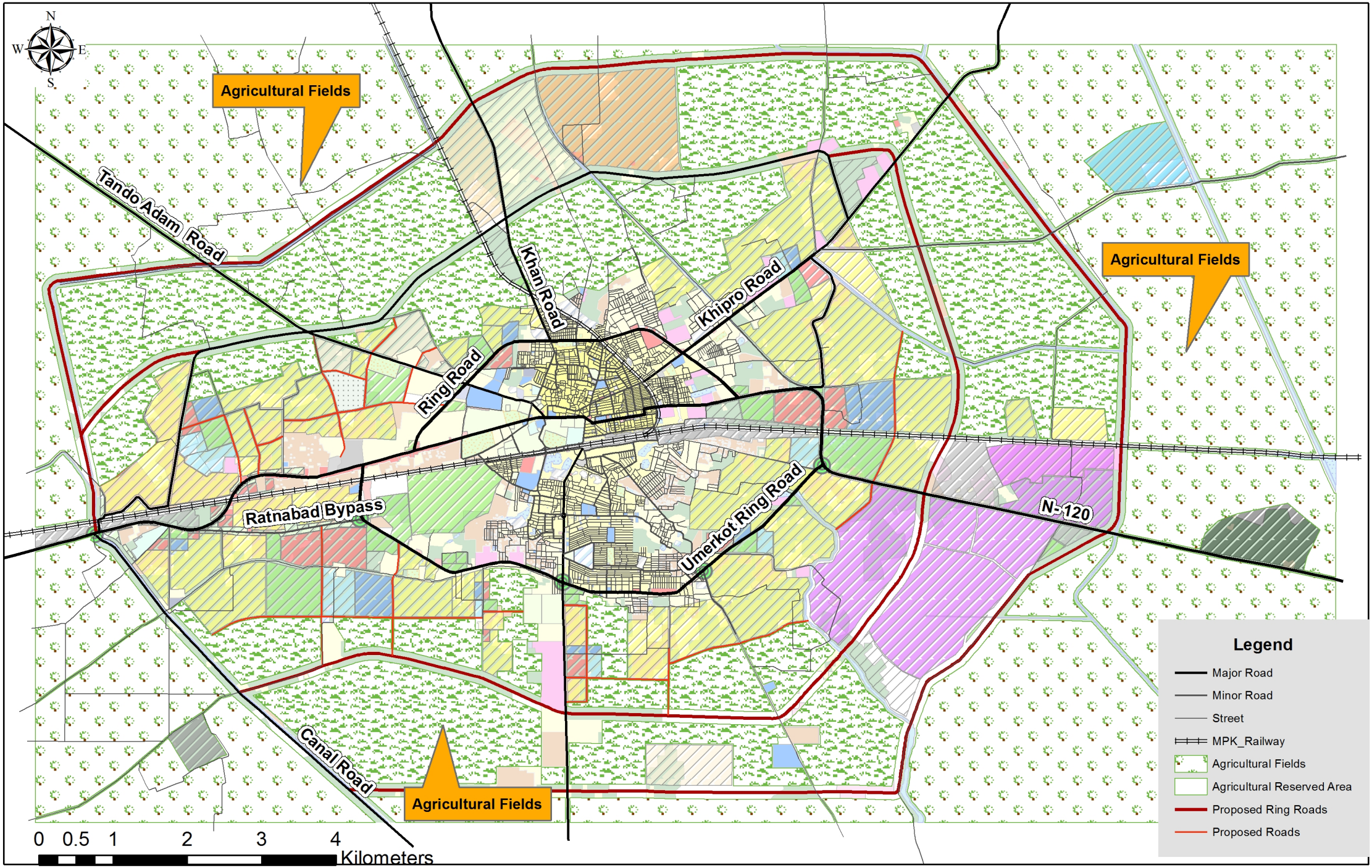
Proposed Utilities and Services Landuse for Mirpur Khas Town



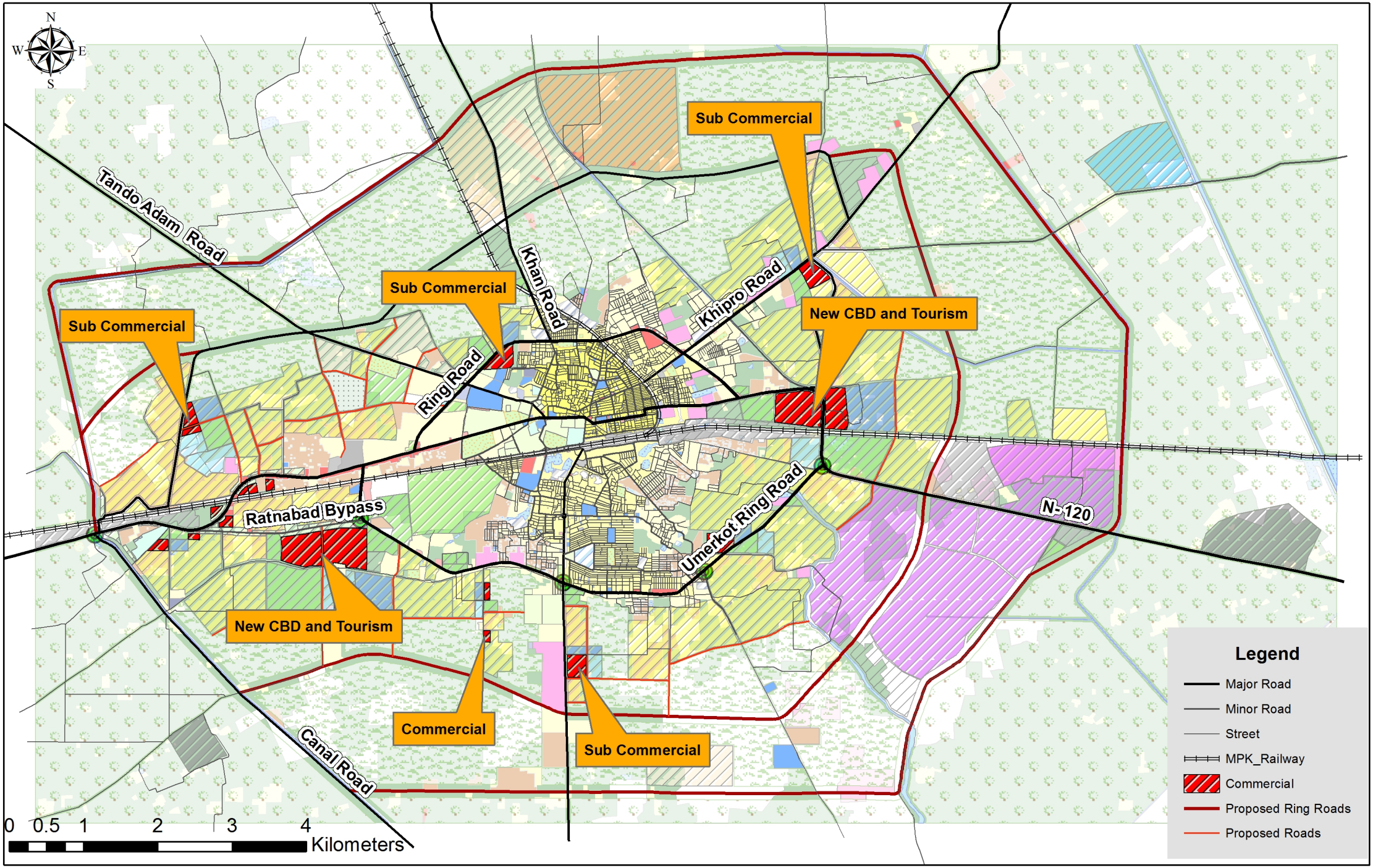
Proposed Utilities and Services Landuse for Mirpur Khas Town



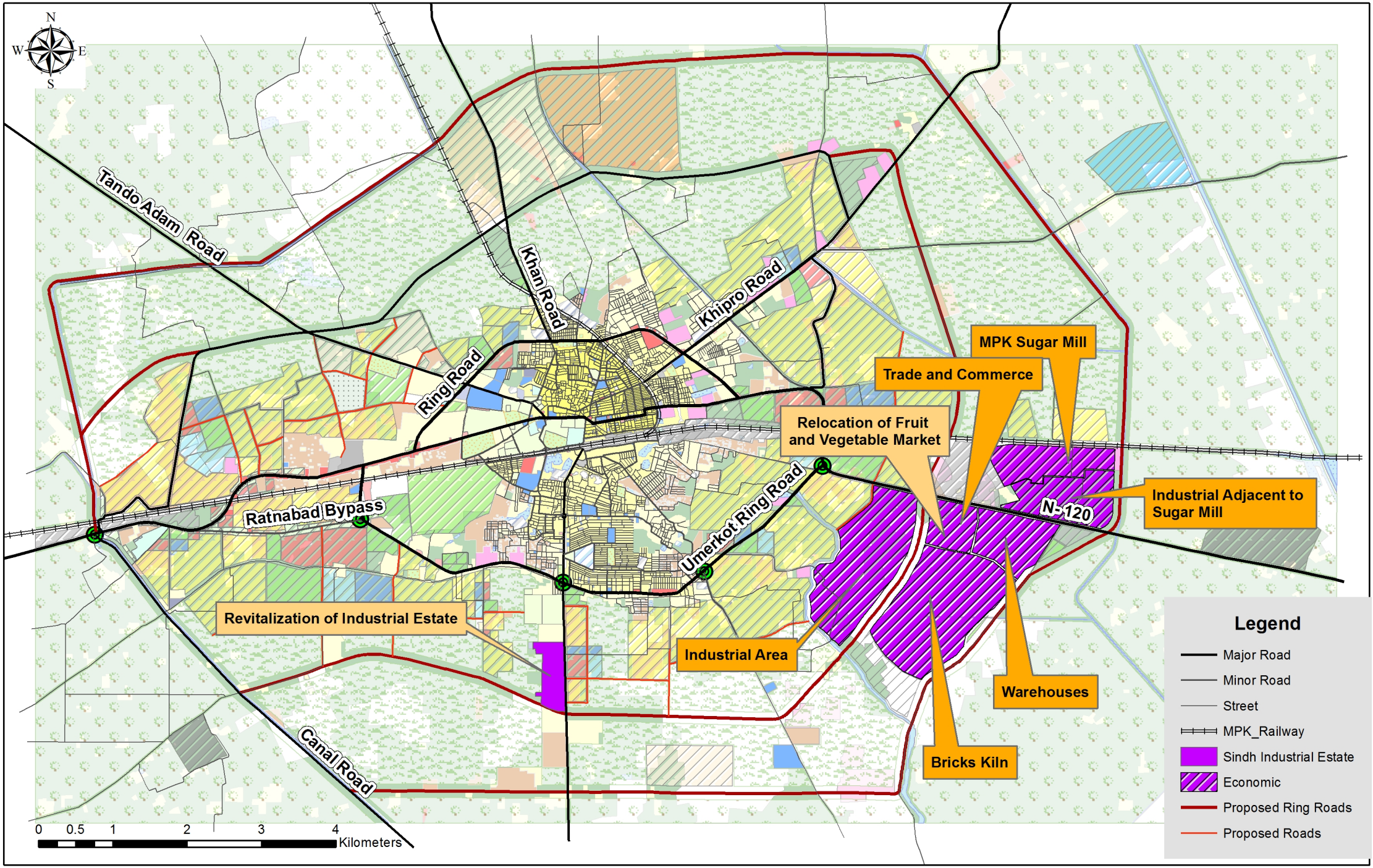
Proposed Agricultural Landuse for Mirpur Khas Town



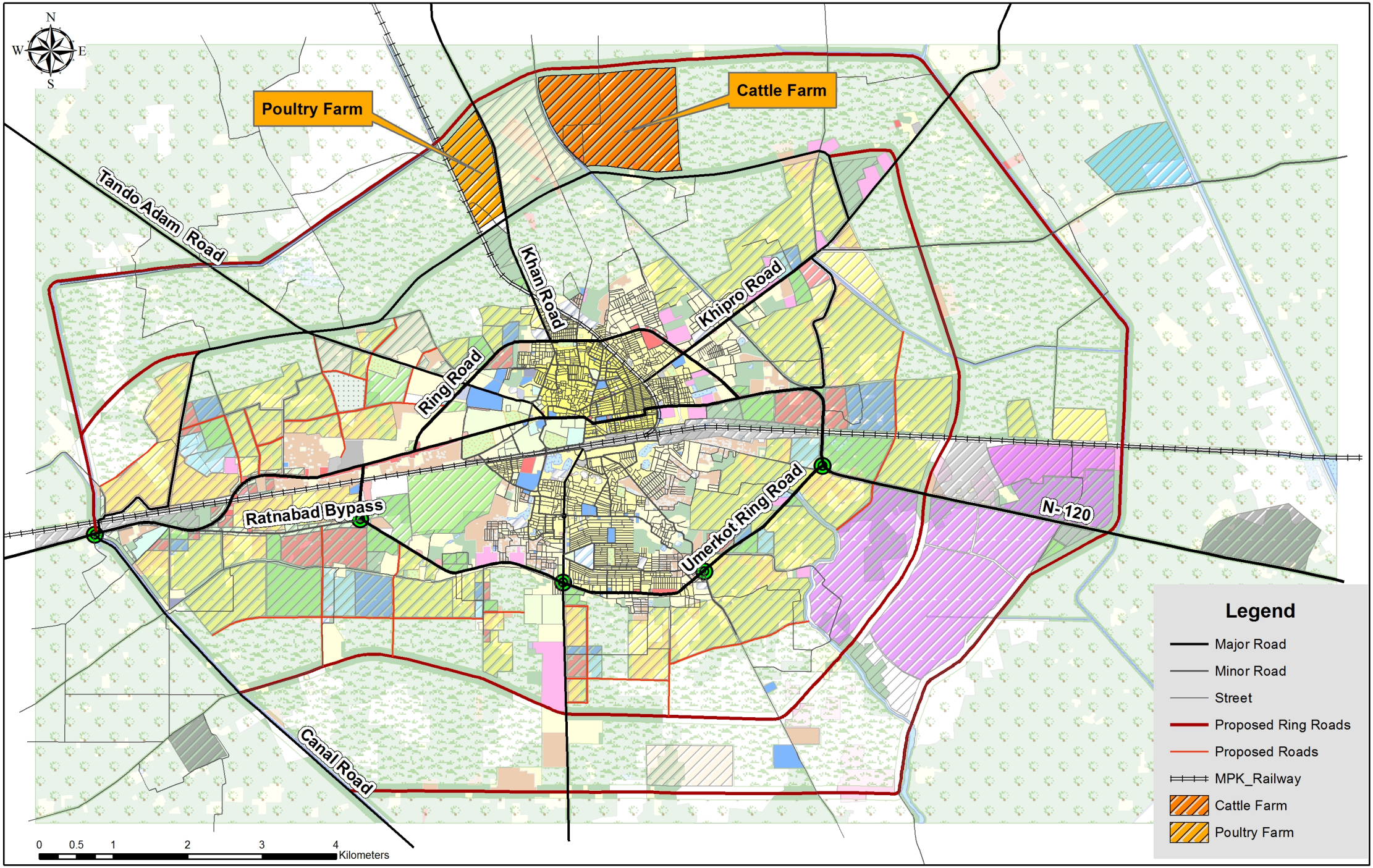
Proposed Commercial Landuse for Mirpur Khas Town



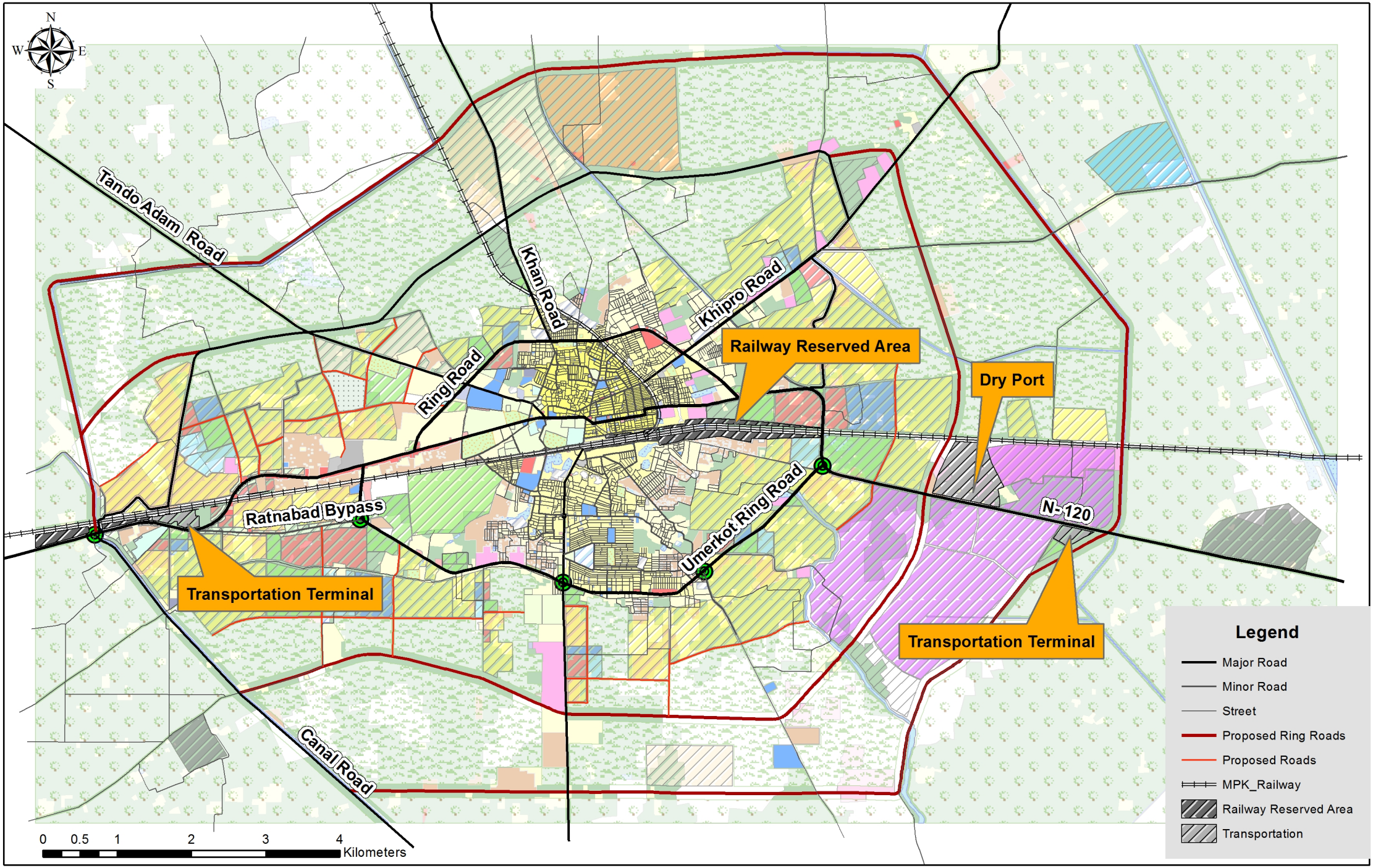
Proposed Economic Landuse for Mirpur Khas Town



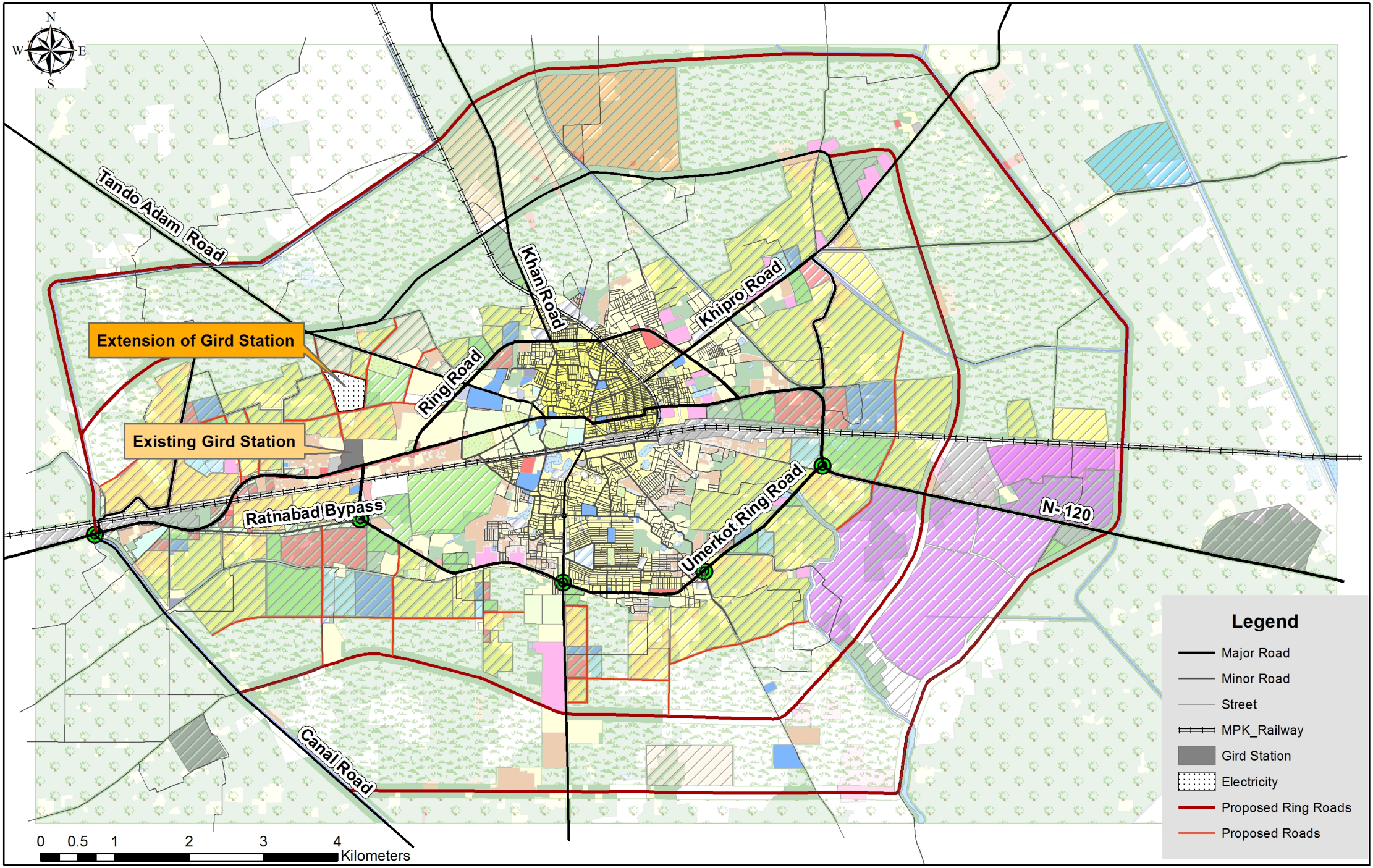
Proposed Livestock Landuse for Mirpur Khas Town



Proposed Transportation Landuse for Mirpur Khas Town



Proposed Utilities and Services Landuse for Mirpur Khas Town



Proposed Public Administration Landuse for Mirpur Khas Town

