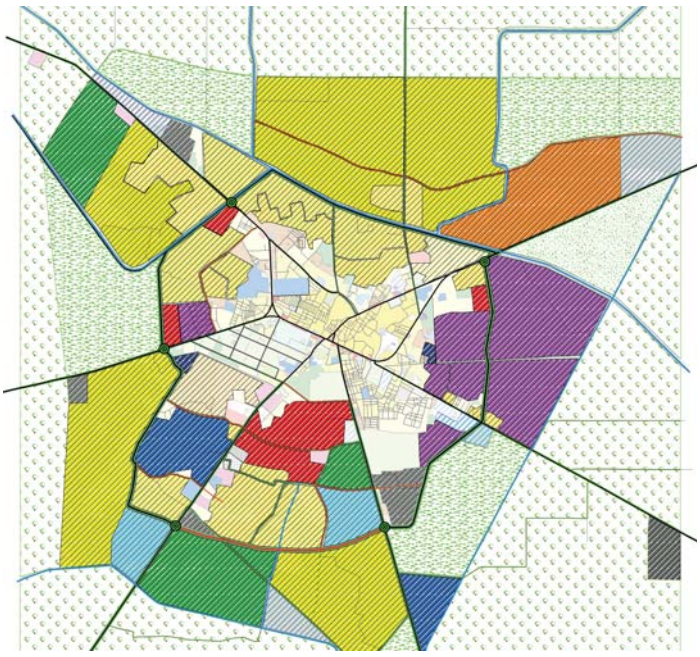
Directorate of Urban Policy Strategic Planning,
P & D Department, Government of Sindh

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)



SANGHAR

February, 2021

EA Consulting Pvt Ltd
(Formerly Engineering Associates)
Engineering, Architecture & Project Management
Head Office: AL-9, 25th Lane, Khayaban-e-Hilal,
Phase VII, D.H.A., Karachi-75500.,
Tel: UAN: 111-111-585, Fax: (021) 3584-1829

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.

ACKNOWLWDGEMENT

The completion of this assignment would not have been possible without the guidance and support of Directorate of Urban Policy & Strategic Planning, Planning & Development Department, Government of Sindh led by Mr. Faisal Ahmed Uqaili (Director General) and team members Mr. Zulfiqar Kumbhar (Deputy Director Housing/P&DC), Ms. Naila Haq (Deputy Director Environment), Ms. Uzaima Nasir Hilaly (Deputy Director Municipal Finance & Governance), Mr. Nabesh Akhtar (Deputy Director Municipal Services), Mr. Dayal Das Rathore (Assistant Director GIS) and Mr. Gulab Ahmed Tanvari (Assistant Director Planning).

The consultant is also thankful to Ex- Director Generals' UP&SP, Mr. Khair Muhammad Kalwar, Mr. Khalid Mehmood Shaikh, Mr. Muhammad Ali Khoso & Mr. Rafique Ahmed Qureshi and Mr. Mumtaz Halepoto Ex- Director Urban Policy & Planning, UP&SP.

EA Consulting Pvt Ltd acknowledges fair & transparent conduct of Financial Contract Management for this assignment carried out by this Directorate of UP&SP under the management and administration of respective Director Generals and Ms. Uzaima Nasir Hilaly Director Admin, Finance & Management.

Moreover, the consultant also appreciates the support of all the District &, line Departments officers/ officials for extending their valuable input and coordination during the preparation of this assignment.

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

STRATEGIC DEVELOPMENT PLAN REPORT - SANGHAR

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXURES

LIST OF ACRONYMS AND ABBREVIATIONS

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

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

WAPDA	Water and Power Development Authority
WATSAN	Water & Sanitation
WASH	Water, Sanitation & Hygiene
WB	World Bank
WHO	World Health Organization

EXECUTIVE SUMMARY

A. PROJECT

District Sanghar lies in 68^0 28" 18' to 70^0 12" 49' east longitudes and 25^0 29" 42' to 26^0 28" 1' north latitudes. According to census 2017, the population of the District Sanghar is 2,057,057. The district has 06 talukas, named; Sanghar, Sinjhoro, Khipro, Shahdadpur, Tando Adam and Jam Nawaz Ali. District Sanghar can geologically be divided into 02 parts, a fertile plain area in the west and desert area in the east. This district is surrounded by the Indian state of Rajhistan on the east, district Khairpur and Shaheed Benazirabad on the north, District Matiari and Tando Allahyar on the west, and District Umerkot and Mirpurkhas on the south. Indus River flows on the western side of this district.

District Sanghar has its district headquarters at Sanghar City. Sanghar is found at the centre of Sanghar District. The built-up area of Sanghar Town comprises of around 1,958.1 acres of land but the spread of urban area as estimated by the consultants is about 4,693.9 acres. The land use analysis indicates that 49.2% of the total urban boundary area is covered by agricultural fields. There isn't any particular pattern of Sanghar town. It is being developed by its own in South-east direction along Daleli Shar Road, in South direction along Mirpurkhas Road, in west direction along Sinjhoro Road and in north direction along Nawabshah road. Sanghar Town comprises of seven zones.

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 November 28, 2018. The stakeholders were mainly 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 best livable cities in the world."

C. DEMOGRAPHY

Sanghar is the District Headquarter Town of Sanghar District. It is the Municipal Corporation. According to 1998 census, town had a population of 50,696 souls with a growth rate of 3.29% during 1981-1998. The 2017 census reveals that the population of Sanghar Town has reached to about 75,410 souls with a growth rate of 2.11% during 1998-2017. Projected population of Sanghar City works out to be 114,541 souls by 2038.

D. SECTOR WISE ANALYSIS AND PROPOSAL

The Consultants had carried out data collections in three layers:

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

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

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

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

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

1. HOUSING

Housing in terms of affordable home with basic infrastructure and facilities is the basic human need. According to 2017 census population results, Sanghar municipal area had a household size of 5.4 persons and a total housing stock of 13,906. The major issues of the housing sector are inadequate supply of land, skyrocketing prices of land, poor land administration, unaffordable housing cost for low income groups, housing in dilapidated condition and unchecked growth of squatter settlement, called Katchi Abadis. According to data provided by Sindh Katchi Abadis Authority (SKAA), there are 14 Katchi Abadis in Sanghar DHQ Town. These are spread over 295.5 acres covering 1,930 housing units with 13,060 population approx. Thus, it is estimated that 17.3% population of Sanghar Town resides in katchi abadis. Out of these eleven are notified while three are still unnotified.

On the basis of projected population for year 2037, the number of households have been estimated around 21,122 on fixed household size 5.4 persons, out of which additional housing requirement will be 7,216. The strategies includes initiation of incremental housing schemes, development of cost effective approaches for low income group and regularize notified Katchi Abadis. The strategies for short term plan are increase in number of small size plots, development of public housing schemes, establishment of low-income housing funds, improvement of old housing, shifting of illegal settlements and provision of basic utilities in the residential areas. The long term plan focus on usage of modern construction technologies, formation of land banks, establishment of new housing scheme where MC is bound to provide basic utilities and facilities, provision of an affordable housing programme for low income group and formulation of green building by laws. The priority projects includes the land acquisition for low income public housing projects and master planning and infrastructure designing of low income public housing project for additional population.

2. SOCIAL AMENITIES

2.1 Education

34,932 children are enrolled in schools with 1,050 classrooms. The schools are short of 114 classrooms on the basis of 30 students per classroom. The major issues are shortage of classrooms, low enrolment level, shortage of teachers, lack of provision of basic facilities, poor condition of schools and colleges and the status of education in the district is quite poor.

The future need is additionl 7,307 classrooms in schools and 3,241 classrooms in high schools and colleges 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, specially girls schools are within easy walking distance. The strategies for short term plan are construction of new educational institutes with all facilities, rehabilitation of existing schools and participation of private sector. The long term plan includes the improvement in quality of learning outcomes, strengthening governance and service delivery and enhancing the equity of resource allocation. The priority projects need to focus on the addition of classrooms, improvement in the quality of education, training programmes for teachers, rehabilitation and construction of women hostels for teaching staff and provision of vocational and skill training centres. A skill development organization for women should be established, as for the economic growth of the country women empowerment is necessary. The immediate action plan involves the rehabilitation and upgradation of educational facilities along Main Nawabshah Road, Shahdadpur Road and Sinjhoro Road.

2.2 Health

In District Sanghar, there is one civil hospital having 208 beds, three THQ having 90 beds, 60 BHUs at district having 120 beds and six RHCs having 70 beds, 133 Dispensaries having 208 beds and 13 T.B clinics having 30 beds. There are 40 private hospitals with 186 number of beds. The total number of 912 beds are serving the district. The issues include insufficient health facilities, diagnostic and other health equipment, difficulty in transferring patients from rural areas to hospitals, vacant posts of doctors and medical staff and difficulty in accessibility to healthcare facilities. The NRM (National Reference Manual) recommends 2 beds per thousand as the medium target. On this basis 3,202 beds will be required to provide gradually.

According to WHO standards doctor to population ratio is 1:1000 so taking that as a reference point currently the short fall of doctors comes out to be 1,320.

On the basis of NRM recommendation approximately 5,020 beds will be required to be provided gradually until 2037. According to WHO standards the future requirement of doctors comes out to be 2,229. The short term plan includes to improve access to healthcare facilities, improve quality of healthcare services, improve functionality of equipment, availability of quality medicines, construction of additional healthcare units, rehabilitation of existing hospitals, enhancement of Mobile Health Unit and provision of rapid motorbike Mobile Unit. The long term plan focus on to improve access through an ambulance network, effective implementation of Health Insurance Programme, provision of incentives to doctors and paramedics staff, establishment of new hospitals and participation of private sector. The priority projects involves the extension of Civil Hospital, provision of Mobile Health Unit, provision of quick response ambulance service with all health units, upgradation of BHUs, RHCs and MCHCs, research programmes for doctors and paramedics staff and provision of diagnostic facilities. The immediate action plan includes the rehabilitation and upgradation of Civil Hospital along Main Nawabshah Road.

2.3 Recreational/Tourism

There are only four parks in Sanghar. A museum is under construction. Several annul festivals are celebrated in the district. There is availability of heritage sites including Sohni Mahiwal Tomb, Hameer Faqeer Dargah, etc. The issues are shortage of water, land isn't reserved for sports facilities, lack of space available for doing exercise, poor management in cultural events, less commercialization, less heritage preservation and lack of infrastructure for tourism activities.

The strategies for short term plan are restoration and maintenance of existing open spaces, provision of sports facilities and promote tourist attractions. The long term plan includes the development and preservation of cultural heritage and touristic places, revenue generation through tourism planning, protection of historical places and youth development programmes. The priority projects focus on the rehabilitation and construction of family parks and playgrounds. The immediate action plan includes the construction of new parks, construction of football ground, rehabilitation of existing parks including Zila Headquarter Family Park, Children Park and Gulshan e Latif Park.

There are few historic and famous places in Sanghar, which can play a pivotal role in the District economy by encouraging tourism including Mi Shahdad Jo Qubo, Mansura, The Hameer Faqeer Dargah, Jheol and Sohni Mahiwal. The issues with these monumental destinations include shortage of water facility, lack of reserved area for sports, poor management for organizing cultural events, lack of infrastructure to accommodate visitors into events, and less commercialization overall. Another such beauty in the city is the canal that intersects chotiari road near the city. This could be maintained with green belts for pedestrians, benches along the banks and solidifying the embankments for an increased touristic experience. The short term solutions include having a gym facility, rehabilitation and creation of open spaces and establishment of synthetic grounds. The long term solutions include development and preservation of cultural heritage, revenue generation through tourism planning, development of youth programmes for sports and recreational activities. The priority projects are the construction of new cricket grounds and rehabilitation of old ones, and creation of other open spaces to increase urbanization of the city and increase touristic attraction.

3. ECONOMIC DEVELOPMENT

3.1 Irrigation

Agriculture in Sanghar mainly depends upon canal irrigation. On the western side of the district, there is a well-established canal system emanating from Sukkur Barrage. Two major canals i.e., Rohri and Jumrao irrigate this area. The irrigation canals running through the district are Nara Canal, Jamrao Canal, Mitharo Canal, Khipro Canal and Rohri Canal. The supply of sufficient irrigation water for future agricultural growth is expected to be available.

3.2 Agriculture

Sanghar contributes significantly in the agriculture sector of Sindh because its climate is suitable for production of various crops, including Kharif crops of cotton, rice, jowar and sugarcane and the Rabi crops of wheat, gram and oil seeds. In addition to these, fruit orchards are abundant in this district. The total geographical area of district Sanghar is 1,018,000 hectares out of this cultivated area is up to 409,000 hectares. The major issues are shortage of irrigation water, high price of inputs, lack of agriculture credit facilities and research centres, water logging and salinity, irrigation and drainage problem.

The strategies for short term plan are modernize agriculture, improve food production, increase supply and quality of crops and provision of warehouses. The long term plan includes the provision of incentives to cater low demand, enhancing crop productivity, agriculture technology development and policy formulation. The priority projects involves the provision of agriculture credit facilities, regular supply of irrigation water, availability of fertilizers and pesticides, installation of tube wells, measures to reduce water logging and salinity, and construction of farm to market roads. The projects for the economic development plan are included in the priority projects.

3.3 Livestock and Fisheries

District Sanghar is richly populated area having animal's population as 3,917,128. The district has highest number of Goats followed by Cattle and Buffalos. Unfortunately, this sector despite being the second most important sector in the local economy, has not been given due importance in the past. The scattered cattle farms will need to be consolidated away from population outside the town. There are nine veterinary dispensaries, six animal health extension centres and 55 veterinary centres serving the livestock. The issues include landlessness, mainly subsistence farming, lack of extension service, secondary source of income, deficient veterinary services, reduced area for natural grazing and climate change. The fish production in 2014 was approximately 3000 M.Tons.

The strategies focus on improving the production performance of livestock, enhancement of livestock production, establishment of model livestock, new cattle and dairy farms, measures to increase veterinary services, availability of large pasture land and labor force, extension of services, lease of fishing rights, training through schools, issuance of licenses, local awareness, aquaculture development, collection of statistical fisheries data and enforcement of fisheries enactment. The projects for economic development is the establishment of new cattle and fish farms. There is need to develop broad-based fisheries policy to modernize the fisheries sector, including construction of landing areas business halls.

3.4 Industries

District Sanghar has agriculture related industries ranging from sugar mill, textile looms, to ginning factories. In the census of manufacturing industries 2001, 39 industrial units have been reported as working in this district. These industries provide, on an average, daily employment to 3,628 people. Vocational training to women force should be encouraged for establishing cottage industry in the district.

The strategies for short term industrial development plan includes sufficient market infrastructure, accommodation of oil refineries, development and establishment of Industrial Estates, provision of vocational training and employable skills. The long term plan includes the establishment of new industries, physical revival and expansion of existing oil fields, support industrial development and modernize service sector. The priority projects need to focus on the revitalization of industrial estate, construction of warehouses and construction of industrial estates. The projects for economic development plan are enhancing capital utilization of present units and establishing new industrial units, provision of incentives to private investors and extension of small industrial estate or requirement of another industrial estate.

3.5 Trade and Commerce

There is availability of financial institutes in the district. The district is well-known due to its characteristics of agriculture engine, which serves all over Sindh. The issues are failure of PPP, demise of local agriculture market and un-planned local business activities.

The priority projects need to focus on the provision parking space, upgradation of old bazaar area, establishment of fruit and vegetable market, specialized wholesale markets, pedestrian facility. An important step towards economic development will be encouragement for establishment of micro-financial services in Sanghar.

4. BASIC UTILITIES

4.1 Water Supply

The water resources of the project towns comprises both the surface source as well as the ground water source. The water supplied is drawn from the irrigation canals and smaller part of supply is dependent upon ground water extraction. The present supply is reported as 2.25 MGD, The issues are identified as deterioration of old system, contamination of water, high proportion of non-revenue water, dysfunctional water supply scheme, ageing infrastructure, poor water quality, inadequate technical capacity and capability in government agencies and absence of management information systems.

The water requirement for 2037 is 3.4 MGD. The strategies for short term plan are priority given to un-served areas, the design of water supply pipes should ensure no contamination of water and preference should be given to rehabilitate the existing schemes. The long term plan focus on adopting a demand led approach in providing access to safe water and frame a broad policy framework which encourages and support government to design and implement policy at the provincial level, and installing water treatment plants. The priority projects includes the improvement of water intake works, repair and rehabilitation of existing water supply network including joint repairs and valves for pressure maintenance, provision of new water supply network, and up-gradation of Slow Sand Filter Plant to Water Ultra Filtration Plant and rehabilitation of exisiting HRs. The immediate action plan should focus on the rehabilitation of water supply schemes including one along Tori Road, another one near Main Nawabshah Road and the last one at the intersection of Sinjhoro Road and Shahdadpur Road.

4.2 Sewerage and Drainage

The major issues are improper operation and maintenance of sewerage facilities, inefficient record of operation and maintenance works, informal settlements, poor condition of drainage system, limited budget for sewerage funds, unavailability of WWTP, raw sewage discharged into water bodies and absence of sewerage and drainage plans. Sewerage water flows at 70% of the water supply, therefore presently against the water demand of 2.3 mgd the sewerage water flows is 1.61 mgd.

In the next twenty years, 2.38 mgd sewage will be generated against the estimated water supply of 3.4 mgd. The strategies for short term plan are to improve drainage and sewerage services, need based interventions, priority given to un-served areas, sewage should be treated before discharging and use of gravity flow systems. The long term plan focus on to acquire land and provide stabilization ponds, development of sanitation plan and all other sanitation related agencies will develop plan in accordance with the overall plan. The priority projects includes the rehabilitation and construction of drains, construction of WWTP and rehabilitation of waste water disposal station.

4.3 Solid Waste Management

There are more than 36 collection points however 7 points are primary collection (disposal stations). The issues are no separate disposal of healthcare and hazardous waste, open and uncontrolled burning of waste, improper waste disposal, absence of landfill site, shortage of machineries and equipment, lack of properly organized waste collection system, segregation of organic waste and implementation of waste policy framework. Considering waste generation rate for design purpose as 0.45 kg per capita per day with the current (2017) population, solid waste production in the municipality area is approx. 33,935 kg or 34 tons per day.

Projecting till 2037, the municipal solid waste will be 52 tons. The short term plan includes the segregation of bio-medical waste collection system, daily sweeping of streets and roads, daily removal of garbage, effective and efficient collection system, zero direct human contact with waste and commercial areas to contribute towards waste management costs. The long term plan focus on the development of an efficient waste management system, allocation of proper landfill site, community and private sector involvement in SWM, public awareness and education, encourage on-site reuse and recycling and implement waste minimization. The priority projects includes the feasibility study for construction of central composting plant and procurement for land acquisition for landfill site.

4.4 Firefighting

The Fire Brigade Station is situated in MC Office Sanghar. This station is consisting of one firefighting vehicles, while there is a current need of one more fire vehicle. Total actual numbers of firefighting staff is 23, out of 27 sanctioned post in MC Sanghar.

5. INFRASTRUCTURE

5.1 Electricity Power/Gas

The power supply to Sanghar (MC) is through HESCO-WAPDA transmission system. Results of primary data reveals that 91% of the households have availability to electric power whereas, the remaining use alternate sources for their daily living. There is shortage of 86MW of power. The issues are supply persistingly falling short, frequent breakdowns and load shedding, little public awareness about fuel conservation measures and the alternate fuel sources are scarce and expensive.

The strategies includes the curtailment of transmission and distribution losses, achieving fuel efficiency, adopting new technologies, altering existing fuel use, addition of sub-stations and encourage energy efficient building construction. The priority projects need to focus on the upgradation of grid station, promote energy efficient appliances and feasibility study of alternate energy sources.

Gas Supply

Out of 276 houses surveyed by the Consultants 84% had the piped gas available to them. 16% of the houses having no gas availability are using wood and gas cylinder. The strategies need to be focused on feasibility study for alternate resources available, measures to cater load shedding and measures to appropriately price the energy sources.

5.2 Transportation

Sanghar District has only 868 kilometers of good quality roads which are inadequate for the area and population. Hyderabad airport is suitable for people of Sanghar to travel by air. The travel time from Sanghar to Hyderabad airport is one hour and thirty minutes. Sanghar city does not have any direct access with railway station but it passes from its sub-divisions like Shahdadpur and Tando Adam Tehsils. There are no proper bus and truck stands. The major issues of transportation are; no formal bus terminal, traffic congestion, insufficient farm-to-market roads, absence of traffic signals and street furniture, shortage of public transport, lack of road safety, unregularized Qinqui system, drainage and parking issues.

The strategies for short term plan includes the creation Environmental Impact Assessment (EIA) for all transportation projects,, issuance of license for public transport system, improve road designs, prevent encroachments, declaring private vehicles free zones, reduce traffic growth and congestion, satisfy mobility needs, improve service delivery, implementation of Axle Load Management, dualization of main arteries, improvement of existing road geometry and improvement in road design and specifications. The long term plan needs to focus on building of transportation system, rehabilitation of existing roads and reconstruct as per specifications, promotes compact development, proper management, placement of traffic signs, lane markings and footpaths, improved market access, maintain sustainable traffic flow and new transport terminal for goods. The priority projects involves the rehabilitation and beautification of major roads and installation of traffic signals and solar lighting on main roads. The immediate action plan includes dualization and rehabilitation of existing roads- M.A Jinnah Road, Nawabshah Road, Civil Hospital Road and Shahdadpur Road- and monuments and street furniture, making pedestrian movement faster by introducing zebra crossing, and removal of encroachments along the Shahi Bazar and Allah Wala Chowk Area.

5.3 Communication

The survey conducted by the consultants reveals that there are about 10% households using PTCL land line. Others 90% of the households use public call offices in the area. At present the internet usage is limited to educated families but it is increasing.

Swift transportation facilities and a well-maintained Communication network are the basic requirement for an efficient agricultural sector. The district need to improve farm to market roads.

6. ENVIRONMENT AND DISASTER RISK MANAGEMENT

6.1 Environment

According to seismic zoning map of Pakistan, Sanghar District lies in Zone 2A which corresponds to a possibility of minor to moderate seismic hazards. The use of the polluted water exposed due to biological and chemical contamination of water bodies in Sindh province is a common practice in rural areas. The issues for District Sanghar are water and wind erosion, loss of biodiversity, soil nutrient degradation, water logging and salinity, drought and floodiing.

The strategies for short term plan are ensuring environmental sustainability, setting up of National Environmental Council (NEC), enforcement of permits to discharge waste, preserve ecological cycles, strengthening forestry education, enhance rangeland production and provide recreational facilities. The long term plan includes the improvement of drainage, achieving sustainable development, multi-pronged approach to fisheries management, create environmental awareness, conserve biodiversity and fostering public-private partnerships. The priority projects need to focus on the rehabilitation of irrigated plantation, enhance rangeland production, rehabilitation of forest parks, afforestation, measures to reduce water logging and salinity, measures against droughts and flooding hazards and reduce biodiversity.

6.2 Disaster Risk Management

Sanghar is a highly disaster prone area and disaster of different types have occurred in the past. The most frequent and damaging disasters are the floods. Sanghar District was hit by 2010-2011 and 2012 rain/floods. The major issues are the low level of risk awareness and knowledge, not “risk conscious” development, insufficient DRR capacity and negligible involvement of private sector in DRR.

The strategies for short term plan are develop co-ordination mechanism with PMD, regulation of water discharge, inspection of embankments, provision of necessary medical facilities, co-ordination and communication with DDMA, emergency declaration by D.H.O at all medical points and detail of medical staff required for medical health coverage. The long term plan includes that DDM, PPHI shall also be responsible for providing medical cover, National risk assessment would identify highly vulnerable districts, DRR need to involve local level actors and clarify mutual roles and responsibilities. “Designated Evacuation Shelters” are provided to the people after the disaster. It is a facility where residents who have fled due to the dangers of a natural disaster may stay for as long as is necessary until the dangers of that natural disaster have receded. The purpose of these facilities is to offer temporary shelter for residents who are unable to return home due to the natural disasters. All public buildings like schools, colleges, etc. or elevated areas would be used as shelter in case of any disaster in town. These shelters are designated by the Municipal Government and awareness about them should be created among the general public. The priority projects should focus on the smooth flow of water, prompt dewatering of stagnant water, HESCO division shall ensure uninterrupted supply of electricity, arrange medical teams, fumigate the affected areas, ensure that ambulances are in working order, setting-up relief camps, ensure sanitation and cleanliness.

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.

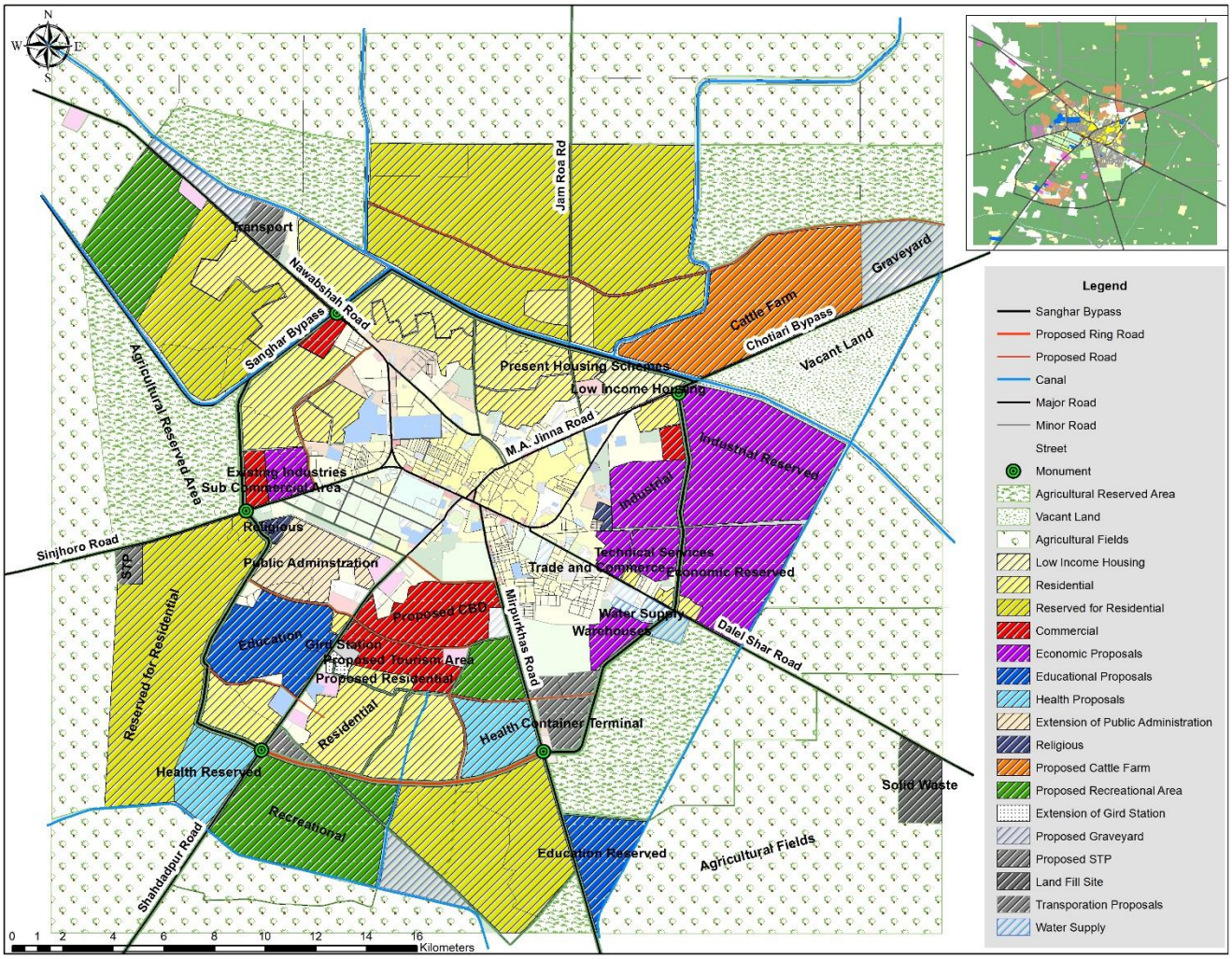
The "Project Management and Implementation Unit" shall supervise and coordinate respective urban developers involved in development activities, conduct monitory audits, prepare evaluation and impact reports. Planning and development department Government of Sindh shall lead "PMIU" to implement Master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

F. STRATEGIES FOR FUTURE DEVELOPMENT

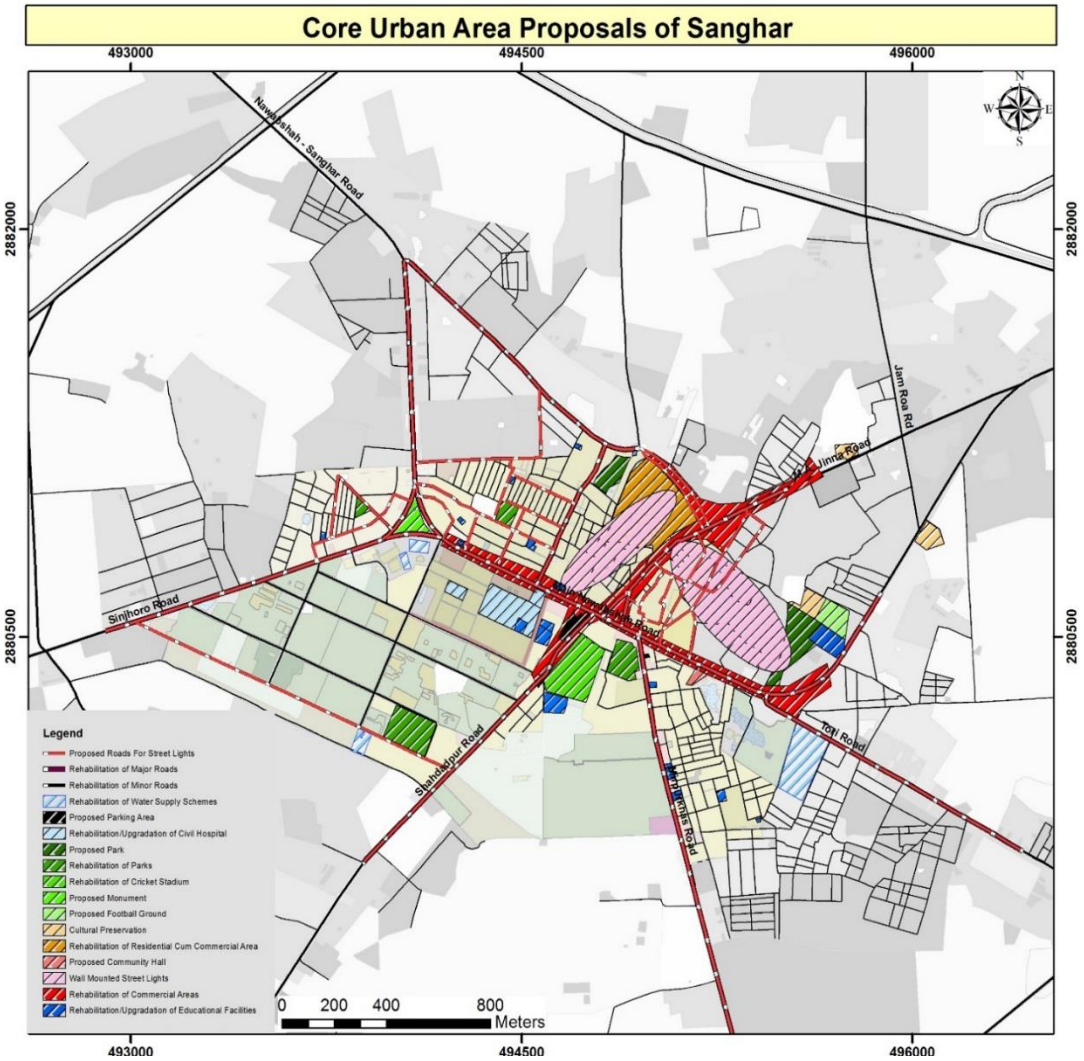
The strategies focus on revitalization of the affordable housing, provision of basic health facilities, efficient transportation and communication, energy efficient technology, active service sector, implementation of pro-active governance, develop human resources, facilitate social infrastructure, reinforce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

G. MASTER PLAN PROPOSALS

Proposed Master Plan for Sanghar Town



H. IMMEDIATE ACTION PLAN FOR CORE URBAN AREA



I. SDGS ACCELERATION PLAN:

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

STRATEGIC DEVELOPMENT PLAN FOR SANGHAR TOWN

STRATEGIC DEVELOPMENT PLAN REPORT – SANGHAR

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 in September 2008 to initiate and ensure planned growth of secondary cities through the Preparation of Master Development Plans of District Headquarter Towns in September 2008.

1.1 Project Background

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

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

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

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

1.2 General Issues

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

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

1.3 Objectives

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

The Consultant is tasked to prepare strategies:

- To plan for social infrastructure at affordable standards for education, health, recreation and cultural needs.
- To upgrade the existing physical infrastructure and enhance the supply of potable water and to propose the required capacity of network for water supply, sewerage, drainage, flood waters till year 2037.
- To provide for modern sanitation, solid waste management and disposal.
- To improve existing road networks, extend links, upgrade intersections, bridges and flyovers; and other means of communication and proposed where needed.
- To provide for safe and efficient public transport.
- To plan for effective traffic management, smooth transit and provide for parking facilities, where required in multi-storey car parks.

- To plan for enhancement and revitalization of economic base by expansion of industrial and commercial base, and for rapid expansion of IT and Telecom sectors, tourism, agricultural activity, etc in the means of sustainable and smart concept.
- To propose alternate energy sources as country is facing acute shortage especially in summer season.

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
    - Disaster Management Plan and
    - Climate Change, Resilience & Adaptability Plans

2. AN OVERVIEW OF SANGHAR AND ITS ENVIRONMENT

2.1 History

The District Sanghar has been an important administrative unit that played an important role in the economy, trade and history of eastern Sindh. Historically, Alexander invaded India in 326 BCE. The Arab invasion, led by Muhammad Bin Qasim, in 711 A.D, made Sindh part of the Umayyad Caliphate. Later on, this region was ruled by different dynasties, including the Soomras (1024-1351), the Arghuns (1520- 1650), the Kalhoras (1657-1783) and the Talpurs (1783-1843). When Britain invaded the subcontinent, General Charles Napier, a commander in the British Army, defeated the Talpur dynasty and conquered Sindh in 1843.

After World War II, People of Sanghar, under the leadership of their spiritual leader Syed Sibghatullah Shah Shaheed also known as Pir Saab Pagaro, started armed struggle in Sindh to get freedom from the British. The freedom movement they launched was called Hur Tehrik (freedom movement). Pir Pagaro declared his community as "Hur" (free from British slavery). The British tried to crush the uprising that resulted in an armed resistance by the Hurs. The British government passed the "Hur Act" and the entire Hur community was declared criminals and ordered to be shot dead on sight. To crush the Hur Tehrik, the British government established Sanghar as district Headquarters. Pir Pagaro Sayyed Sibghatullah Shah was hanged on March 20, 1943. The Hurs continued their struggle even after the hanging of the Pir Saab, right up to the time of the independence of Pakistan[1].

As the British left the subcontinent, Sanghar district was merged with Mirpur Khas and some of its portions with Nawabshah, in 1953. Keeping in view administrative and political reasons, Sanghar was declared a district again in 1954 and its headquarters was finally established in Sanghar city.

2.2 Topography and Geology

District Sanghar can geologically be divided into two parts, a fertile plain area in the west and desert area in the east. The Nara canal flows from northwest to southeast. The western plain has been formed by rich alluvial deposits of the river Indus. Sanghar city lies at the middle of the district. The western part of the city is fertile land irrigated by the Nara canal while the eastern part is desert Thar. The general elevation of the plain is about 50 meters above sea level. Originally, soil of the area is composed of alluvial deposits having various proportions of sand, silt and clay at different places. The layers of soil formation are generally uniform varying in depth from 5 to 20 feet.

The topography within 3 kilometers of Sanghar is essentially flat, with a maximum elevation change of 15 meters and an average elevation above sea level of 21 meters. Within 16 kilometers is essentially flat (37 meters). Within 80 kilometers contains only modest variations in elevation (163 meters).

[1] Population Welfare Department, Government of Sindh, (http://www.pwdsindh.gov.pk/districts/Sanghar.htm)

The area within 3 kilometers of Sanghar is covered by cropland (66%) and artificial surfaces (27%), within 16 kilometers by cropland (75%) and bare soil (21%), and within 80 kilometers by bare soil (51%) and cropland (44%).

2.3 Geographical Location and Area

District Sanghar lies in 68^0 28" 18' to 70^0 12" 49' east longitudes and 25^0 29" 42' to 26^0 28" 1' north latitudes. This district is surrounded by the Indian state of Rajhistan on the east, district Khairpur and Shaheed Benazirabad on the north, district Matiari and Tando Allahyar on the west, and district Umerkot and Mirpurkhas on the south. Indus River flows on the western side of this district, in the vicinity of district Matiari. District Sanghar has been administratively sub-divided into six talukas: Sanghar, Sinjhoro, Shahdadpur, Tando Adam, Jam Nawaz Ali, and Khipro. Sanghar city is the district headquarter. Chotiari dam is located 14 km North East from Sanghar city.

2.4 Administrative Set-up

District Sanghar has its district headquarters at Sanghar city. This district has six talukas, named: Sanghar, Sinjhoro, Khipro, Shahdadpur, Tando Adam and Jam Nawaz Ali. It has 55 union councils and 362 Dehs (revenue village). Out of these Dehs, 335 are rural, 6 are urban, 20 are partly urban and one consists of forests.

Table 2-1: Administrative Division of District Sanghar

Sanghar	Krungo Circled / Supervisory Tapas	Patwar Circles / Tapas	Number of Dehs					
			Total	Rural	Urban	Partly Urban	Forest	Un-Populated
Sangahr Taluka	3	22	69	65	2	2	-	-
Sinjhoro Taluka	3	21	88	81	2	5	-	-
Khipro Taluka	3	21	78	73	2	2	1	-
Shahdadpur Taluka	3	20	47	42	-	5	-	-
Tando Adam Taluka	2	13	28	25	-	3	-	-
Jam Nawaz Ali Taluka	2	11	52	49	-	3	-	-
Total	**16**	**108**	**362**	**335**	**6**	**20**	**1**	**-**

Source: Deh Statistics of Sindh 2008, Agriculture Census Organization

2.5 Population

According to 1998 census the population of district was 1,319,881, population of Taluka was 264,882 and the population of Sanghar MC was 50,696 .This is a phenomenal increase which brings into focus the economic vitality of Sanghar.

2.6 Present Population

According to 2017 census the population of the district is 2,057,057, population of Taluka is 434,087 and the population of Sanghar MC is 75,410. The following table shows the comparison of 1998 and 2017 census:

Table 2-2 : 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
Sanghar MC	50,696	2.29%	6,945	7.3	75,410	2.11%	13,906	5.4
Sanghar Taluka	264,882	3.16%	44,895	5.9	434,087	2.63%	78,836	5.5
Sanghar District	1,319,881	2.74%	211,354	5.8	2,057,057	2.36%	374,609	5.5

Source: District Census 1998 and 2017

2.7 Future Projections

Sanghar has gone through a massive transformation so much in terms of infrastructure but mainly in terms of population dynamics. Projected population of Sanghar works out to be 114,541 souls by 2037, at 2.11 % AGR of 2017.

Table 2-3 : Future Population Projections of Sanghar MC

Source	AGR	Census 2017	Projected 2022	Projected 2027	Projected 2032	Projected 2038
Census 2017	2.11%	75,410	83,717	92,938	103,176	114,541

Source: Consultant's Estimates

2.8 Urban Morphology

There isn't any particular pattern of Sanghar town. It is being developed by its own in South-east direction along Daleli Shar Road, in South direction along Mirpurkhas Road, in west direction along Sinjhoro Road and in north direction along Nawabshah road.

Geographically speaking, Sanghar is found at the centre of Sanghar district and can be approached easily from the eastern desert part of the area. This is probably the reason why the administration has chosen to locate the capital of this district in Sanghar rather than Tando Adam and Shahdadpur, even if these two cities were more dynamically growing than Sanghar.

Being a district capital Sanghar provide the public services to the whole of the Sanghar district. This is only area where Sanghar plays a significant regional role. Sanghar Town is service sector oriented towards overhauling the arid eastern area which are much poorer in comparison with the western part of Sanghar district.

Being away from the major transportation and development axes (National highway, Indus River, Pakistan railway), Sanghar is severely handicapped due to industrial and commercial development. For this reason

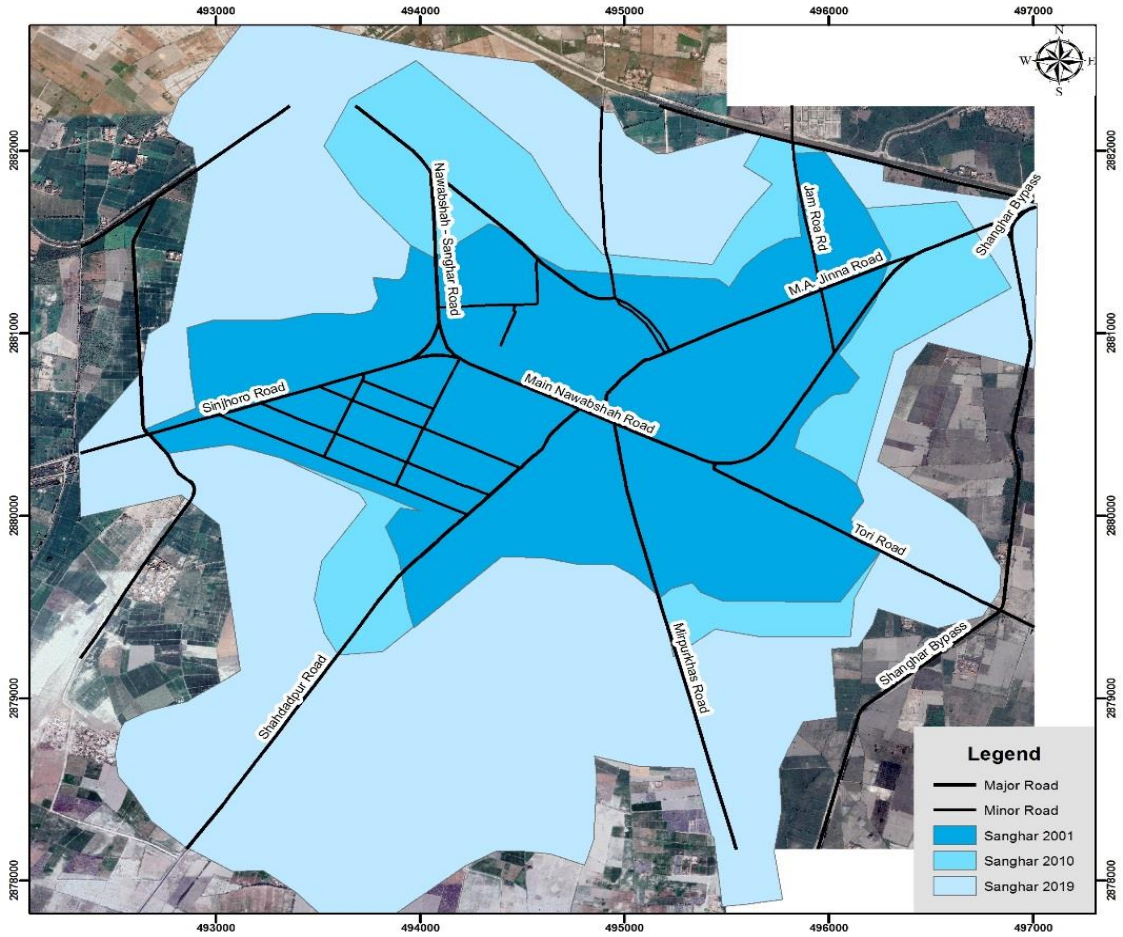


Figure 2-1: Historical Growth of Sanghar

Sanghar does not benefit from a rich agricultural production which could support several agro-based industries in the city.

2.9 Land Use and Spatial Analysis

The built-up area of Sanghar town comprises of around 1958.1 acres of land which is 41.71% of the total area as compare to consultant's urban boundary which is 4693.9 acres. The land use analysis indicates that almost 28% of total urban boundary area is in use of residential purpose only. 49.2% of the area is covered by agriculture fields.

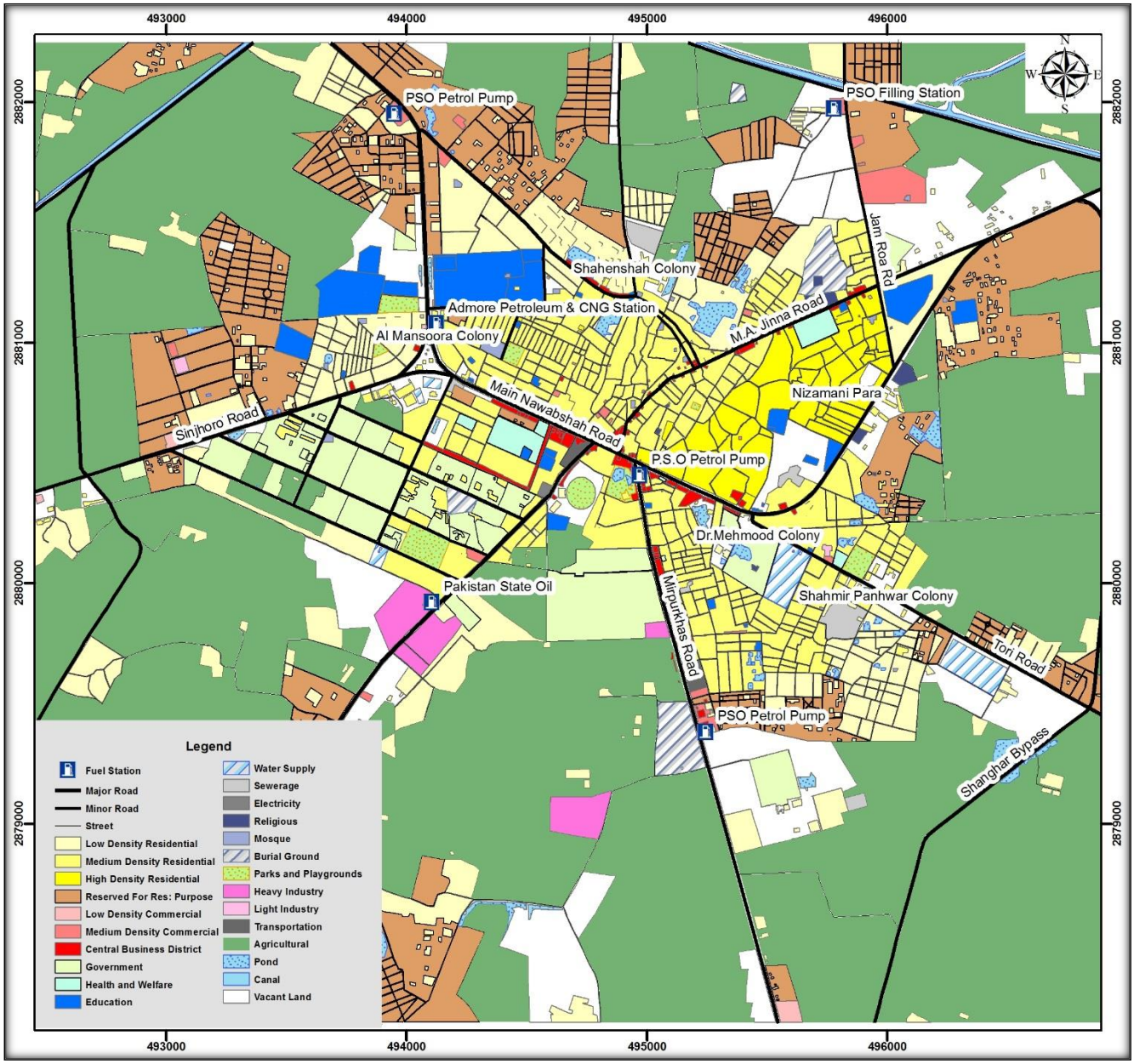


Figure 2-2: Land use Map of Sanghar

Sanghar(Urban Boundary)				4693.89
Categories	**Landuse Classification**			**Area (Acres)**
Urban	**Residential**	**Residential**	Low Density Residential	431.3
			Medium Density Residential	325.7
			High Density Residential	83.4
			Reserved For Residential Purpose	472.6
	Sub Total			1313.0
	Commercial	**Commercial**	Low Density Commercial	3.3
			Medium Density Commercial	20.5
			Central Business District	19.9
	Sub Total			43.7
	Parks And Playground	**Parks And Playground**	Parks And Playgrounds	18.7
	Sub Total			18.7
	Amenities	Institutional	Education	79.2
			Government	151.8
			Health And Welfare	12.9
			Religious	7.6
		Utilities And Municipal Service Facilities	Electricity	7.6
			Sewerage	12.0
			Communication	0.0
			Water Supply	19.2
		Burial Ground	Burial Ground	29.0
	Sub Total			319.3
	Industrial	Manufacturing	Small-Scale Manufacturing/ Light Industry	1.2
			Large-Scale Manufacturing/ Heavy Industry	44.5
	Sub Total			45.7
	Transportation	Transportation	Transportation	228.2
	Sub Total			228.2
	Sub Total			1968.5
Non-Urban	Agriculture And Forestry		Agricultural	2302.8
	Sub Total			2302.8
	Water Bodies		Canal	14.3
			Pond	40.2
	Sub Total			54.5
	Vacant Area			368.1
	Total			368.1
Total				**4693.9**

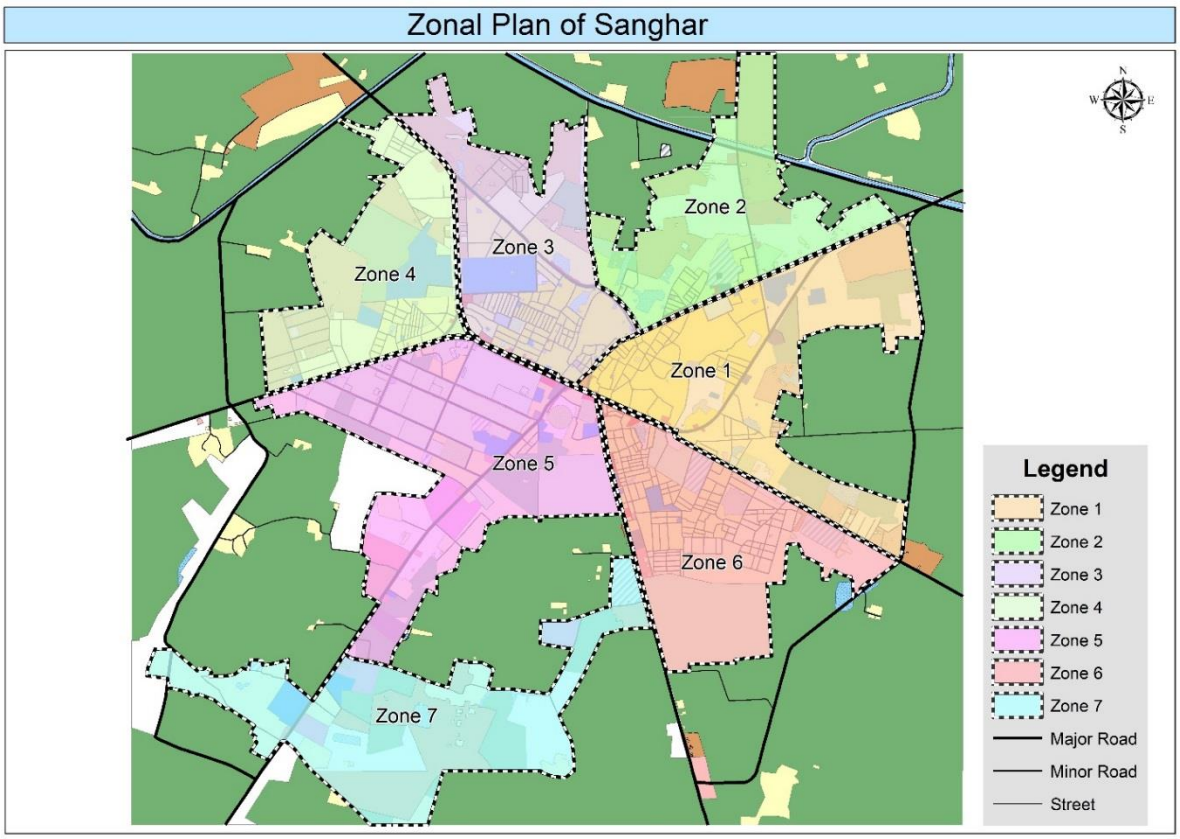
Source: Spatial Analysis done by Consultants

2.10 Town Scape

Zone 1:
Zone 1 consist of old town area including nizamai para, the zone is enclosed by chotiari road and sanghar bypass. This zone includes Bazaar and Chamber of Commerce Office.Dargah Hazrat Shah Ibrahim and welfare Centre are also present in this zone .This zone also has Padri Hospital along with lots of small commercial outlets relating to everyday commodities .

Zone 2:
Zone three has Agriculture Market. It has abundant open space, majority of it reserved for future Housing. It also contains high density residential and have a lot of potential for residential development in future.

Zone 3:
This zone is characterized by haphazard planning along MA Jinnah Road, but it is more planned as the development moves toward NawabShah Road. This zone has government High school and Town Committee office. Lots of banks exist here like Bank Al Habib, Sindh Bank and Meezan Bank.



Zone 4:
It is enclosed by Nawabshah road and Sinjhoro Road. New construction is happening here with increased potential for development because of its growth towards Nawabshah by Nawabshah road. It is low density residential with lots of area reserved for future housing. This zone also got Pir Syed Sabghatullah Shah Shaheed Government Degree College along Nawabshah Road.

Zone 5:

This zone is the administrative hub of the city with DC office, DC House, District Account Office, Nadra,DHO office, District Police Head Quarter, Sanghar . Health wise it got Civil Hospital situated near DHO office. STC Bus Station and Farid bus station are present in this zone near to each other.
It is also low density commercial zone with more green area (parks, cricket ground etc.) Then the rest of the city.

Zone 6:

It comprises of high density residential colony named Shahmir panhwar colony, it has high density commercial along Mirpur khas road as well as Dalel sher road .Lots of vacant land is available, in addition considerable land is reserved for future residential development. This zone also has water supply system (Reservoir and Overhead tank).There is central jail located along Tori Road.

Zone 7:

This zone has potential for new development as it has several high density as well as low density industries, plus lots of educational institute's .Though development is in bit and pieces, construction of bypass road has also increased the potential of the area.

Figure 2-3: Pictures of various types of Land uses in Sanghar

Residential

Barren Land

Commercial area in Sanghar

Civil Hospital Sanghar

Graveyard

Office of Deputy Commisioner, Sanghar

Govt. Elementary School, Sanghar

Religious building

3. VISION FOR STRATEGIC DEVELOPMENT PLAN OF SANGHAR

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 Summation of Vision Formulation

The basic aim of vision formulation exercise is to have pluralistic approach to establish a shared and common vision for the development of **Sanghar** 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 Nawanshahr (Divisional Headquarter) at Royal Taj Hotel on November 28, 2018 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 Sanghar 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 Sanghar'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

SANGHAR 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

PROPOSED MASTER PLAN OF SANGHAR TOWN

4. PROPOSED MASTER PLAN OF SANGHAR TOWN

4.1 Spatial Pattern

Sanghar, the district headquarter town was formerly a small village with a population of few hundreds, named after a pious fisherwoman, Mai Sanghar. District Sanghar has been an important administrative unit that plays a significant role in the economy, trade and history of eastern Sindh.

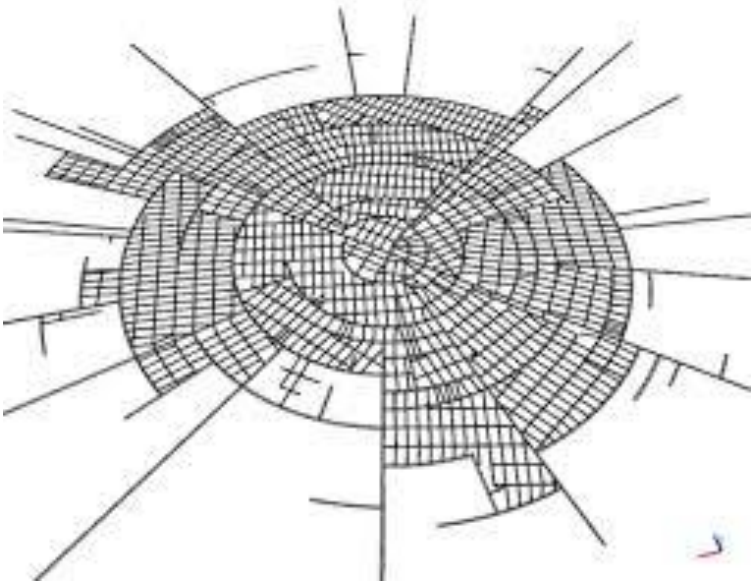
Sanghar Town is present at the center of the district and can be approached easily from the eastern desert part of the district. Sanghar is oriented towards servicing the arid eastern area which are much poorer in comparison with the western part of Sanghar district.

Some of the important features are located far outside the Sanghar Town area. It includes Cadet College and Brahmanabad in southern side along Canal Road, both are at a distance of approx. 50 kilometers from town center. On northern side Makhi Forest with Chotiari reservoir are located at a distance of approx. 38 kilometers.

Being away from the major transportation and development axes (National highway, Indus River, Pakistan railway), Sanghar is lagging behind in industrial and commercial development despite being surrounded by rich agricultural production area could support several agro-based industries in the city.

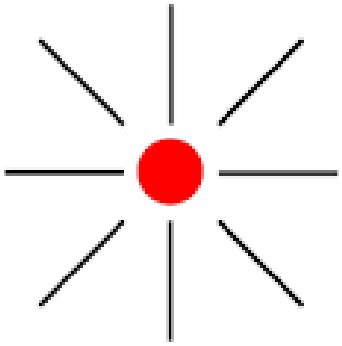
Despite its location away from National Highways, Sanghar district has good communication network of metaled roads, which connects to its taluka headquarters of Sinjhoro, Shahdadpur, Tando Adam and Khipro. There are seven major roads, radiating from core town of Sanghar and forming radial pattern namely: Nawabshah Road, Mirpurkhas Road, Shahdadpur Road, Sinjhoro Road, Chotiari Road, Jamrao Road and Dalel Shar Road.

Due to radial network of major roads, there is no particular physical development pattern of Sanghar Town, as its growing in all directions. It is being developed in east along Dalel Shar Road, in south along Mirpurkhas and Shahdadpur Roads, in west along Sinjhoro Road, in northwest along Nawabshah Road, in north along Jamrao Road and somehow also in Chotiari Road in northeast. Other than road network, the Sanghar Town is also covered with Canal Network almost from all directions.



4.2 Basic Urban Form

The existing town is a small lively and thriving urban center that fulfils the socio-economic and financial needs of its population and that of surrounding towns, villages and specially desert area of Khipro Taluka.



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 future town, and the future development will radiate from it in all directions in concentric circles. At present seven major roads connect Sanghar with the other cities, all converging on the town center. Interconnection of these radiating roads with the ring road around the existing town, will keeps the development compact.

4.3 Proposed Master Plan

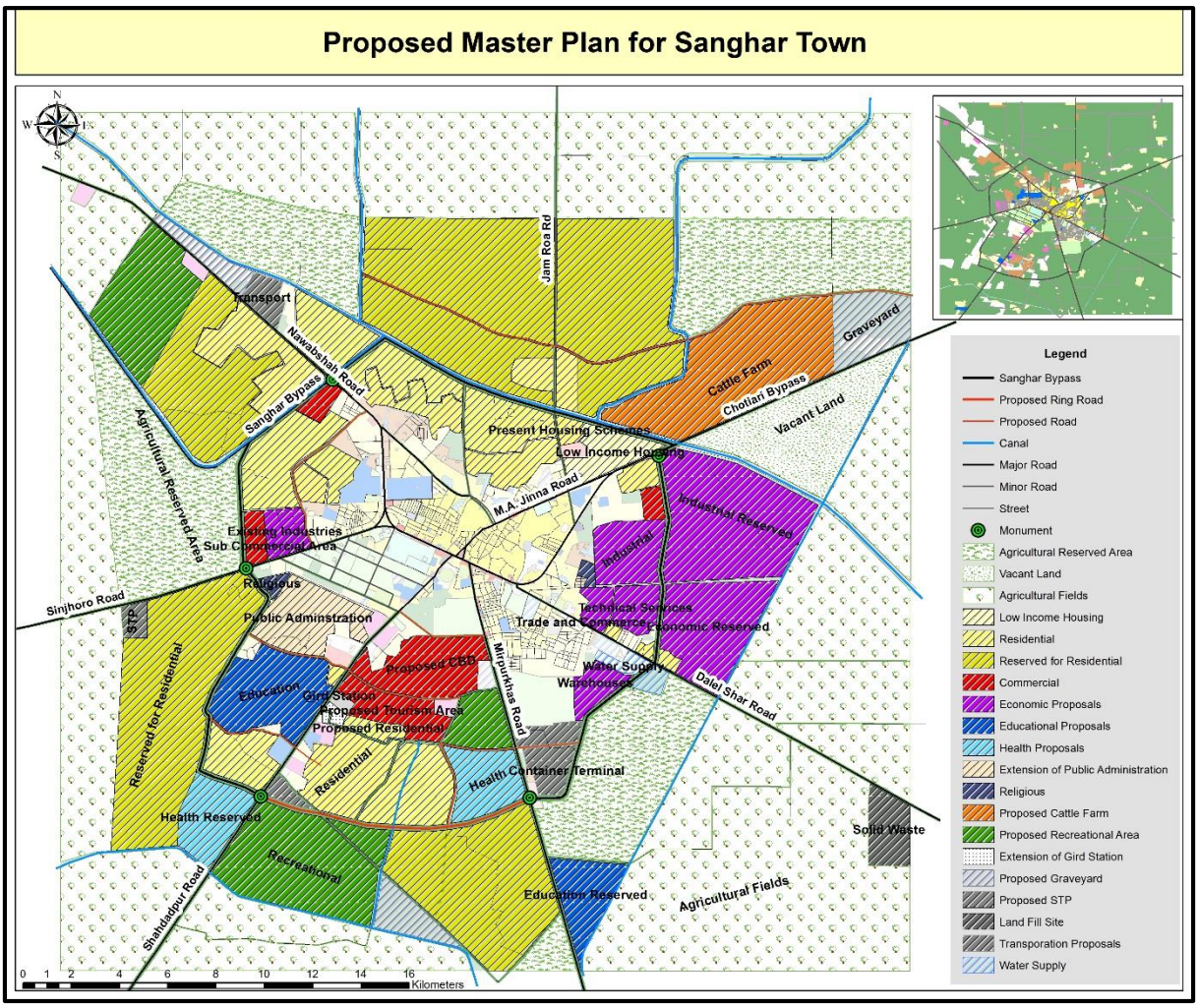
The Proposed Master Plan for Sanghar has been prepared with the consideration of three phases as follows:

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 Sanghar Master Plan is 12,000 acres approx. for a population of 115,000 by 2037. In this way, Sanghar Town in next twenty years is expected to have population density of 10 persons per acre and overall five housing units per acre with an average household size of 5.4.

The hallmark of the plan is that it is **compact without being congested**. As the future expansion of the Sanghar Town is expected to be large, thus the complete Proposed Sanghar 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 in radial form that the existing major roads, serving as radial roads and proposed ring road is making circle all around. Further the intersection of radial roads and ring road creates main junctions and forming different sectors.



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

4.3.1 Salient Features of Planning

- The main CBD Central Business District occurs in between Mirpurkhas and Shahdadpur Roads. In addition, sub commercial areas are also identified in east, west and towards Nawabshah Road, to reduce the burden over the main CBD.
- All economic activities are placed along eastern bypass with respect to existing connectivity and to serve Khipro Taluka as well.
- The transport terminals are also provided at intersection of Mirpurkhas and Shahdadpur and Nawabshah Roads.
- The areas for graveyards have also been reserved at the extreme ends of the proposed town.

- The cattle area is proposed in the north to limit the town development further and it will also benefit the population of Khipro and other settlements.
- The extension of public administration area is proposed just behind the existing setup of administrative units.
- All major health and educational activities have been placed along Mirpurkhas and Shahdadpur Roads due to major development corridors.
- In addition to Mirpurkhas and Shahdadpur Roads, recreational areas are also placed along Nawabshah Road in order to balanced distribution.
- The areas reserved for agriculture beyond 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.

4.3.2 Ring Road – Connecting Bypasses

The proposed ring road is not a smooth circle as it is basically formed by combining existing bypasses and major roads, as these are already serving as bypass without much pressure of land acquisition around these. Thus the Ring Road will complete its circle with proposed connection in southern side. This will join the existing eastern and western bypasses at Mirpurkhas and Shahdadpur Roads respectively. Further this ring will be completed with the existing Canal Road in the north.

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.

4.3.3 Radial Roads – Regional Connectivity

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

However, these roads are also serving as vital radial regional connections. As a result, there are seven proposed radial roads with increased ROW, which will serve as future regional connections. However it is very important to control upfront development along the Major Roads. Likewise, ring road on both sides of major roads as well as planting of local trees is also recommended.

4.4 Proposed Land Use Zoning

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 Sanghar 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:

Figure 4-1 Proposed Land Use Classification for Sanghar

S.No	NRM STANDARDS		PROPOSED LAND USE CLASSIFICATION	
	Land Use Zoning	Land Uses (%)	Level - 1 Functional Zoning	Land Uses (%)
1	Residential	40-45%	Residential	40.6%
2	Commercial	2-3%	Commercial	2.9%
3	Industrial	2-10%	Economic	11.0%
			Livestock	
			Industrial	
4	Institutional	3-5%	Health and Welfare	8.0%
			Educational	
			Religious	
			Public Administration	
5	Community Open Spaces	4-6%	Recreational	5.8%
6	Graveyards	2-3%	Graveyards	2.2%
7	Arterial Circulation & Terminals	15-20%	Transportation	6.9%
			Utilities and Services	
8	Protected Reserved	15-25%	Urban Forestation	22.6%
			Agriculture	
			Water Bodies	
			Vacant / Reserved	

The total area requirement for full fledge metropolis will be around 12,000 acres. As shown in the table of proposed land use classification, the percentage of residential is low and institutional is high, in comparison to the NRM standards. Subsequently, the institutional area will also contain residences for health, educational, religious and public administration employees / staff. In this way, institutional area is sharing the residential load as well.

[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 Sanghar

S.No	PROPOSED LAND USE CLASSIFICATION FOR SANGHAR TOWN						
	Level - 1 Functional Zoning	Level - 2 Functional Zoning	Areas (acres approx.)		Land Uses (%)	Areas (acres)	Land Uses (%)
1	Residential	Existing Residential	840	1,313	10.9%	4,873	40.6%
		Present Housing Schemes	473				
		Proposed Residential	977	3,560	29.6%		
		Reserved for Residential	2,583				
2	Commercial	Existing Commercial	44	197	1.6%	352	2.9%
		New Central Business District	153				
		Reserved for Tourism	90	90	0.7%		
		Sub Commercial Nawabshah Road	21	66	0.5%		
		Sub Commercial Sinjhoro Road	27				
		Sub Commercial Bypass	17				
3	Economic	Trade and Commerce	30	349	2.9%	1,326	11.0%
		Warehouses & Godowns	45				
		Technical services, Workshops	52				
		Reserved for Economic	222				
4	Livestock	Cattle Park	438	438	3.6%		
5	Industrial	Existing Industrial	46	540	4.5%		
		New Industrial Area	105				
		Reserved for Industrial	388				
6	Health and Welfare	Existing Health and Welfare	13	238	2.0%	956	8.0%
		Hospitals with Medical & Nursing College	110				
		Health Reserved	115				
7	Educational	Existing Educational	79	386	3.2%		
		Colleges and Universities	202				
		Reserved for Future Educational	104				
8	Religious	Existing Religious	8	27	0.2%		
		Religious 1	10				
		Religious 1	9				
9	Public Administration	Existing Public Admnitration	152	305	2.5%		
		Public Admnitration and Housing	153				
10	Recreational	Existing Parks and Playground	19	19	0.2%	697	5.8%
		Sports and Cultural Complex	75	678	5.6%		
		Festival Grounds	242				
		Amusement and Theme Parks	362				
11	Graveyards	Existing Graveyards	29	29	0.2%	266	2.2%
		Graveyard 1	46	237	2.0%		
		Graveyard 2	67				
		Graveyard 3	124				
12	Transportation	Existing Transportation	228	649	5.4%	828	6.9%
		Containers Terminal	48				
		Truck Terminal	32				
		Public Transport Terminal Nawabshah Road	36				
		Public Transport Terminal Bypass	16				
		Road Network	289				
13	Utilities and Services	Existing Utilities and Services	39	180	1.5%		
		Water Supply	33				
		Sewerage	22				
		Landfill	77				
		Electricity	9				
14	Urban Forestation	Urban Forestation	368	368	3.1%	2,709	22.6%
15	Agriculture	Agricultural Reserved	1,853	1,853	15.4%		
16	Water Bodies	Canals	161	161	1.3%		
17	Vacant	Vacant / Reserved Area	327	327	2.7%		
		Total Area for Future Development of Sanghar Town	12,008	12,008	100%	12,008	100%

4.4.1 Residential Zone

The important features of the proposed master plan is accommodation of all income groups with diverse options for housing. Therefore in total 4,900 acres of residential land use is proposed, which will reach 24,000 housing units of various sizes of plots ranging from 120 sq.yds to 2000 sq. yds for Sanghar Town till 2037. This will reach on an average of 05 housing units per acre.

There are existing vacant land parcels in overall town, specially in the northwest and northeast 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) 50 acre of land is proposed along Chotiari Road 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 might 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 institution - 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**

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

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

  The following guidelines are for apartment zone development:

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

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.

4.4.2 Commercial Zone

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

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

- **New CBD (Commercial Business District)**
  The New CBD has been located in the area of central attraction accessible from both Mirpurkhas and Shahdadpur Roads. 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.

- **Tourism**
  Considering the potential of tourism due to Brahmanabad and Makhi Forest with Chotiari Reservoir, the area has been reserved for tourism behind New CBD; which will include convention center, expo center, hotels, shopping malls, exhibition ground, etc.

- **Sub Commercial**
  In continuation to the main CBD, it is recommended to place sub commercial areas at other major intersection to share the burden of retail commercial activities and will also benefit the inhabitants with nearby commercial facilities.

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

[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.

4.4.3 Economic Zone

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

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

- **Technical Services**
  On inner side of Ring Road, technical services area is marked to cater present trend of technical services in the town. These technical services will include mechanical workshops and spare parts (auto mobile repairing), building construction materials, home depots, furniture market, housewares, food and beverages, computer hardware etc.

- **Economic Reserved**
  On outer side of Ring Road the land is reserved for economic activities which are not defined currently. 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**
  Area for warehouses have been located on inner side of Ring Road next to containers terminal. 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.

- **Trade and Commerce**
  The trade and commerce area is positioned along Dalel Shar Road next to technical services area. This will provide in and out trading activities of the region specially to Khipro Taluka on eastern side of the town. It will includes grains, fruit and vegetable markets, wholesale markets, slaughter house, storage areas etc.

  The following guidelines are for economic zone development:

Permitted Uses	**Allied Permissible Uses**
- Warehouses, Godowns, Cold Storage and Workshops - 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

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

4.4.4 Livestock Zone

Since Sanghar is not only an agricultural town, local inhabitants rely on livestock such as cattle and fisheries for another source of income. In this regard livestock zone is placed in northeast direction along Chotiari Road, to promote livestock production. However, since fisheries are not favorable in the urban areas, hence main emphasis is to be given to cattle production and their required facilities and services. In addition poultry is another requirement to fulfil through the livestock zone.

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

- **Veterinary Hospital and College**
  At present there is no veterinary hospital in the existing town. A new full-fledged veterinary hospital and college is proposed to cater to livestock health requirements and 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 cattle, poultry, ostrich, camel etc. with pasture and grazing lands around the farms.

The following guidelines are for livestock zone development:

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

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

4.4.5 Industrial Zone

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

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

New Industrial Estate [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.		

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

- **Existing Industrial Area**
  Initially for small scale industries existing industrial area of 45 acres at Sinjhoro Road is recommended to be filled first. Mainly the small industries will be promoted like agriculture related industries. The small scale industries may include flour mills, ice factories, packaging of fruits and vegetables, feeder crops, cottage industries of handicrafts, souvenirs etc.

- **New Industrial Area**
  The proposed industrial area at inner side of the Ring Road is suggested to develop for medium and large scale industries. These will include sugar mill, textile looms, cotton ginning factories, oil, gas and LPG etc.

- **Industrial Reserved Area**
  An additional area reserved for industrial purpose for future use on the other side of the Ring Road and its development is advised after fully utilization of existing industrial area.

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

The following guidelines are for industrial zone development:

Permitted Uses	Allied Permissible Uses
- Small, Medium and Large 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: 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

4.5 Health and Welfare Zone

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

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

- **Health and Welfare Area**
  The health area is marked in regard to one of the major connectivity of Mirpurkhas Road to serve other areas as well. In this area it is suggested to have extension of DHQ Hospital with medical and nursing colleges as well. Since it will become tertiary level center for health facilities, thus 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.

- **Reserved for Health and Welfare**
  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. This health area reserved is placed along Shahdadpur Road to make it accessible for other towns as well and to attract private investment in health and welfare sector. It will comprises of the specialized units like oncology, urology, infertility centers, organ transplantation, and specialized treatment centers, research and development centers.

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

The following guidelines are for health and welfare zone development:

Permitted Uses	Allied Permissible Uses
- Large Hospitals - Specialized treatment centers - Medical College - Dental College - Pharmaceutical College - Nursing College - Laboratories and Diagnostic Centers - Blood Banks - Health Research Institutes	- Staff Residences (medical and paramedic) - Separate Hostels for Boys and Girls - Auditoriums, seminar halls, workshop spaces - Community facilities (parks, playgrounds, schools, clinic, neighborhood commercial) - Support facilities (gym, health club, bus stops, taxi stand, banks, fueling stations)
Applicable SBCA Bylaws[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

4.5.1 Educational Zone

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

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

- **Educational Area**

  The educational area along Shahdadpur Road is mainly proposed for the public sector general university, which is lacking in the town. The idea is to first introduce common educational fields like languages, humanities, applied sciences, arts, commerce, social sciences etc., which could be modified further. Afterwards broad-spectrum of new ranges of education will be added according to the demand of the society, in form of wings, departments and blocks.

  In addition to academic buildings; allied facilities like administration, sports grounds, and health clubs will also be accommodated here. Since it will be the primary level university of the town, thus it will also contain large number of students, faculty and staff. This huge influx will also require residences with community facilities.

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

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.

It is also proposed to provide government degree colleges for boys and girls, separately. 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 zone 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.

- **Reserved for Educational**

  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 is reserved along Mirpurkhas Road. The purpose behind is to involve regional level youth in the education and research, in order to enhance the educational attainment level.

  The following guidelines are for educational zone development:

Permitted Uses	Allied Permissible Uses
- Large scale educational areas - General Education Universities - Scientific Research Institutes - Engineering colleges / universities - Business and management schools - Finance and accountancy Institutes - IT and media Institutes - City level libraries, book banks, data and information centers	- Staff Residences (teaching and non-teaching) - Separate Hostels for Boys and Girls - Auditoriums, seminar halls, workshop spaces - Community facilities (parks, playgrounds, clinics, schools, neighborhood commercial) - Support facilities (gym, health club, bus stops, taxi stand, banks, fueling stations)
Applicable SBCA Bylaws[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

[15] Ibid

4.5.2 Religious Zone

In the proposed master plan two religious sites are allocated in the Sanghar Town. 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

4.5.3 Public Administration Zone

A widely spread Public Administration area in between Shahdadpur and Sinjhoro Roads is already existing. Considering future requirements, the extension of public administration is marked behind the existing area along proposed Ring Road (Western Bypass).

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

- **Extension of 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 Sanghar 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 is proposed to be reserved.

[16] Ibid

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

- **Public Employees Housing**
  The area for public employee housing is suggested 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 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

4.5.4 Recreational Zone

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

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

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

[18] Ibid

- **Amusement and Theme Parks**
  The recreational area specifically for amusement and theme parks is designated in southern side along Shahdadpur Road. In this area large scale amusement facilities like thrilling rides in a safe and pleasant manner will be provided. Moreover theme parks like art park, ice park, floral garden, glow garden etc. could also be introduced as per the demand of the region.

- **Festival Grounds**
  Considering local tradition and types of festivals, a large space is designated for such events. These grounds will be used for large population events like carnivals, eid festivals, In addition considering Sanghar 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 Sanghar region as well.

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

4.5.5 Graveyards Zone

The present graveyards have sufficient space available for near future need. However, for long term three areas for graveyards are designated for long term phase considering accessibility. These graveyards can be further divided according to the requirement of practicing religions in the town. Two of these sites are along Nawabshah Road and Chotiari Road, while one site is also approachable from existing minor road in southern side. Thus these sites will be reachable whenever required and will also remain in the peripheries of the town.

The following guidelines are for graveyard zone development:

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

4.5.6 Transportation Zone

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

In Sanghar Town, the transportation area is a combination of radial roads and ring road, with variety of terminals and intersections.

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 combing western and eastern bypasses, canal road in north with newly proposed southern connection, it completes the proposed Ring Road. And the existing roads becomes major connecting corridors for the Sanghar Town through widening and beatification.
  All proposed Major Roads (primary, secondary and tertiary roads) of the master plan will be dual carriageways with green medians in the center; as shown:

Table 4-2: Proposed Road Network

S.No	Major Roads	ROW (ft)	Forestation (ft)
i.	Ring Road	200	200
ii.	Mirpurkhas Road	150	100
iii.	Shahdadpur Road	150	100
iv.	Nawabshah Road	100	50
v.	Sinjhoro Road	100	50
vi.	Chotiari Road	100	50
vii.	Jamrao Road	100	50
viii.	Dalel Shar Road	100	50
ROW – property to property distance Forestation on both side of ROW			

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

In addition to the 200 feet ROW, urban forestation of 200 feet on both 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. It will have a right of way of 150 feet (min) with three lanes, service road, median, footpaths, parking and cycle/pedestrian tracks.

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

- **Truck and Containers Terminals**

  A seprate sub transportation zone is recommended for trucks and containers terminals at intersection of Mirpurkhas Road and Ring Road, adjacent to District Jail. Since from this point all industrial and economic activities are connected, it found more appropriate location for heavy traffic and goods transport. This proposed terminal will help in transporting goods from / into the town, which will benefit and boost the economic activities of the town. Since in Sanghar the provision of railway is not seems viable, thus for goods transport this terminal is necessary for trading activities in the region.

  This will mainly comprises of the truck parking areas as well as container yards. In addition required residence for the drivers and other staff with small offices, rest areas, washrooms, shops etc.

- **Public Transport Terminals**

  Along Shahdadpur and Nawabshah Roads 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 from these routes; as most of residential, educational and health related traffic will be generated.

  This will be comprises of the parking for public buses, hiace, wagons, taxis; with allied facilities like ticking booths, sitting / waiting areas, washrooms, shops and required residence for the drivers and other staff.

The following guidelines are for transport zone development:

Permitted Uses	Allied Permissible Uses
- All types of parking areas - Designated ROW - Green belts - Footpaths - Traffic management devices	- Drivers and staff accommodation - Support offices, rest areas, washrooms, shops etc. - Street furniture like lights, trash bins, benches etc.
Applicable SBCA Bylaws[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

4.6 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**
  At Dalel Shar water supply reservoirs are existing. With respect to this an available land adjacent to it is proposed to increase the area for water supply infrastructure. This increase will also cater to water supply filtration plant and other advance purification mechanism.

- **Sewage Treatment Plant**
  An area along Sinjhoro Road is designated for STP and its related uses. This site is low in elevation level, 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 far outside the town area, in extreme east considering to wind direction, which is from southwest to northeast. This landfill site is accessible from a major road namely Dalel Shar Road. As the whole town will grow according to the master plan it will serve the population for next 20 years or even beyond.

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

- **Grid Station**

  Grid station in Sanghar Town is existing along Shahdadpur Road. Its extension is also proposed adjacent to it. The extended facility will benefit the residents as per the need of the future consumption of the town.

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 Urban Forestation Zone

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

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

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

The following guidelines are for urban forestation zone development:

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

4.7.1 Agricultural Zone

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

The following guidelines are for agriculture zone development:

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

4.7.2 Water Bodies

The canals and other water courses are passing in north, east, south, and northwest areas of the Sanghar Town. It is suggested to protect all 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.

4.7.3 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 Sanghar Town but being on the peripheral area, would not disturb the town activities in general and it is directly accessible from Chotiari Road.

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, Sanghar municipal area had household size of 5.4 persons and a total housing stock of 13,906. Most of them were categorized as pacca houses which include Pacca (Brick construction) and RCC houses.

General housing condition of the sample surveyed houses were satisfactory. Sample survey conducted by Consultant of the town reveals that approx. 38% of the houses were constructed in between 6 to 10 years. 70% of the houses were below 120 sq. yards with an average of 6 to 7 members in each household. 49% of the houses have only two rooms.

As far as the utility services in the houses are concerned, basic services needs improvement as the sample survey reveals 71% of the houses have drained (flush system) in their houses while 29% of the houses have un-drained toilets which requires manual cleaning.

Table 5-1 : Housing Statistics

ADMINISTRATION UNIT	Past Census 1998				Current Census 2017			
	Population	AGR	No. of HH	HH Size	Population	AGR	No. of HH	HH Size
Sanghar MC	50,696	2.29%	6,945	7.3	75,410	2.11%	13,906	5.4
Sanghar Taluka	264,882	3.16%	44,895	5.9	434,087	2.63%	78,836	5.5
Sanghar District	1,319,881	2.74%	211,354	5.8	2,057,057	2.36%	374,609	5.5

General housing condition of surveyed houses was satisfactory although major reasons for the housing backlog are lack of resources, inadequate planning, and wrong land development policies that favour elite at the cost of poorer sections of the society. In Sanghar urban area the problem manifests as unstoppable growth of squatter settlements through encroachment of state and private land. Up gradation of Katchi Abadis and policy /strategic guidelines need to be formulated for stoppage of this practice.

5.1.1 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.
- Poor land administration with inadequate legal and regulatory systems.
- Housing and associated infrastructure is in dilapidated condition requiring improvement / replacement

- Unchecked growth of squatter settlements: Katchi Abadis encroachment on state and vacant land is a direct outcome of the housing shortage.

5.2 SWOT Analysis

STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
HOUSING			
Majority of the population lives in self-owned houses Almost half of the urban area population has pacca houses The trend of new housing schemes construction by private development is increasing. Most of the formal population is served by electric, gas and water supply. The trend of rental housing is low	High prices of houses in private sector The informal housing sector lacks provision of utility services like gas supply, clean water and drainage facilities	Demand for new planned housing schemes Demand for low income housing Demand for public housing projects More housing for local people of town Opportunity for local micro financing for housing Installation of basic utility services through new projects	Homelessness Commercialization Increase in urban sprawl Inflation of land Shortage of open spaces in urban areas Formation of urban slums Relocation of higher income groups

5.3 Need Assessment

On basis of projected Population for year 2037 the number of households have been estimated around 21,122 out of which additional Housing requirement will be 7,216.

Table 5-2 : Projected Housing Need 2037 (Sanghar MC)

Housing	Population	No. of HH
Total need (2037)	1,14,541	21,122
Present 2017	75,410	13,906
Additional	(Projected POP-Present POP) 39,131	(Projected HH-Present HH) 7,216

5.4 Policy Guidelines

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

i. *Policy Measures for Land*[20]

Priority Identification of Land for Housing

The land availability shall be enlarged through various innovative measures like land banking on continuous basis to cater for at least 5 to 10 years development plan needs.

Land Acquisition

The procedural and legal bottlenecks in the acquisitions process shall be removed and land acquisition laws shall be suitably amended to make provision for unified, transparent and market value oriented systems and procedures which would also minimize litigation.

Land Information System

Development of a comprehensive land information system using modern technology Land

ii. Policy Measures for Housing Finance21

- Housing finance institutions shall be encouraged to promote savings and provide micro loans for low income group through community organization, NGOs and CBOs.
- Part of the sale proceeds of valuable public land shall be set aside to subsidize low income housing and housing for the poor and needy.
- Subsidized loaning facilities shall be extended for rural housing construction and improvements through micro-financing system and institutions like Khushhali Bank, Zakat funds, etc.
- Mark-up on Housing loan installment for individuals shall be treated as expense in tax return.

iii. Policy Measures for Katchi Abadis, Squatter Settlements & Slums[22]

- 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.
- 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.

[20] National Housing Policy 2001
[21] Ibid
[22] Ibid

- 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.

5.5 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 MC should be bound to provide piped water, sewerage, electricity and gas connection to approved scheme with coordination with other relevant authorities.

5.6 Strategic Development Plan

The aim of this Strategic development Plan is to facilitate all for the provision of housing,In this regard following strategies need to be focused:

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

i. Long Term Plan:

- Support research and development programs for economic building material and modern construction technologies.
- Land bank to be formed to facilitate availability of suitable, affordable, safe and secure land parcels within the town for the development of housing schemes.
- Concepts of small towns should be worked out to minimize the housing requirement in secondary cities.
- A mechanism of new approved housing schemes should be established in which MC should be bound to provide piped water, sewerage, electricity and gas connection to approved scheme with coordination with other relevant authorities.
- An affordable housing program for low income group in different phases up to 2037, through one window operation (including technical guidance, easy loan provisions, legal procedures)
- Formulation of Green Building Byelaws for future housing to address water conservation, low energy consumption, waste recycling etc.
- Agricultural land should be protected from the on sought of housing scheme by developer further the multi housing should be engaged to conserve the Rich farm land.

ii. Short Term Plan:

- Increase in proportion of small size plots could be made for low income groups in all new housing schemes.
- Promote the development of public housing scheme for low income groups
- Low-income Housing Funds would be established to provide sufficient and affordable credit for housing to meet the needs of shelter less poor. Example is Grameen Bank which is a microfinance organization and community development bank founded in Bangladesh. It makes small loans to the impoverished without requiring collateral
- Improvement of old housing in core urban area including face lifting of existing town fabric.
- Shifting / removal of illegal settlements from hazardous zones in addition to Up gradation / regularization of notified Katchi Abadis in Sanghar Town
- Improvement / provision of basic utilities and community facilities for the residential areas

5.7 Priority Projects

5.7.1 Detailed Planning and Feasibility Project

Due to high levels of poverty, houses in Sanghar are not built in response to climate/weather. There is a diurnal variation of temperature. Thus, housing must be looked into, to prevent illnesses caused by extreme weather. The solution is to reconstruct the existing houses and to construct the new ones for a significant number of households which have low income. These households are unable to acquire their own houses so resolve their housing problem on their own resulting in the expansion of slum areas and encroachments.

The living condition in such areas is poor, they face so many problems and mostly don't have utility services. To resolve the problems occurred due to this situation, the public sector in Sanghar should launch proactive strategy for urbanization.

i. Development of Housing Site with allied services for Low Income People and land acquisition

➢ **Project Justification**

According to Socio Economic Survey results conducted by consultants, the status of ownership of houses is like 83% family owned, 5% rent free/Govt employers and 12% on rent. Therefore on priority basis, the provision of developed site for residential purpose is proposed to accommodate at least 500 families in short term plan. In long term plan up to 2037, provision for additional 7,216 household will be provided for upcoming generation for next twenty years.

Description	Results
Present Population census 2017	75,410
12 % Population of Sanghar DHQ Town Living in rental houses with no house ownership	9,049
Present Gap @ 5.4	1,675

The private sector has been active in for the provision of housing for the population. The government only provide the minimum support for housing for the low income groups but the construction of housing will be the responsibility of the low income groups.

The purpose of this project is to:

- Provide affordable shelters to the poor people.
- This process will improve the living standard of the town.
- The development of site 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, Sanghar MC, SBCA, PHED, SSGC & HESCO etc.

Estimated Cost: 750 Million Approx. (Short Term)

Project Name	Long Term	Proposed Area in Acres	Preliminary Cost in Million	Justification
Land acquisition for Housing Land Development	Short Term	50 Acre	250.00	Per acre cost @ 5 Million / per Acre
Phase Wise Land Development with allied Facilities (50 Acres)	Long Term	50 Acre	500.00	500 Number of units up to 250 sq. yds. For this proposed site development we have assumed 10 million per acre with internal allied facilities and infrastructure.

Proposed Residential Landuse for Sanghar Town

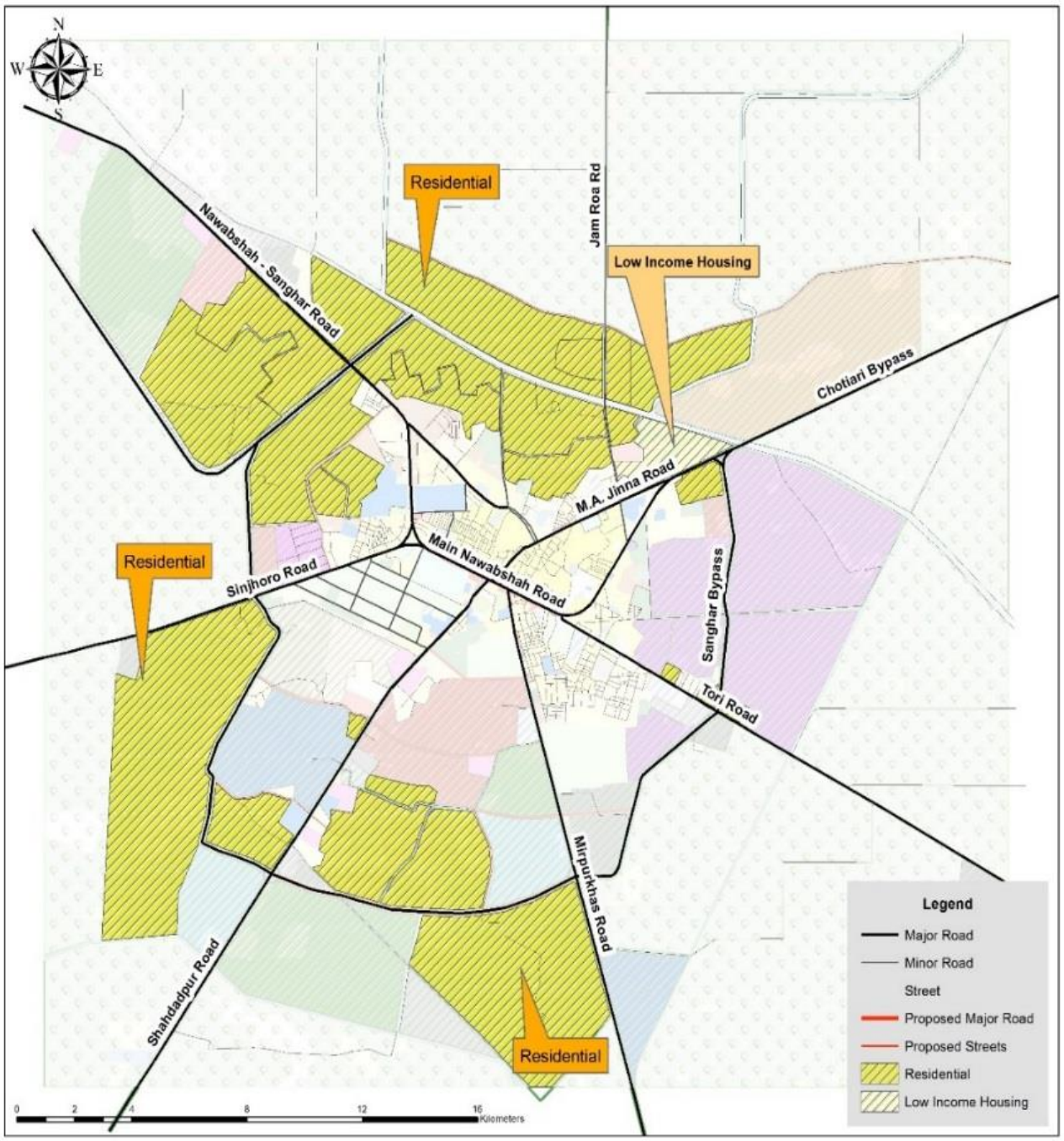


Figure 5-1: Housing Proposal Sangahar Town

6. SOCIAL AMENITIES

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.

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

Table 6-1: Present Educational Institutions, Teachers and Enrolment Record at Taluka Sanghar

Primary ,Middle and Elementary Schools

S. No.	Type	Numbers	Classrooms	Enrolments	Teachers	Students per classroom	Teacher Student Ratio
1	Govt. Girls Primary Schools (GGPS)	29	66	1,918	163	29	1:12
2	Govt. Boys Primary Schools (GBPS)	85	150	3,991	150	27	1:27
3	Primary School (Coeducation)	448	711	26,552	1032	37	1:26
4	Middle Schools (Girls)	8	31	599	32	19	1:19
5	Middle School (Boys)	3	21	536	22	26	1:24
6	Middle School(Co-Education)	9	56	1,071	60	19	1:18
7	Elementary Schools (Boys)	1	1	15	2	15	1:8
9	Elementary Schools (Mixed)	1	14	250	28	18	1:9
Total / Average		**584**	**1,050**	**34,932**	**1,489**	**33**	**1:23**

Source: District Education Department Sanghar

Table 6-2: Present Educational Institutions, Teachers and Enrolment Record at Taluka Sanghar Secondary Schools							
S. No	**Type**	**Numbers**	**Classrooms**	**Enrolments**	**Teachers**	**Students per classroom**	**Teacher Student Ratio**
1	Secondary School (Girls)	2	36	1,935	77	54	1:25
2	Secondary School (Boys)	5	76	3,483	145	46	1:24
3	Secondary School (Co-Education)	7	66	2,512	92	38	1:27
4	Higher Secondary School (Boys)	2	37	2,706	47	73	1:58
5	Higher Secondary School (Girls)	1	7	322	17	46	1:19
6	Higher Secondary School (Mixed)	1	6	250	16	42	1:16
	Total / Average	**16**	**192**	**9,273**	**317**	**48**	**1:23**

- **Technical Institutions**

  The present number of technical institutions in district Sanghar are 13 (male: 8, female: 5). 2 male polytechnic institution with total enrolment of 541 and teaching staff of 7 teachers. There are 2 male Monotechnic Institutions with the enrolment of 247 and teaching staff of 5 teacher, 3 male commercial institutions with 80 male enrolment and 7 male teachers and 6 Vocational institutions (male: 1, female 5) with the total enrolment of (male: 42, female: 121) and having teaching staff of 11 (male: 5, female: 6).[23]

6.1.2 Issues

Following are major issues of education sector which includes:

- Shortage of class rooms as per current enrolment (The available no of classrooms are not sufficient, for current enrolment. At present 1,050 classrooms are available, in the existing schools and colleges, whereas shortage of classrooms amount to 114 on the basis of 30 students per classroom Similarly in colleges and university present shortage of classroom is amounting to 117)
- Low enrolment level
- Shortage of teachers causing low quality of education

[23] *College Education Statistics-2014-15*

- Lack of provision of basic facilities i.e. washrooms, electricity, drinking water etc.
- Poor condition of schools and colleges due to lack of repair and maintenance of buildings
- In addition to classrooms, the rehabilitation of existing educational buildings with all basic and allied facilities are also required. Lack of allied facilities includes furniture, playground, laboratories, libraries etc.

6.1.3 SWOT Analysis

Table 6-3: Education & Literacy

Strength	Weakness	Opportunity	Threats
1. Urban literacy rate is higher than rural 2. High demand rate for private schooling education system 3. Literacy rate is 75%	1. The status of female education is quite poor in District Sanghar. 2. The trend of losing public institutes and universities. 3. Less highly educated personnel's 4. Lack of modern teaching techniques	1. More people will move to urban areas for education 2. The standard of private and government schooling must be maintained by incorporating qualified teachers 3. More PPP is required for educational sector	1. Shift of educated professional to other major towns of the country 2. Expensive quality education

6.1.4 Need Assessment

I. <u>Present Need Assessment in Education Sector (2017)</u>
District Sanghar (Includes primary to Higher education institutions)

As per NRM (National Reference Manual) and NEP (National Education Policy) standards, recommended students per class room occupancy is 30 students per class room. Total enrolment and available number of class rooms shows that there is a present shortage of class rooms.

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, Sanghar district have need of 1,674 extra class rooms.

Table 6-4: Present Need Assessment in Education Sector of Sanghar District

S. No	Description	Results
1.	Total Enrolments	242,632
2.	Total Number of available Class Rooms	6,441
3.	Student Per Class Room @ NRM Standard (Primary to Secondary)	30
4.	Present Occupancy Load of Students per Class Room	38
5.	Class Rooms Required for present need	8,088
6.	Shortage of Class rooms	1,674
Source: *Sindh Education Statistics 2015-16 and Consultant's Estimates 2017*		

Taluka Sanghar (Includes primary to Secondary education institutions)

- Short term plan, for taluka provision of 197 classrooms at different levels is required with the repairing of existing buildings with all basic facilities and training of teaching staff is required.

Table 6-5: Present Need Assessment of Sanghar Taluka (Primary to Elementary)

Table 6-6: Present Need Assessment of Sanghar Taluka(Secondary to Higher Secondary)

S.No	Description	Results
In Schools of Sanghar(Primary, Middle and Elementary)		
1	Total present enrolments	69,599
2	Classrooms available at present	2,085
3	Students per classroom at present	33
4	Classrooms required for present need @ 30 students per classroom	2,319
5	Present shortage of classrooms	235
Source: ***District Education Department Sanghar and Consultant's estimates***		

S.No	Description	Results
In Schools of Sanghar (Secondary and Higher Secondary)		
1	Total present enrolments	9,273
2	Classrooms available at present	192
3	Students per classroom at present	48
4	Classrooms required for present need @ 30 students per classroom	309.10
5	Present shortage of classrooms	117
Source: ***District Education Department Sanghar and Consultant's estimates***		

II. Future Assessment (2037) District Sanghar

i. Primary to Higher Secondary

The long term plan target is to achieve 100% enrolment with 1:1 male female ratio by 2037; therefore following calculation is done 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 needed to construct in future to serve additional estimated population.

Table 6-7: Future Assessment (2037) at District Level

Projected population 2037 (10 and above)	As per 1998 Census 30.87% Attainment (from Primary to Higher Secondary)	Required Class Rooms @ 30 (2037)	Present Supply (2017)	Future Demand (2017-2037)
3,281,725	**1,013,068**	**33,769**	**6,441**	**27,328**
Source: Consultants Estimate Based on 1998 Census.				

b. Taluka Sanghar

Table 6-8: Future Requirement of Classrooms in Sanghar		
S.No	**Description**	**Results**
In Schools of Sanghar		
1	Expected total enrolment by 2037 @ 100% enrolment	254,148
2	Total classrooms requirement in 2037	8,472
3	Additional classrooms requirement in 2037	7,307
In High schools and Colleges of Sanghar		
1	Expected total enrolment by 2037 @ 100% enrolment	106,496
2	Total classrooms requirement in 2037	3550
3	Additional classrooms requirement in 2037	3241
Source: ***Consultant's estimates based on population projection on 2017 census and 1998 census age pyramid***		

6.1.5 **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 dilapidated schools and buildings should be given top priority.

[24] Sindh Vision 2030

6.1.6 Strategic Development Plan

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

i. Long Term Plan

- Improving the quality of learning outcomes through strengthening the teaching/learning process, improving the quality of teachers through merit-based selection and recruitment.
- 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.

ii. Short Term Plan

- Sustainable construction of new schools and colleges with all facilities to cater additional future enrolment.
- Rehabilitation and improvement in the existing schools/colleges 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.

6.1.7 Priority Projects

i. Provision of Additional of 100 Nos. of Classrooms in Existing Schools and College Buildings Along With Allied Facilities with Basic Utilities (pilot project).

- **Project Scope & Justification**

  Education Plays Very Important role to achieve goals of any urban strategy. Currently the situation of primary education in Sanghar is very poor. At the present, there is need of extra schools with the number of 352 class rooms at taluka level. The focus must be on the improvement of the infrastructure and provide the basic facilities like water, electricity, toilet, playgrounds etc. At the present, there is shortage of 352 class rooms at Taluka level and by the year 2037 need will increase up to 10,548 number of class rooms. Therefore, 8,271 more class have to constructed by the year 2037.

- **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 Sanghar MC

  Estimated Cost: 250 Million PKR Approx.

ii. Rehabilitation/Construction of Technical and Vocational Training Institutes & Various capacity Building Training Programms to enhance Academic capacities.

- **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 Sanghar, 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.

- **Project Justification: -** Various capacity Building Training Programms to enhance Academic capacities.

  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: 230 Million PKR Approx.

Project Name	Long / Sort Term	Preliminary Cost in Million	Justification
Provision of Additional of 100 Nos. of classrooms in existing schools and college buildings along with allied facilities with basic utilities (Pilot Project).	Short Term	210.00	According to the National Education Union, minimum space standard for single student is about 20 feet^{2,} and minimum space of 55 m^2 or 592 feet^2 for 30 students. For this 100 class room having capacity of 30 students per room required on priority basis. - Space Required Per Student =20 sqft - Total No of Students @ 30 Student per Class Room = 3,000 Nos. - Total Area Required = 60,000 - @ Rate of 5,000/sft = 210 Millions
Various capacity Building Training Programms to enhance Academic capacities.	Long Term	20.00	Teachers Capacity building programs can also strengthen their teaching skills for better results.

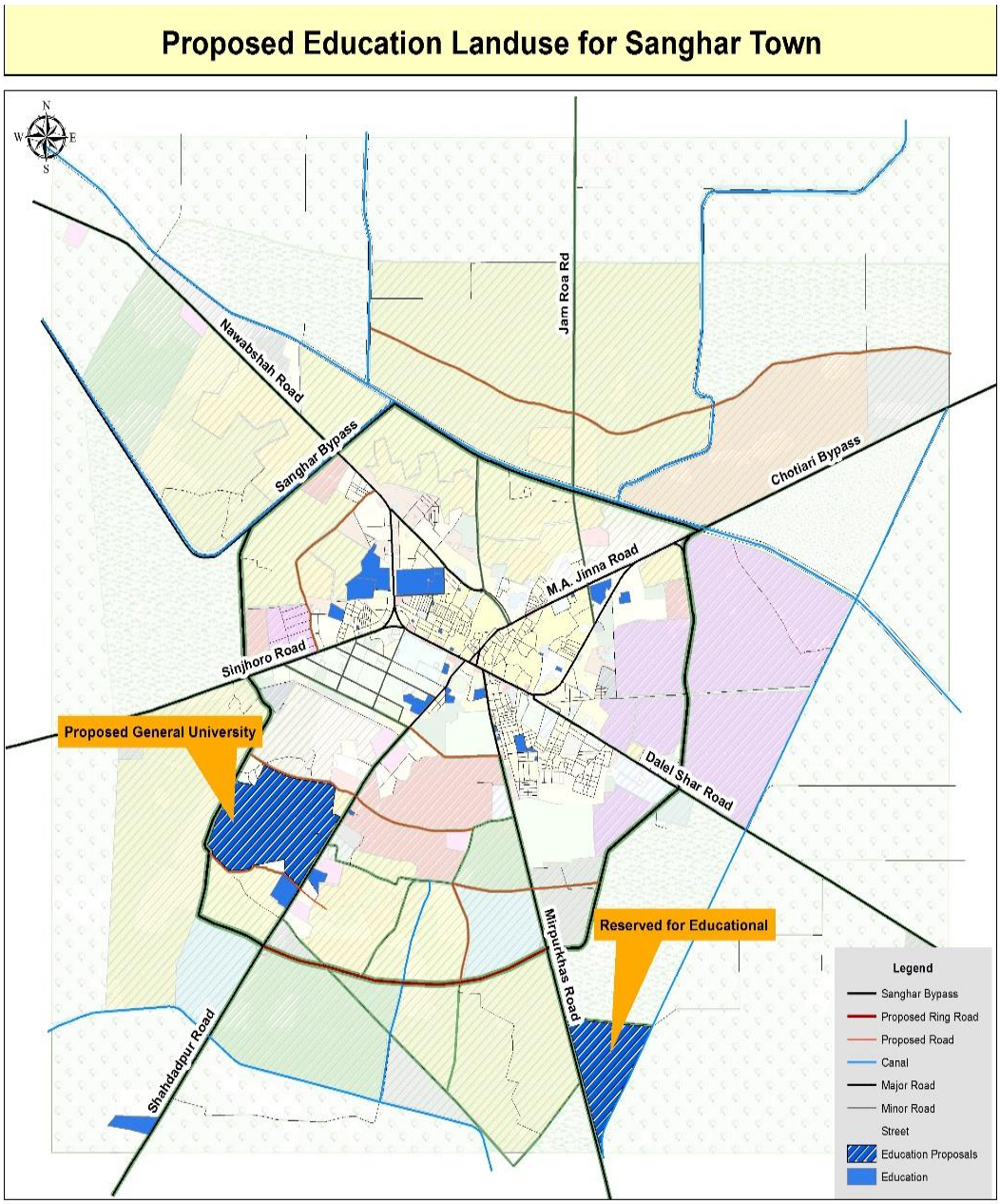


Figure 6-1: Educational Proposals for Sanghar MC

6.1.8 Immediate Action Plan for Core Urban Area

i. Rehabilitation and Up gradation of Schools

All schools marked in core urban area should be rehabilitated 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. Through which existing population could easily get satisfactory service.

At present only five educational facilities are present in core area of Sanghar. Besides repair and rehabilitation we are only proposing all allied services related to basic utilities, access road and building renovation.

S. No.	Education Facility Name	Area (acre)	Repair & Rehabilitation – Activity Wise Cost in Millions							
			Street / Road / Parking	Utility Facilities					School Building Repair/ Renovation	Security
				Electricity	Water Supply	Sewerage	Gas	PTCL		
1	**Govt. Vocational Girls School**	0.78	0.78	0.90	1.17	1.17	0.78	0.20	0.39	0.20
2	**Govt. Girls Primary School**	0.13	0.13	0.15	0.20	0.20	0.13	0.03	0.07	0.03
3	**Govt. Girls Double Section School**	2.27	2.27	2.61	3.41	3.41	2.27	0.57	1.14	0.57
4	**Govt. Elementary College**	3.79	3.79	4.36	5.69	5.69	3.79	0.95	1.90	0.95
5	**Govt. Girls Degree College**	6.4	6.40	7.36	9.60	9.60	6.40	1.60	3.20	1.60
Total		13.37	13.37	15.38	20.06	20.06	13.37	3.34	6.69	3.34
Total PKR Rs. Million			**95.60**							

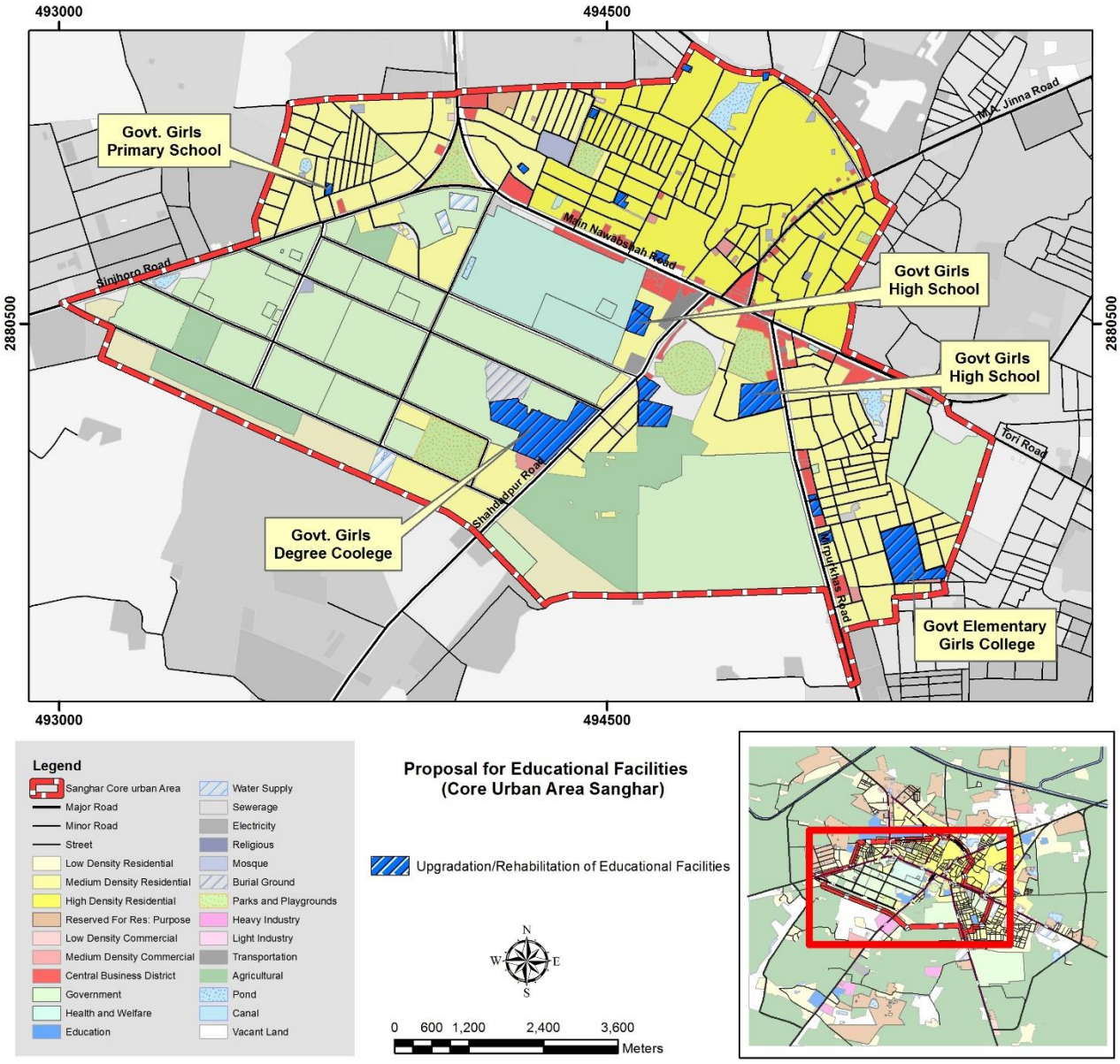


Figure 6-2: Rehabilitation of Educational Institutes of core urban area

6.2 Health

6.2.1 Existing Situation

In Sindh maternal health facilities and proper reproductive care is not available at the required scale. Low levels of maternal health and nutrition coupled with high fertility rates lead to high mortality and morbidity among mothers and also children, particularly in the rural areas. The lack of such healthcare endangers the life of the mother and the child. In Sindh the fertility rates average at 6.0 births by women by the age 45-49 and more than 4,000 mothers die every year due to pregnancy related issues. Consequently, poor women's health in Sindh is as much a medical as social problem. Underlying factors here are the lack of awareness of and attention to, women's health needs; women's lower education and social status; and social constraints on women and girls, including the practice of seclusion.

In district Sanghar, there is one civil hospital having 208 beds, 3 THQ having 90 beds, 60 BHUs at district having 120 beds and 6 RHCs having 70 beds, 133 Dispensaries having 208 beds and 13 T.B clinics having 30 beds. There are 40 private hospitals with 186 number of beds serving at the Sanghar district.

Table 6-1: Government and Private Departmental with Bed Capacity in District Sanghar

Type	No.	Beds
Civil	1	208
Taluka	3	90
BHUs	60	120
RHCs	6	70
Private	40	186
Dispensaries	133	208
T.B. Clinics	13	30
Total	**256**	**912**

Source: Health Profile of Sindh, 2017

In district Sanghar there is only one Leprosy clinic, 1 Unani Shifa khana and 2 Maternity homes which serving the whole district population.

The present total number of doctors at district Sanghar are 737.there are 9 Physicians (Govt: 5, Private: 4), 8 Surgeons (Govt: 4, Private: 4), 8 Gynecologist (Govt: 5, Private: 3), 7 Pediatricians (Govt: 5, Private: 2), 19 Dentists (Govt: 14, Private 5) and GMO doctors are 686 (Govt: 399, Private: 287).

6.2.2 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.

6.2.3 SWOT Analysis

STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
Health			
Availability of Civil Hospital in the town	Limited health facilities in urban area There are 912 beds for total population Shortage of doctors and paramedical staff	More investment is required through PPP in health sector More job opportunities for doctors More job opportunities for the paramedical staff	Less emergency response to health incidents. Death rate may increase. Difficult to control eradication of epidemic diseases

6.2.4 Need Assessment

- **Present Assessment at district level (Population, Bed Ratio, Doctor Ratio) 2017**

  The NRM (National Reference Manual) recommends 2 bed per thousand as the medium term target. On this basis approximately 3,202 beds will be required to be provided gradually. At present 17 to 20% of these beds will be in the private sector. The shortage of doctors and para medical staff, laboratory equipment, diagnostic services and quality of buildings are an evident problem in small towns and will need to be tackled in Tender with increase in beds.

  Currently there are 737 doctors present at district level.

  According to WHO (World Health Organization) standards doctor to population ratio is 1:1000 so taking that as a reference point currently there are 1,320 doctors required for the present population of district.

Table 6-9 : Present Health Need at Sanghar District

Present Population	Available Beds	Present need	Required Beds	Available Doctors	Present Need	Required Doctors
2,057,057	912	4,114	3,202	737	2,057	1,320

- **Future Need Assessment at District Level (Population, Bed Ratio, Doctor Ratio) 2037**
  The consultant considered it appropriate to consider the catchment population of the whole district to work out the present need assessment and future (2037) requirements. The NRM (National Reference Manual) recommends 2 bed per thousand as the medium term target. On this basis approximately 5,020 beds will be required to be provided gradually until 2037.

As already discussed above 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 2229 doctors for the future population of Sanghar District.

Table 6-10 : Future Health Need at Sanghar District (2037)

Future Population	Available Beds	Future need	Required Beds	Available Doctors	Future Need	Required Doctors
2,965,955	912	5,932	5,020	737	2,966	2,229

6.2.5 Policy Guidelines[25]

Enhance basic health care by making it more accessible & affordable, efficient, effective and timely. This will be achieved by diversifying outlets through the involvement and support of other organizations that provide health or health related services. An important inclusion in this direction will be the extension and enhancement of basic healthcare education in schools, colleges, universities and other technology/vocational training institutions.

Enhance and improve existing emergency care facilities and trauma centers, including ambulatory services and paramedic forces.

6.2.6 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:

i. Long Term Plan

- To improve the access through an "Edhi' type ambulance network financed by local charity, in connection with local government bodies and healthcare facilities
- Effective implementation of Health Insurance Programme to reduce catastrophic health expenditures.
- Tertiary Level Specialized Hospitals
- Provision of incentives to doctors and paramedics staff like Accommodation facilities, increments etc.
- Establishment of new BHU/Hospitals at HQ Town and Tehsil towns as the shift from rural to urban areas is being gradually made
- Participation of private sector directly or through public-private partnership.

[25] Sindh Vision 2030

- Research and development programme for doctors and paramedics staff

ii. Short Term Plan

- Improve access to healthcare facilities as due to long journeys to hospitals many patient die on the way.
- Improve the quality of healthcare services,
- Improving functionality of equipment and availability of quality medicines.
- Rehabilitation and improvement in the existing hospitals
- Provision of Rapid motorbike Mobile unit for core urban area

6.2.7 Priority Projects

i. Construction / Rehabilitation of Health Institutes

➢ **Project Scope & 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 Special 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 Sanghar.

➢ **Project Benefits**

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

➢ **Implementing Authority -** Government of Sindh - Health Department

Estimated Cost: 550 Million PKR Approx. (Short Term)

Project Name	Short Term	Preliminary Cost in million	Justification
Extension of Civil Hospital for more specialized wards / sections	Short Term	500.00 Millions	Extension of civil hospital includes different wards i.e. PEADS, ENT, Gynecology, ICU, General wards, Nursery, waiting areas, trauma center & Burns Ward etc.
Provision of diagnostic facilities, ambulance, pharmacy & Incinerator in DHQ Hospital	Short Term	50.00 Millions	- Two nos. of ambulances each costs 5 million = 5 x2 = 10millions - Installation of incinerator - Subsidized drug & pharmacy with modern diagnostic labs etc.

Proposed Health Landuse for Sanghar Town

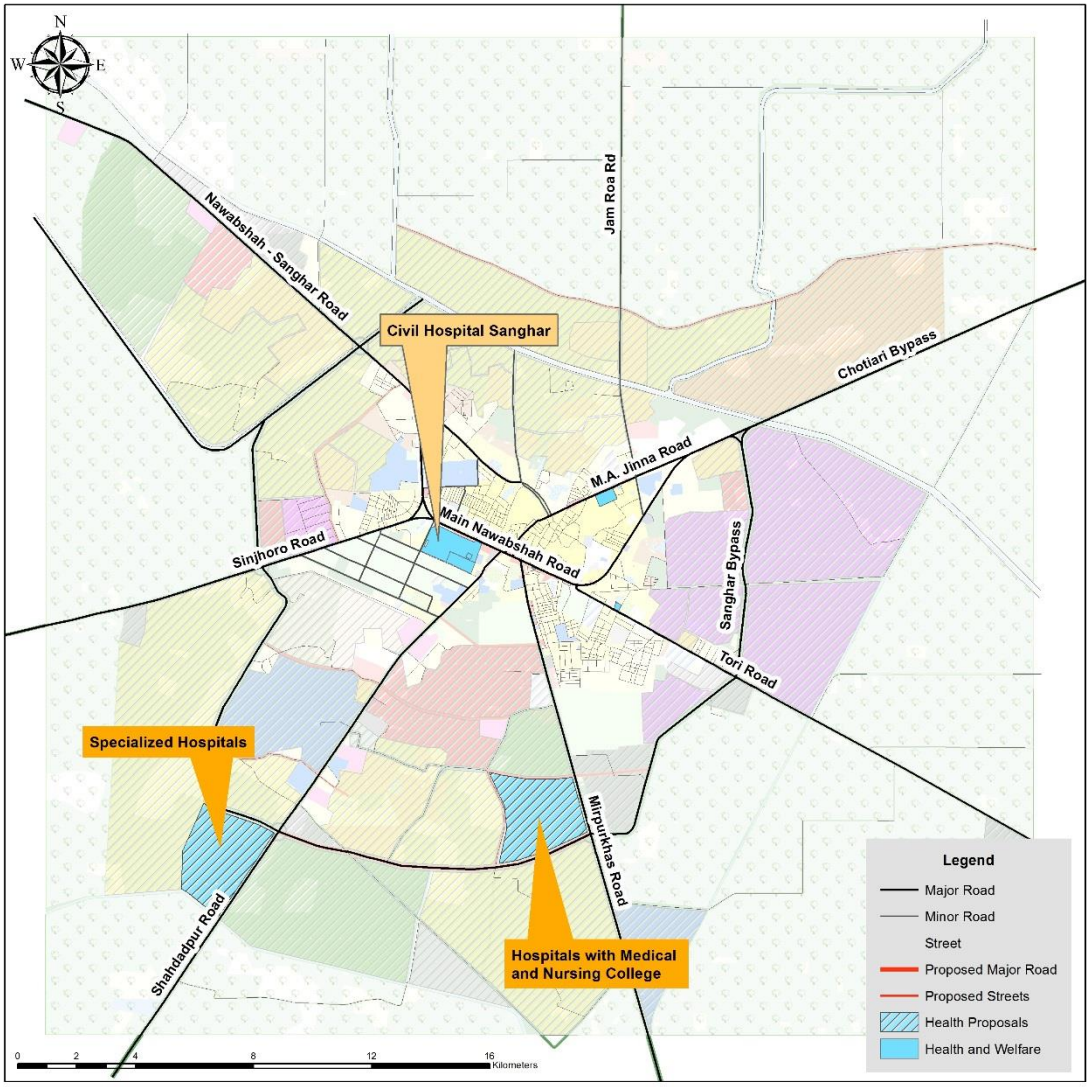


Figure 6-3 Health Zone Proposal Sanghar Town

6.2.8 Immediate Action Plan for Core Urban Area

i. Rehabilitation and Up gradation of DHQ Hospital Sanghar

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

- Repair & Rehabilitation of DHQ Hospital Sanghar & Installation of Incinerators

Rehabilitation of RHC center (Building)						
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 Sanghar	30.86	30.86	19.96	38.58	7.72
Total		30.86	30.86	19.96	38.58	7.72
Total PKR Rs. Million			**97.11**			

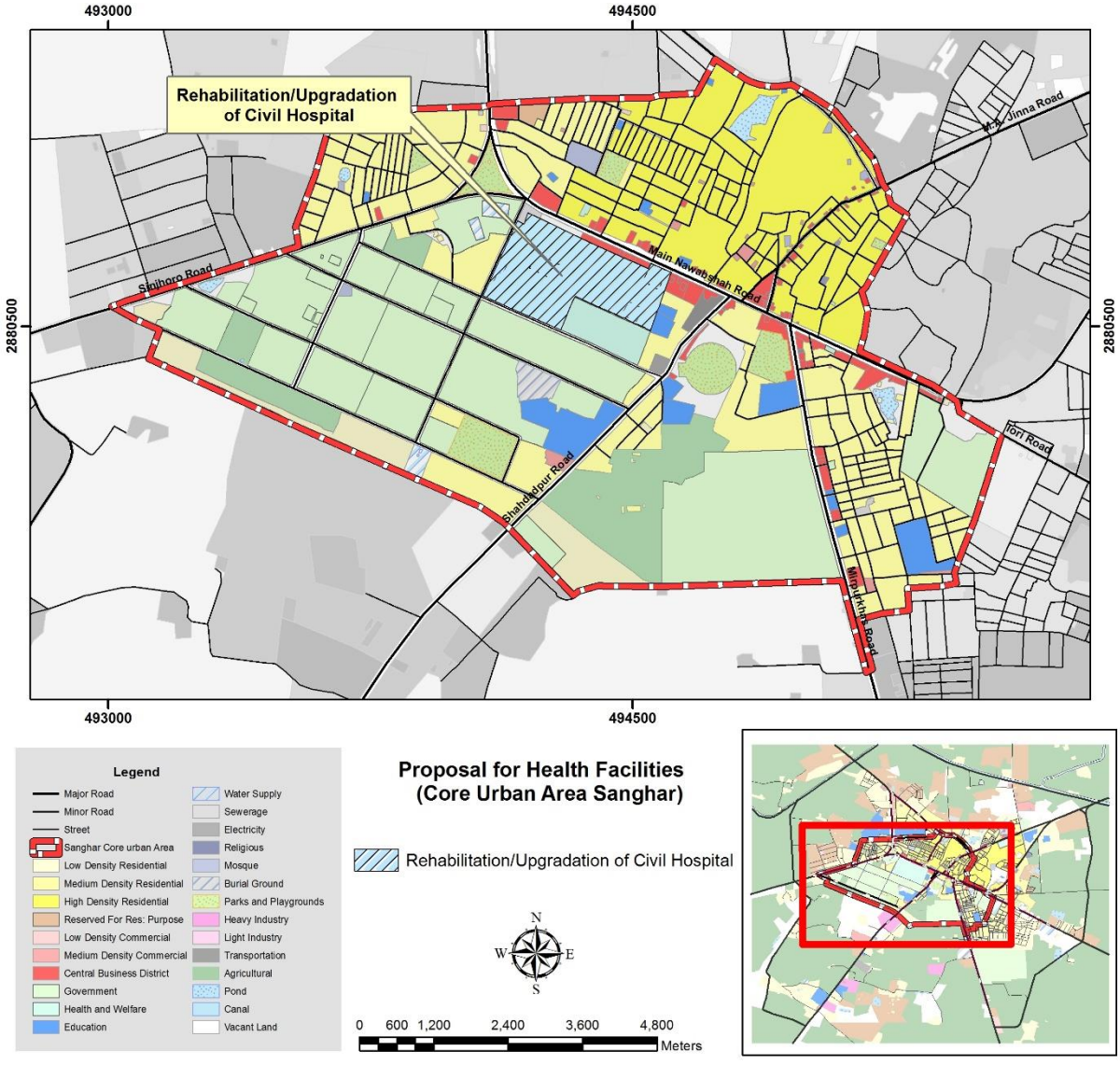


Figure 6-4: Proposal for improvement in Health sector core area Sanghar

6.3 Recreational/Cultural/Tourism

6.3.1 Existing Situation

Recreational and entertainment are necessary for the mantal,physical and spiritual development of a community. Recreation can be active like organized sports or passive like breathing in a fresh air or standing in a green landscaped park with friends and family

Recreational Spaces in Sanghar

According to Cultural Department of Sanghar, there is only one cricket ground and no Hockey or Football ground available, even no area is reserved for sports facilities.

There are only 4 parks in Sanghar.

- Rani Bagh
- Society Sanghar Park
- Zilla Headquarter Park
- Children Park

A Museum is also under construction in Sanghar. While a single theatre is functional in the town.

The indigenous cultural activities of various social groups and minorities comprises many events that attract people from its surrounding localities. Several annual festivals are celebrated in this district. Strong potential for producing culturally ornamented products used in daily life. Sanghar District is also famous for Chotiaro reservoir, which can be converted as tourism spot by enhancing the infrastrastrucutre and estabilishing the facilities in the premises of Dam. It can also help to boost the economcy as well as will be beneficailry for the local people.

Availability of heritage sites.

Here are few historic and famous places in Sanghar

- Mir Shahdad Jo Qubo, the tomb of Mir Shahdad Talpur, who is regarded as one of the finest military commanders of Sindh, is one of the historical heritages of Sindh and is located in Shahpur Chakar, at a graveyard of the family members of Mir Shahdad Talpur.
- Mansura, ruins from the seventh century A.D.
- The Hameer Faqeer Dargah is situated in Khadro Sindh.
- Sohni Mahiwal Tomb of Sohni in Shahdadpur.

6.3.2 Issues

- Shortage of water facility to maintain green spaces, green belts and trees plantation.
- According to Cultural Department of Sanghar, there is only one cricket ground and no Hockey or Football ground available.
- Lack of reserverd area for sports facilities.
- Poor Management for organizing cultural events
- Lack of infrastructure to accommodate visitors into such events.
- Less commercialization from tourism point of view.
- Less heritage preservation.

- Infrastructure is lacking for tourism activities

6.3.3 SWOT Analysis

SPORTS AND RECREATION			
Strength	**Weakness**	**Opportunities**	**Threats**
Local environment of town supports green urbanism There are 4 parks in Sanghar Society Sanghar Park Rani Bagh Zilla Headquarter Park Children Park A Museum is also under construction in Sanghar A theatre is also functional in the town.	Poor maintenance of existing infrastructure According to Cultural Department of Sanghar, there is only one cricket ground and no Hockey or Football ground available There isn't any area reserved for sports facilities	Good health of local communities Air pollution reduction Healthy environment Protection of natural habitat	Give birth to passive recreation Obesity Loss of cultural values
Culture			
The indigenous cultural activities of various social groups and minorities comprises many events that attract people from its surrounding localities Strong potential for producing culturally ornamented products used in daily life	Poor Management for organizing cultural events Lack of infrastructure to accommodate visitors into such events Lack of opportunities to commercialize / merchandize cultural goods	If organized appropriately could generate handsome amount of revenues with other spin-off effects Arrangement of full security and residential places for the visitors can attract people towards the town	Security Threats Demise of cultural values and norms

6.3.4 Need assessment

Sanghar Town has needs more green space and recreational facilities for the healthy environment. Community parks would be assured in every new housing scheme.

6.3.5 Policy Guidelines

- Federally-managed lands and waters afford critically needed opportunities for outdoor recreation,
- Diverse recreation opportunities on Federally-managed lands and waters are an important complement to recreation opportunities on state and adjacent lands,
- Managed outdoor recreation can be consistent and compatible with conservation of natural resources including fish and wildlife and preservation of heritage resources,

- Providing enhanced and expanded opportunities for outdoor recreation can be done within the provisions of existing, multiple-use;
- Clean air and clean water and other environmental objectives are vital components of quality outdoor recreation experiences; and providing quality recreation opportunities
- Sanghar needs infrastructure and programmes for sports activities, sport confections, gymnasium and family parks, and children play area and gardens.

6.3.6 Strategic Development Plan

The aim of this strategic Development Plan is to provide Recreational Infrastructure of International Standards at District, Protect and conserve the cultural heritage, promote language, art and culture of District and dissemination of information through media. Some of the Strategies are mentioned below;

Canal Beautification :

A canal is located in the north running near the city and intersecting chotiari road.

For the beautification of canal, footpaths and walk ways should be constructed and benches should be fixed on the banks of canals to turn them into recreation spots for the locals and to this effect design should be prepared in collaboration with the irrigation department.

Similarly, food courts will be set up in various places along the canal bank, while spots should be identified for the purpose. Green belt should also be provided for the purpose of facilitating pedestrian movement. Moreover embankments should be reinforced.

For the beautification of canal passing through the city wondrous pathways and vistas can be created along the bank of the canal .Providing Soothing distant tourism opportunity to capture the beauty but not destroy it through increased impact on ecosystem, this can be done by creating a buffer area

i. Long Term

- Development and preservation of cultural heritage
- Revenue generation through tourism planning.
- Promotion of rich heritage to increase historical importance of town.
- Preservation of touristic places
- Protection of historical places and cultural heritage
- Youth development programme for sports and recreational activities
- Establishment of new open spaces as well as establishment of indoor and outdoor game facilities.

ii. Short Term:

- Existing open spaces in core urban area should be restored and maintained. New open spaces should be identified and created.
- Establishment of synthetic grounds, playing turf(for hockey, football) and indoor gym facility.

Proposed Recreational Landuse for Sanghar Town

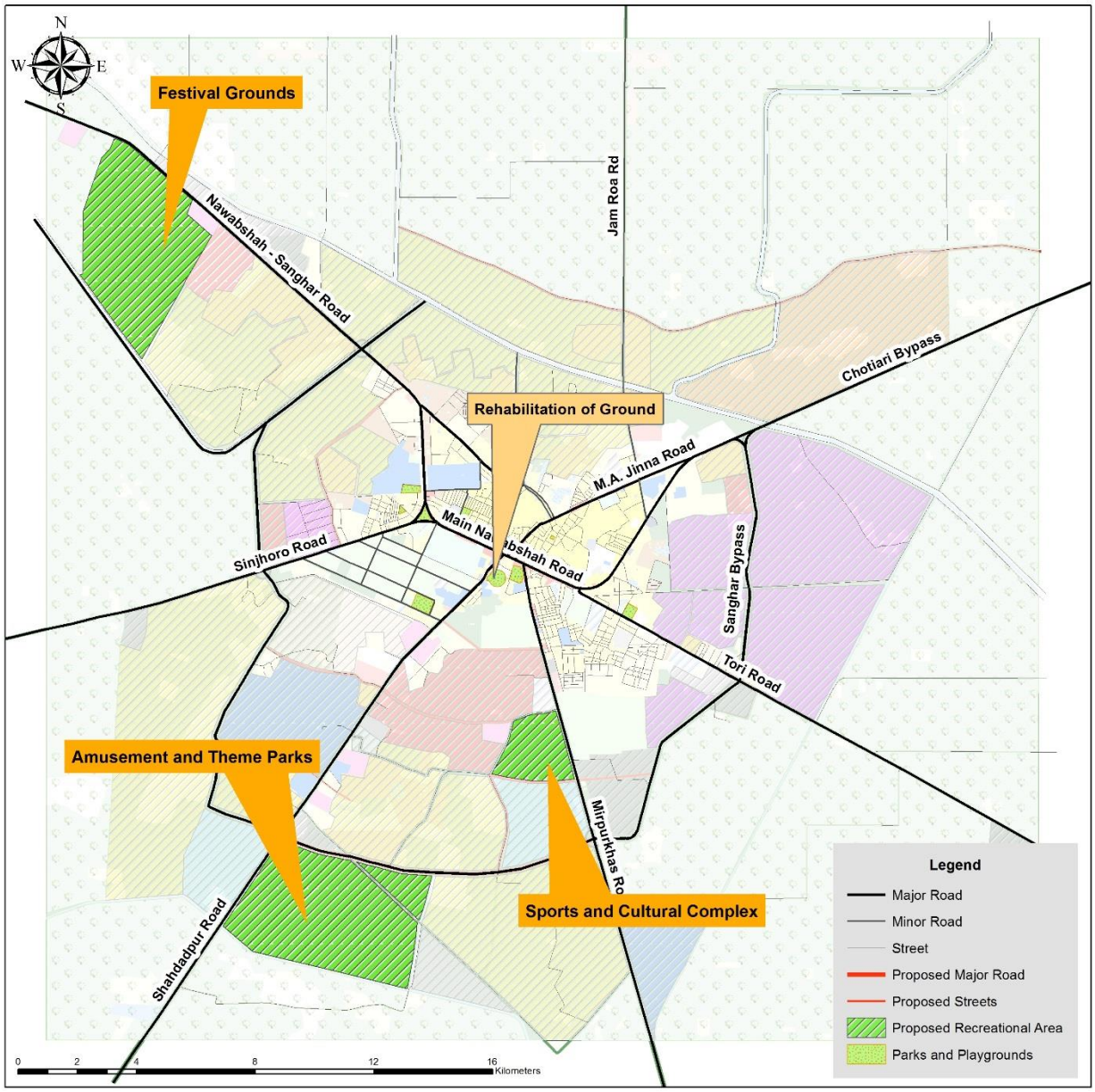


Figure 6-5 : Recreational Proposal Snaghar Town

6.3.7 Priority Projects

i. Construction/Rehabilitation of Existing Sports/Cricket Ground.

- **Project Scope & Justification**

  Currently, the Sanghar MC is serving with four parks & one Cricket Ground. Circkrt ground is located along shahdadpur road in core urban area without basic facilities. There is also lack of family parks and open spaces resulting in a high level of air pollution and poor environment. The following are the recreational proposals with respect to the priority bases sets to improve present Sports/Cricket Ground.

  These are in very poor condition and also insufficient for the population of 75,410, so therefore the project is proposed to construct more parks and rehabilitate the available parks to facilitate the people of Sanghar MC.

- **Project Benefits**

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

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

Estimated Cost: 97.83 Million PKR Approx. (Short Term)**.**

Project Name	Short Term	Total Area in acre	Preliminary Cost in millions	Justification
Rehabilitation of Cricket sports ground	Short Term	8.35 acre	97.83	- Spectator area 12,000 sft. Repair & Rehab; @ the rate of 1800/ sft. Total 21.6 Million for Rehabilitation of Spectator area. - Playground Area 3.50 Acres (152,460 sft, Repair & Rehab; @ the rate of playground @ rate of 500/ sft. - Total 76.23 Million for Rehabilitation of playground area.

6.3.8 Immediate Action Plan for Core Urban Area

- **Provision of Open Spaces and Park:** There is an acute shortage of compulsory open spaces in core urban area of Sanghar. Present sports & recreational facilities consist on Rani Bagh, Bilal Masjid Park (Society Park), Zilla Headquarter Park, Children Park & only cricket ground is present in town. Process of land acquisition should be started to facilitate core urban area with parks and playgrounds.

- Existing parks are in poor condition, therefore they should be preserved and restored for Family Park and recreational facilities. Some new monuments and land marks should be placed in the Chowks of core urban area for beautification purposes. Whereas Installation of Monuments on important Chowks and junctions of the core urban area of Sanghar DHQ town will represent the history and grandeur of the town.

Table 6-11: Recreational Facilities Preservation

S. No	Recreational Preservation Site Name	Area / Locality /Address (acre)	Area (acre)	Rehabilitation Required Area wise or job wise cost (PKR)			
				Street / Road / Parking	Utility infrastructure	Public Facilities	Security
1	Rehabilitation of Bilal Masjid (Society) Park	10.64	1.33	1.53	1.66	0.32	0.33
2	Rehabilitation of Zila Headquarter Family Park		5.46	6.28	6.83	1.31	1.37
3	Rehabilitation of Children Park		0.62	0.71	0.78	0.15	0.16
4	Rehabilitation of Gulshan e Latif Park		3.23	3.71	4.04	0.78	0.81
Total			10.64	10.64	12.24	13.30	2.55
Total PKR Rs. Million			38.73				

Note:

- ✓ Rehabilitation of lanes, streets and connection minor and major roads.
- ✓ Utility Infrastructure rehabilitation includes basic services of Water supply, Electricity supply and Gas supply.
- ✓ Public facilities includes rehabilitation and provisioning of public toilets, proper seating arrangements.
- ✓ As per the law and order situation security concerns makes the overall impact to uplift the society life w.r.t. to secured environment.
- ✓ All these basic services in every DHQ town core areas needs to be rehab for quicker revitalization of people's life.

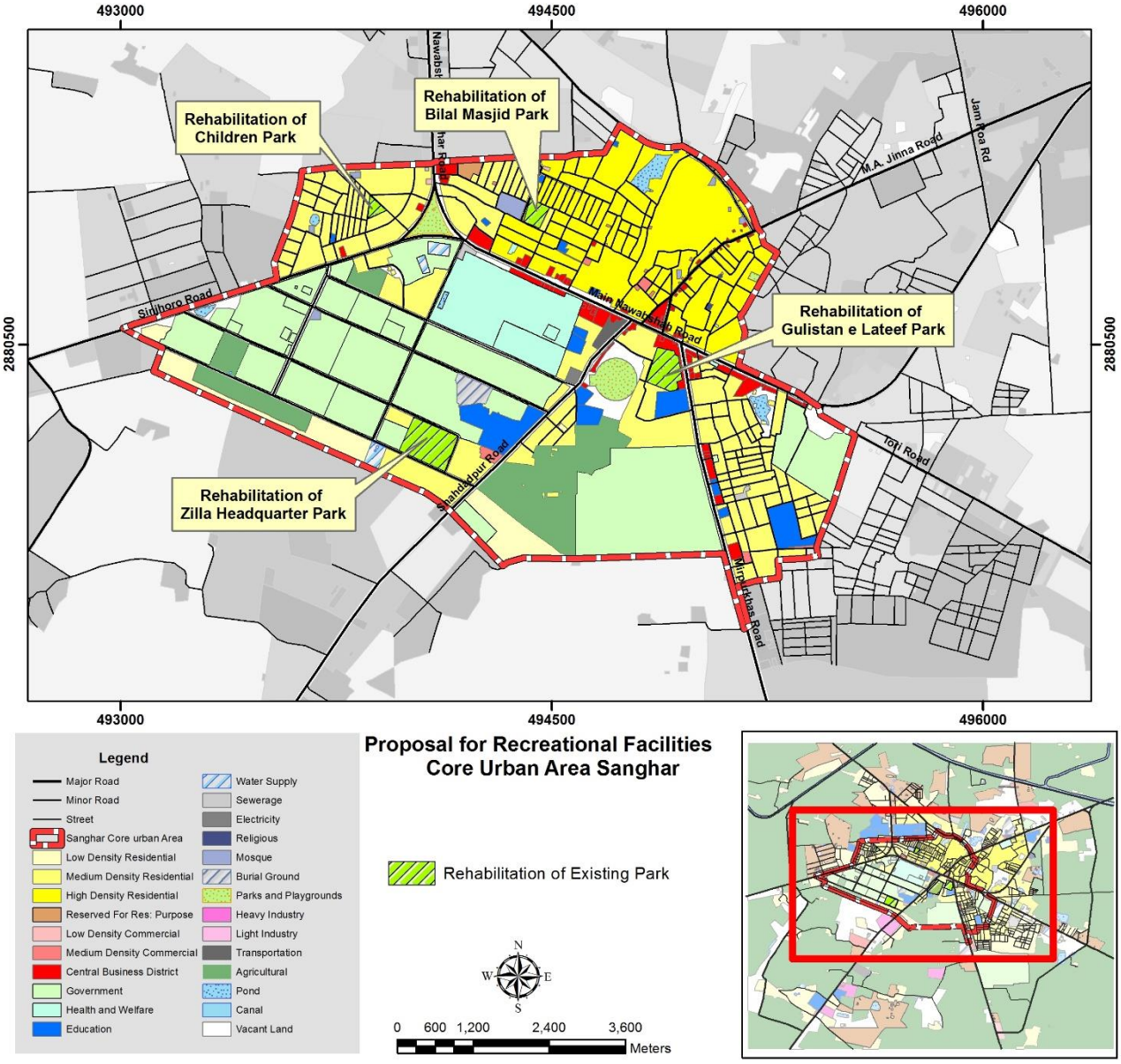


Figure 6-6: Rehabilitation of Recreational Facilities of core urban area

7. ECONOMIC DEVELOPMENT PLAN

Economy of an area or town plays an important role for its sustainability and further growth. Sanghar is fertile District having its economy based mostly on Agriculture, Oil & Gas Industries, Sugarcane, Wheat and vegetable. It has Sugar Mill, Chemical Factory, Oil & Gas Companies, Cotton Factory's, Ice Factory's, Floor Mills, Handy Craft, Business & shop keeping etc. 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 and industrial engine which serves all over Sindh by using market of Hyderabad, Nawabshah and Mirpurkhas, the regional Hubs.

i. Policy Guidelines for Overall Economic Development Plan

- Creating a better quality of life for the citizens of the district by encouraging private sector to invest in the district.
- Increase farmer's income.
- 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 Plan

- Modernize and revitalize the service sector.
- Implement proactive governance centered on accelerated and balanced economic growth.
- Develop Human resources through capacity building for employment opportunities.
- Reinforce the local governance institutions.
- Modernize local / district / divisional administration.
- Decentralization of governance authorities.
- Involve community participation.
- Exploring and implementing PPP (Public Private Partnership) in all sectors.

7.1 Agriculture

7.1.1 Existing Situation

Sanghar contributes significantly in the agriculture sector of Sindh because its climate is suitable for production of various crops, including Kharif crops of cotton, rice, jowar and sugarcane and the Rabi crops of wheat, gram and oil seeds. In addition to these, fruit orchards are abundant in this district.[26]
Taluka Shahdadpur and Tando Adam are famous for the production of a variety of fruits including banana, mango and dates. The fish of Jumrao canal is also another source of livelihood for the people of Sanghar district.
On the western side of the district, that constitutes half of the total district area, there is a well-established canal system emanating from Sukkur Barrage. Two major canals i.e., Rohri and Jumrao irrigate this area. Taluka Sanghar, Jam Nawaz Ali, Sinjhoro and some parts of Khipro are irrigated from Jumrao canal, whereas, Rohri canal irrigates the talukas of Shahdadpur and Tando Adam. On the eastern side of the district, the area is desert like and as such is barren and has no canal irrigation.

The list irrigation sources/ canals running through the district are given under as:

- Nara Canal System
- Jamrao Canal
- Mitharo Canal
- Khipro Canal
- Rohri Canal

Agriculture, in Sanghar, mainly depends upon canal irrigation. However, other modes of land irrigation like river water and tube wells are also used. Irrigation is done mostly through canals and tube wells. Out of the 355 rural Dehs, 354 have canal irrigation and 144 have tube wells as well.
The total geographical area of district Sanghar is 1,018,000 hectares out of this cultivated area is up to 404,000 hectare. Out of cultivable land dividing 2016-17, actually cultivated to 220,000 hectares leaving 184,000 hectares as fallow. Waste land available to 196,000 hectares, whereas, 409,000 hectares are not available for utilization.

Table 7-1: Comparison Land Utilization

Sr. No.	Type of Cultivated area	2013-14	2015-16	2016-17
		Geographical area	Geographical area	Geographical area
1	Cultivated area	409,000	404,000	404,000
2	Current Fallow	180,000	184,000	184,000
3	Net area sown	229,000	220,000	220,000
4	Cultivated Waste	196,000	196,000	196,000
5	Not available for cultivated	404,000	409,000	409,000
Source: Development Statistics of Sindh 2018				

[26] Report on Tranche Condition (2006), Taluka Administration, District Government Sanghar, Sindh Devolved Social Services Program (SDSSP), Government of Sindh,(http://www.fdsindh.gov.pk/sdssp/DG%20-%20Sanghar%20-%20LSU%20Assessment%20Report.pdf) accessed on 15/05/2013

Based on the above projections made on the assumption that the crops production will be increased by utilizing "Cultivable waste" land and the yield per hectares will also improve with availability of 196,000 hectares "Cultivable waste" land.

The details of crop production during 2016-17 show that Wheat, Sugar and cotton major crops. Position is presented in the table as under:

Table 7-2: Comparison of Land Utilization and Crops Production

Sr. No	Crops	Year 2013-14		Year 2014-15		Year 2015-16		Year 2016-17	
		Area Hectare	Production	Area	Production	Area	Production	Area	Production
1	Rice (M.T)	6,449	17,583	6,457	17,853	Banned	Banned	Banned	Banned
2	Wheat (M.T)	107,062	389,328	102,092	370,548	108,792	365,294	111,859	353,811
3	Sugarcane (Bales)	14,349	965,772	14,497	788,117	14,787	884,272	16,926	1,012,185
4	Cotton (Bales)	123,487	879,799	128,233	849,525	124,395	698,798	119,288	687,438
5	Rapeseed & Mustard (M.T)	8,441	8,510	8,537	8,607	8,611	8,682	8,175	8,242
Source: Development Statistics of Sindh 2018									

7.1.2 SWOT Analysis

Agriculture			
STRENGTH	**WEAKNESS**	**OPPORTUNITY**	**THREAT**
1. Agriculture based economy 2. Strong network of distribution of agro based products 3. The climate of Sanghar contributes significantly in agriculture sector of Sindh for production of various crops 4. In addition to these, fruit orchards are abundant in this district	1. Low demand of home grown food products 2. Less revenue generation by local government	1. Job opportunity for rural population 2. Healthy population 3. Outside investors show interest in agriculture sector	1. Shortage of educated and skilled professionals 2. Less efficient local markets 3. Shortage of agro based products 4. High land prices

7.1.3 Issues

- Non-supply / short supply of irrigated water which could be one of cause due to low economic conditions of people of Sanghar.
- High price of Inputs (Fertilizers Material, Pesticides and Quality seed)
- Lack of agriculture credit facilities.
- Lack of Agriculture research centers.
- Measure to reduce Water logging and salinity.
- 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

i. Long Term Plan

- Promotion of technical and home based industry.
- Cater to the Low demand of home grown food products by providing incentives.
- Enhancing crop productivity through adoption of new technologies
- Agricultural technology development, dissemination and adoption.
- Cross-cutting issues-policy formulation and review, agricultural statistics.

ii. Short Term Plan

- Modernize and revitalize agriculture.
- Improved food production to reduce hunger including emergencies and disasters that require agricultural support.
- Increase the supply and quality of agricultural crops
- Provision of warehouses for storage of agricultural products
- 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.

Proposed Agriculture Landuse for Sanghar Town

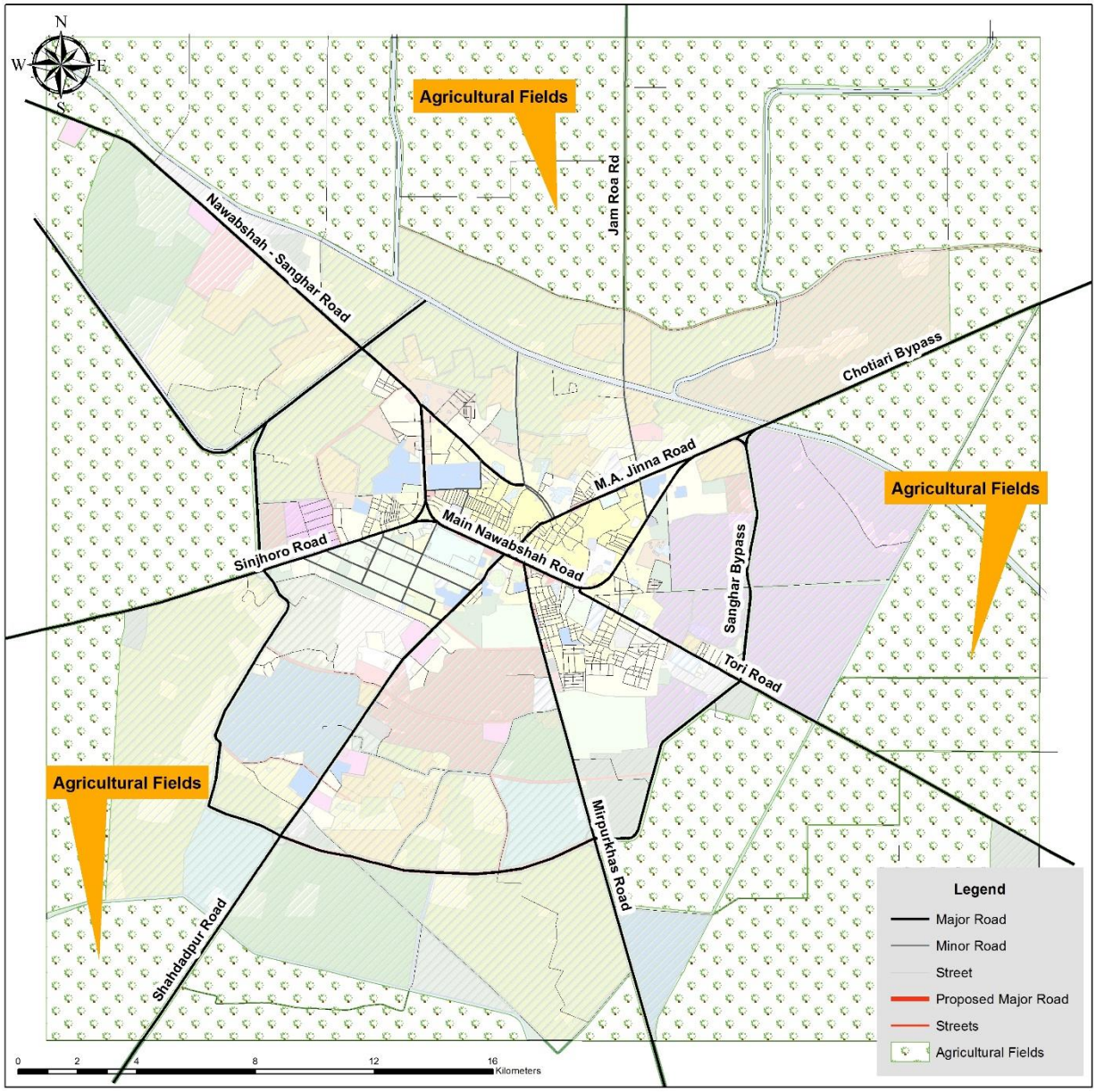


Figure 7-1: Proposed Agricultural Landuse For Sanghar Town

Projects listed in ADP (2018-2019) include:

i. Sindh Agricultural Growth Project (SAGP) World Bank Assisted
ii. Nutrition Sensitive Agriculture Project Phase-I.
iii. Construction of Office Building for On-Farm Water Management staff

7.1.5 Economic Development

Sanghar district is producing Cash Crops like Sugarcane, Wheat, Rice and Cotton. The analysis translates that about **47% and 41%** of arable land used for cultivation of cotton and wheat crop only, might be the reason that soil and climate of the region suits to Rice crop, therefore grower and government may focus to reclaim more waste land to convert the same into arable land and priority may be given to Rice and Wheat crops.

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
- Tube well installation facilities
- Decreasing water logging and salinity
- Construction of farm to market roads

7.2 Livestock

7.2.1 Existing Situation

District Sanghar is richly populated area having animal's population 3917128 of large and small animals. This district is well known with different type of breeds of cattle, Goats and sheep's. Animal population of district is highest number of Goats having 696584 hands followed by cattle 370235 heads and buffalos 323543.

Table 9-1 Number of Livestock

Sr. No.	Livestock by Category	District	Sanghar Taluka
1	Cattle	3,70,235	1,25,948
2	Buffalos	3,23,543	1,00,709
3	Sheeps	83574	24,307
4	Goats	6,96,584	1,63,534
5	Camels	6406	1311
6	Asses	45,818	10,118
7	Poultry	4,37,000	-------

Source: Departmental Data Collection, Livestock Department, Sanghar.

7.2.2 Issues:

- Landlessness and small holding prevents the farmer to raise livestock on commercial basis
- Mainly subsistence farming
- Limited knowledge and facilities due to lack of extension service
- Almost for every farmer, livestock farming is a secondary activity and treated as secondary source of income
- Reduced areas for natural grazing and feed production in the face of increasing urbanization and food security requirements
- Climate change and environment degradation

7.2.3 Need Assessment

The services for veterinary in district Sanghar are deficient District Sanghar is richly populated area having animal's population 3917128 of large and small animals. For this population of Animals, the services are not sufficient and not serving the all population of animals.

There are 09 veterinary dispensaries, 06 animal health extension centre and 55 veterinary Centre's, all are established in six Taluka's of district Sanghar to provide better service.[27].

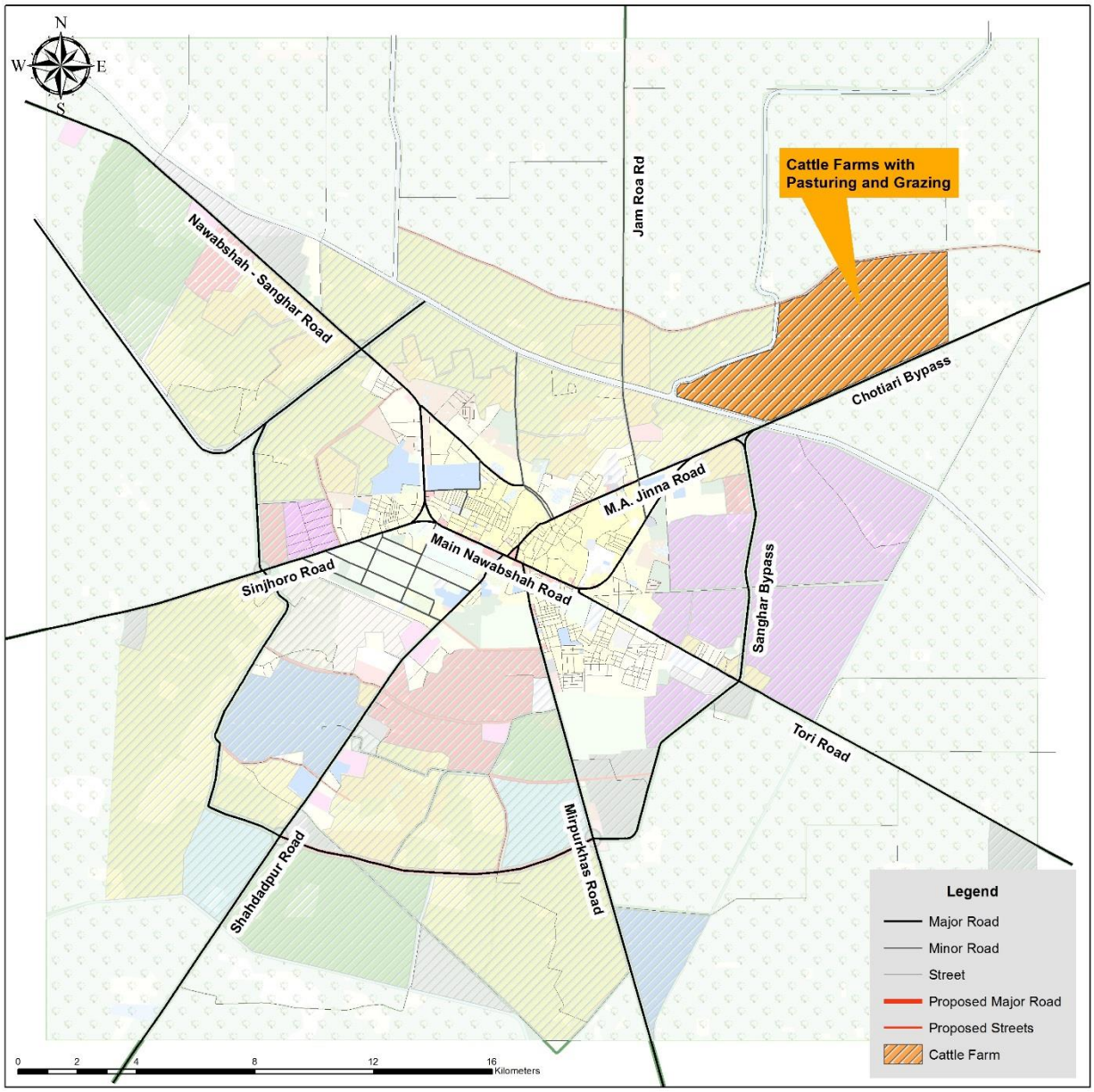
7.2.4 Strategic Development Plan

- Improving the production performance of livestock in District through manipulation of different minerals and feed supplements.
- Enhancement of Livestock Production and Productivity through strategic deworming and vaccination.
- Establishment of model livestock farms linked with improved supply chain and value addition.
- Establishing new cattle & dairy farms that lead to increase in number of cattle's and quantity of milk.
- Measures to increase Veterinary Services.
- Establishment of Cooperative dairy farming and in-land fisheries
- Large pasture land and labor force available for livestock growth
- Livestock based products can enhance economic activities if produced through appropriate industries.

[27] Livestock Department Sanghar

Lvestock Allocation for ADP 2017-2018				
Sector	**No. of Schemes**	**Status Approved/ unapproved**	**Allocation 2017-18 Rs. Million**	**Scheme Descriptions**
Livestock	01	Approved 01	9	• Establishing new cattle & dairy farms • Veterinary services.

Proposed Livestock Landuse for Sanghar Town



7.3 Fisheries

7.3.1 Existing Situation

There are 70 fish production farms and also 50 private sector units are working for fish farming in Sanghar District. 580 fishermen are experiencing their luck full time and 215 as part time. The number of registered boats in district Sanghar are 1200. The production of fish in 2014 in district Sanghar is approximately 3000 M.tons[28].

Table 10-1 Annual Fish Production

Fisheries-Water bodies, Fish farms & Production (M.Tons)		
1	Number of Fish Farms	120
2	Number of Boats	1,200
3	Number of Fishermen	795
4	Annual Fish Production	3,000

Source: Fisheries Department Sanghar

7.3.2 SWOT Analysis

Livestock & Fisheries			
STRENGTH	**WEAKNESS**	**OPPORTUNITY**	**THREAT**
1. District Sanghar is richly populated area having large and small animals 2. This district is well known with different type of breeds of cattle, goats and sheep. 3. Local skills and vet services available 4. Good breed of buffalos and cows are found in the district. 5. Mechanism for milk collection is available	1. Large scale breading has not developed 2. Lack of facilities to industrialize livestock based products. 3. Limited knowledge and facilities 4. Landlessness	1. Cooperative dairy farming and in-land fisheries has sufficient scope 2. Large pasture land and labour force available for livestock growth 3. Livestock based products can enhance economic activities if produced through appropriate industries.	1. Theft and security issues 2. Losses due to Disasters (floods and epidemics) 3. Reduced areas for natural grazing and feed production in the face of increasing urbanization and food security requirements

[28] Development Statistics of Sindh 2015

7.3.3 Need Assessment

There is need to develop and implement a broad-based fisheries policy which is required for accelerated development of the fisheries sector. Government of Sindh has to take measures to modernize the fisheries sector including establishment of farms on district level to promote fish farming.

7.3.4 Strategic Development Plan

- Need for extension services in private sector
- Lease of fishing rights, conservation, management and promotion of fisheries
- Training through open training schools
- Issuance of district angling licenses
- Local publicity and awareness
- Enforcement of fisheries enactment in their respective domain
- Fish seed stock replenishment in natural water bodies in their respective domain
- Aquaculture development activities through modern techniques
- Collection of statistical data of fish and fish resources in their respective domain

7.3.5 Economic Development

i. Establishment of new Cattle and Fish farms

It is expected that sustainable growth of livestock will be maintained as per objectives of Livestock & Fisheries Department with the participation of private sector. Hence there is possibility for increasing number of livestock and dairy farms to meet the requirement of meat and milk. Similarly new fish farms and poultry farms in the districts need to be established to generate production and income of the people engaged in this business. For this there is proposed the Cattle Farm along the Chotiari Road in the north of Sanghar Town, while Fish farms need to be identified by consernd authority to attract the private investment, where water is available.

There is need to develop and implement a broad-based fisheries policy which is required for accelerated development of the fisheries sector. Government of Sindh has to take measures to modernize the fisheries sector including establishment of farms on district level to promote fish farming.

7.4 Industries

7.4.1 Existing Situation

District Sanghar has agriculture related industries ranging from sugar mill, textile looms, to ginning factories. Sanghar Sugar Mill, textile looms in Tando Adam, cotton ginning factories in towns are the source of employments for residents of district Sanghar. In the census of manufacturing industries 2001, 39 industrial units have been reported as working in this district. These industries provide, on an average, daily employment to 3,628 people.

As per existing industrial estate of Sanghar,

INDUSTRIAL ESTATE SANGHAR		
S.No	**Item**	**Description**
1	Location	Sanjbore Road, Sanghar
2	Year of Establishment	1985-86
3	Total Area	45 acres
4	Total Number of Plots	98
5	Size of Plots	2-4 Kanals
6	Uptake/ No.s of Plots Allotted	52
7	Industrial Plots Availability	Available; Occupancy - 20%
8	Infrastructure	Roads, Water Supply, Sewerage, Telephone
9	Type of Industry	Approved for Food, Beverages, Handicrafts, Light engineering. No restriction except for manufacturing of defence parts and armaments and all kind of liquors and alcohols
10	Nearest City	Karachi

7.4.2 Types of Industries

Most of the industries in Sanghar are pertaining to the agriculture and oil field. Famous among these are the sugar, oil industries, Textile Looms, Cotton ginning factories and flour mills since wheat and sugarcane is cultivated on large scale in this district. There are 98 units proposed with 1,000 to 2,000 sq yds. Plot Size in Sanghar industrial Estate. “Various type of industries Approved in estate are; Food, Beverages, Handicrafts, Light Engineering”.

Sanghar is bestowed with natural resources like Oil and Gas. The natural products of the district are Oil, Gas and LPG. The following exploration and production companies are working in district Sanghar:

1. *Oil & Gas development Company Limited (OGDCL)*
2. *Pakistan Petroleum Limited (PPL)*
3. *United energy Pakistan Limited (UEPL)*
4. *Pakistan Exploration Limited (PEL)*

7.4.3 SWOT Analysis

ECONOMY			
Industrial			
Strength	**Weakness**	**Opportunity**	**Threats**
1. District Sanghar has agriculture related industries ranging from sugar mill, textile looms, to ginning factories 2. Sanghar is bestowed with natural resources like Oil and Gas.	1. Less job opportunities for other sectors 2. Limited industrial profile. 3. Sugar Industry crisis	1. More international trade 2. Job employment 3. Reliable environment is present for establishment of export industries.	1. Isolated economy 2. Uneducated social group 3. More emphasis of crop producers on sugar cane production 4. Air pollution 5. Water contamination to river Indus resources

- **Occupation**

  The main occupations of the people of District Sanghar 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.

7.4.4 Need Assessment

Vocational training to Women force should be encouraged for establishing cottage industry in the district.

7.4.5 Strategic Development Plan

i. Long Term

- 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
- Support industrial development.
- Modernize and revitalize the service sector.

ii. Short Term

- Sufficient market infrastructure to ensure optimal value addition
- Oil refineries should be accommodated in the district so as to improve the economy and reputation of the oil which is being supplied through the oil fields
- Development of Industrial Estates / Apparel Park / Special Economic Zone in District
- Provision of vocational training and employable skills to the unemployed youth of the district
- Revitalization of industrial estate

Proposed Economic Landuse for Sanghar Town

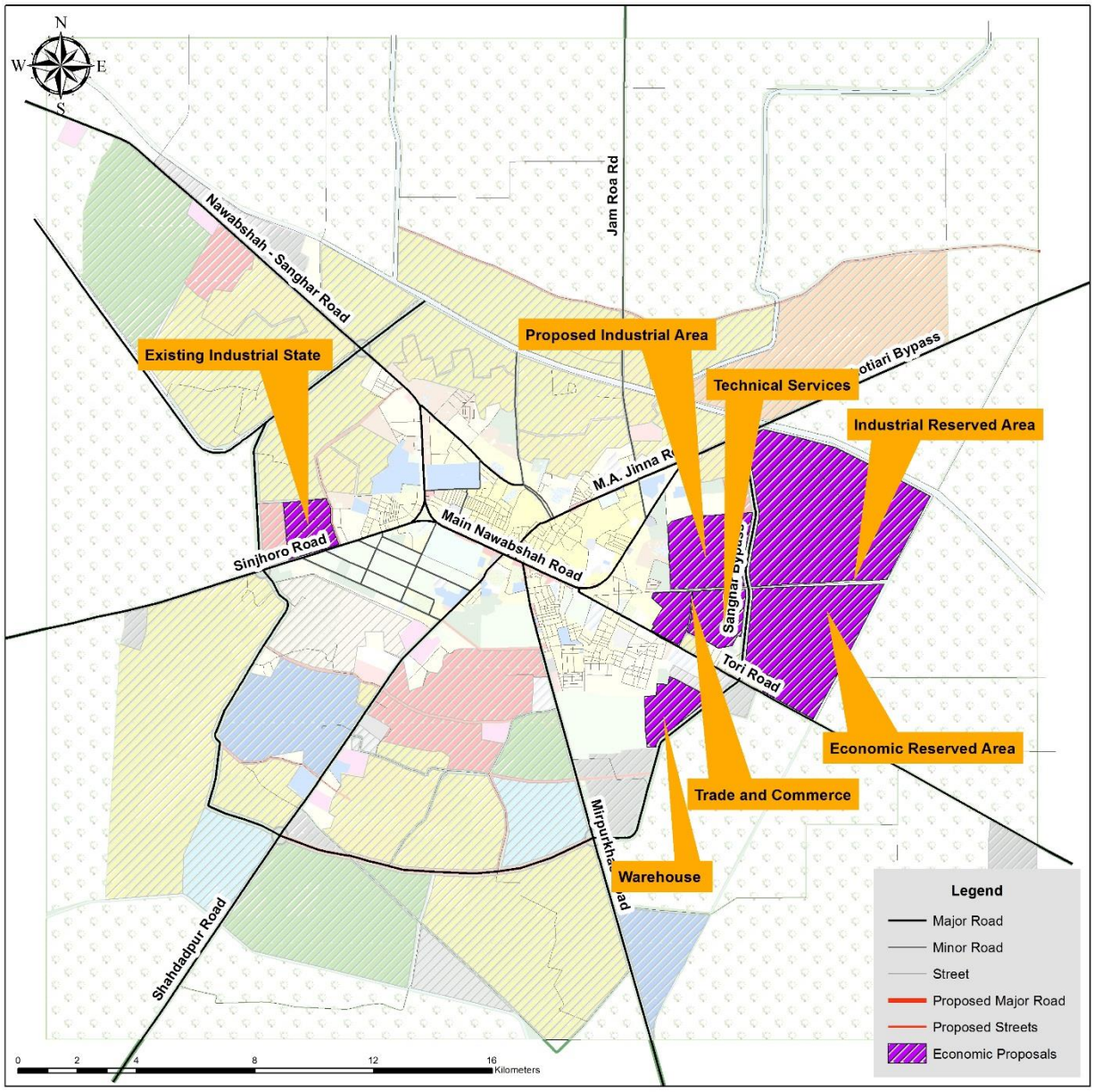


Figure 7-2 : Future Small Industral Zone Proposal Sanghar Town

7.4.6 Priority Projects

i. Revitalization of Industrial Estate of Sanghar (Sinjhoro –Sanghar Road)

- **Project Scope & Justification**

At the present, Sanghar is providing sufficient employment through its industrial estate. There are about 39 industrial units established in the district. District Sanghar has agriculture related industries ranging from sugar mill, textile looms, to ginning factories. Sanghar Sugar Mill, textile looms in Tando Adam, cotton ginning factories in towns are the source of employments for residents of district Sanghar. There will be a need to take actions with basic aim to retain the situation and attract the future investments.

There are 98 No.s of unit's proposed with 1,000 to 2,000 sq.yd plot in size in Sanghar industrial Estate. "Various types of industries are presently working for small or mid-level scale in Sanghar are;

- *Food*
- *Beverages*
- *Handicrafts*
- *Light Engineering*

While revitalizing the Industrial Estate of Sanghar, the industrial zone must be bifurcated through green belts as buffer zone to limit the adverse impacts of industrial pollution on adjoining residential areas and need to develop bases are being adhere here at regional industrial need with respect to the provision of all scale services serving the Sanghar and connecting region for industrial development. 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.

- **Estimated Cost**: **250 Million Approx.**

PRIORITY PROJECT - SANGHAR - 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	Sanghar Industrial Estate	**50**	45.00	145.00	25.00	35.00
Total PKR Rs. Million			**250.00**			

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.

- **Project Benefits:**
  Increase industrial activity with significant employment generation and overall assistances to the city's economy.

  While revitalizing the Industrial Estate of Sanghar, 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.

7.4.7 Economic Development

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

ii. Addition in industrial units suggested may vary as it is dependent upon the production capacity of each unit. As noted earlier, establishment of a Small Industrial Estate is already in process However incentives to private investors will be the key element for which Sindh Investment Board and Sindh Small Industries Corporation have vital role to play.

iii. Considering future growth in industries, particularly Flour Mills, Rice husking Units, Ice/Cold Storage and Cottage industry, the area for Small Industrial Estate may need extension or another Industrial estate would be required.

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

7.5 Trade and Commerce

7.5.1 Existing Situation

- Availability of financial institutes and Chamber of Commerce in the Town
- The district as a whole is well-known due to its characteristic of agriculture engine which serves all over Sindh by using market of Shaheed Banazirabad, the regional trading Hub.
- Large number of local skilled artisans available.
- Strong local retail.

7.5.2 Issues

- The failure of PPP trouble for locals and government.
- Demise of local agriculture market.
- Un-planned local business activities.

7.5.3 SWOT Analysis

Trade & Commerce			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Availability of financial institutes 2. Large number of local skilled artisans available 3. Strong local retail	1. Demise of local agriculture market 2. Un-planned local business activities	1. More opportunities for public private partnership 2. Support to local economy 3. Home grown handicrafts can be promoted through proper exposure to export market 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

7.5.4 Stragic 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

7.5.5 Priority Projects

- **Project Scope & Justification**

  At present there is no site designated for fruit & vegetable market. 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.

  As towns expand, the relocation of wholesale markets to the fringes becomes imperative. In order for this major operation to be successful, it is necessary to provide good level of access and infrastructure in the project area. Close linkages with bus and truck stands must be ensured.
  Approximately 10 acres out of total land is reserved for fruit & vegetable market within Trade and Commerce zone. Total 10 acres area is reserved for fruit market, in first phase land acquisition for 5 acre is proposed on priority basis. Whereas remaining land will be reserved for future expansion.

  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**

  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 Sanghar DHQ town with respect to its use in future and giving ease to the present user of existing market. It will help to increase in earnings of local population, reduce congestion and also help to increase revenues & employment.

- **Implementing Authority –** BoR, Sindh Small Industrial Development Board. Sanghar Chamber of Commerce and Industries.

Estimated Cost: **250** Million Approx.

Project Name	Sector	Short Term	Area in Acres	Preliminary Cost in million	Justification
Land Acquisition for Establishment of Fruit And Vegetable Market At Sanghar	Economic Development (Trade & Commerce)	Short Term	5 acre	250.00	Per acre cost @ 5,000,000 (5 Million) per Acre

7.5.6 Immediate Action Plan for Core Urban Area

The core town area is the oldest and the most congested part of the Sanghar town. And facing lot of problems i.e. unavailability of footpaths, outdated sewerage system, encroachments, illegal rikshaw 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 Sanghar 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 area; Rehabilitation of bazaars located along main M.A Jinnah Road, chotiari road, shahdadpur road & Nawabshah road; Provision of pedestrian facility in Bazar area; Up gradation & Rehabilitation of internal Bazaar roads.

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

Sanghar has major commercial hub like; Shahi Bazar and commercial activities along M.A Jinnah Road, chotiari road, shahdadpur road & Nawabshah road. Main CBD includes traders, wholesale markets, and traditional embroidery shops, Auto Shops, restaurants, schools, clinics and general stores etc.

Municipality old markets are present in old commercial area of Sanghar. Land encroachers grabbed few municipality properties and not paying any fares.

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

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

Rehabilitation of 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**
	Rehabilitation of Main Commercial (CBD) Area • Rehabilitation & Beautification of main areas; - Shahi Bazar - M.A Jinnah Road - Chotiari Road - Shahdadpur Road - Nawabshah Road	**68**	17.00	2.04	25.50	17.00
	Total PKR Rs. Million		**61.54**			

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

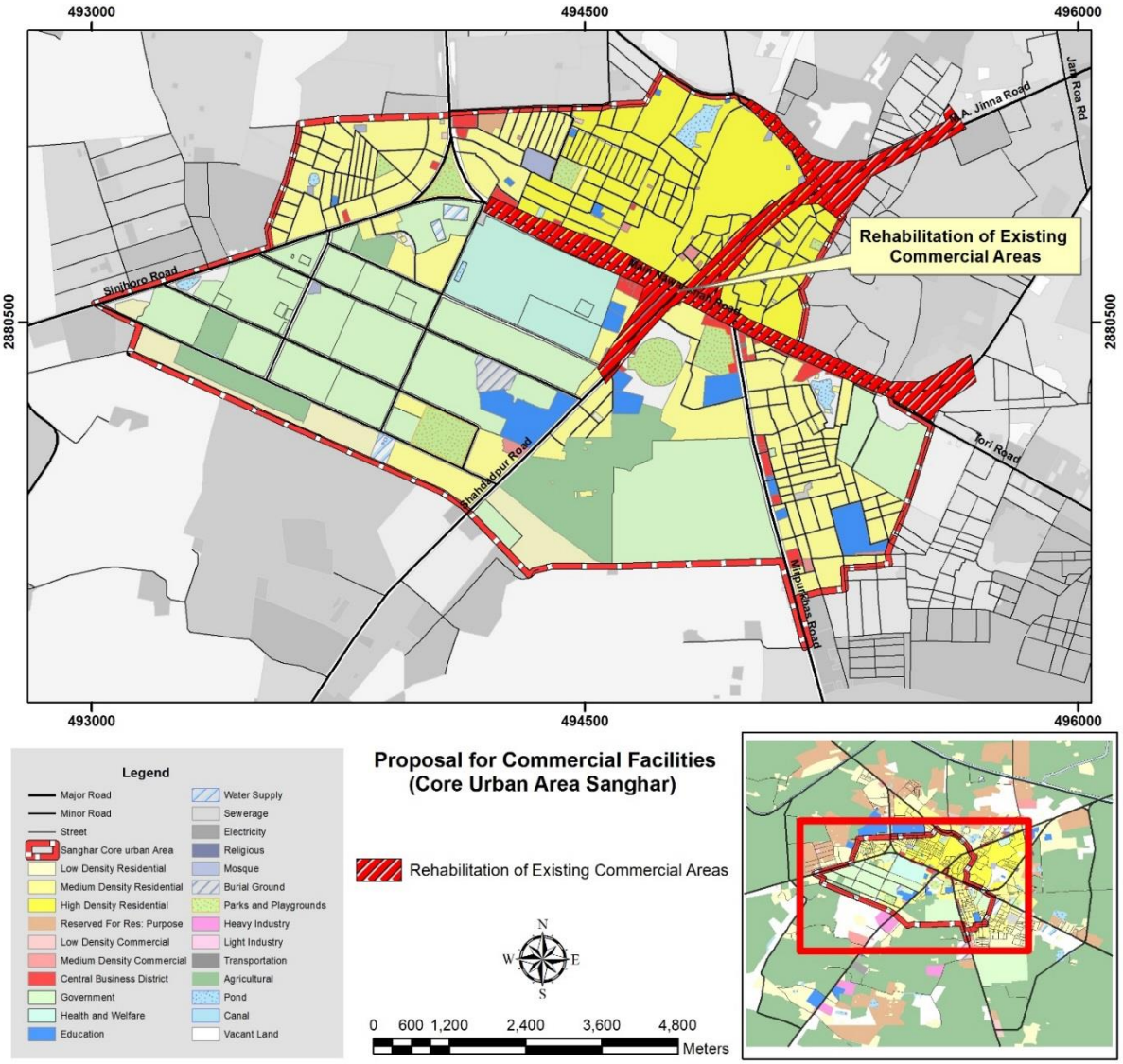


Figure 7-3: Proposal for Rehabilitation of Commercial Facilities

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

Poverty Reduction Strategy (PRS)

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

In Annual Development Programmme 2020-21, under social protection and poverty reduction sector, Establishment of Rural Growth Centers under Poverty Reduction Strategy (ADP No.1813) is approved for Badin, Thatta, Tharparkar and Sujawal with target June 2023 and estimated cost of 4.0 billion.

i. A Vision for Poverty Reduction in Sindh

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

ii. Poverty Reduction Strategy (PRS) Approaches

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

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

iii. Poverty Reduction Strategies

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

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

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

- Building on and expanding the UCBPRP programme

- Mainstreaming a CDLD approach, and integration of this approach with line department activities.

STRATEGY II Addressing Urban Poverty

- The direction of the strategy to address urban poverty is on emphasizing ' urban within rural' – focusing on the small towns within rural areas of Sindh
- The strategy focuses on targeting employment opportunities and enterprise development
- A key approach within this is utilizing 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 Centers, 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 center 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

It include the following components but not limited to

- Housing and village up-gradation (internal roads, drains, parks, Masjid)
- Commercial facilities to support local agro-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 center and other community facilities, such as RSP center
- Drinking water plants.

iv. Mainstreaming the Poverty & Policy & Program

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

- Industries & Commerce Department
- Local Government Department
- Works & Services Department
- Transport Department
- Planning & Development Department

v. Access to Micro-Finance

Access to demand-driven microfinance provided by sustainable microfinance institutions (MFIs) has proven to be a powerful tool for poverty reduction by improving the ability of poor people to increase 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 water resources of the Sanghar town comprise of both the surface source as well as the ground water source. The bulk of municipal water supplied to the Sanghar Town is drawn from the irrigation canals, passing close to the town, and comparatively much smaller part of the supplies is dependent upon groundwater extraction through tubewells.

Additionally, the population draws water from hand-pumps which take water from thin layer of fresh groundwater overlying the main saline layer.

Figure 8-1: Water Intake Directly from Toori Minor (Distributary of Mitrao Canal)

As per consultant's socio economic survey, Source of water Piped supply water is the most popular source of water, accounting for 77% in Town. Hand pump comes second, being used by 10% of households in Sanghar MC.

The water supply scheme for the town is based on surface supply from **Toori Minor off taking from Nara canal. The present supply is 2.25 MGD.** The groundwater layer underlying the town of Sanghar is only 37 meters (122 feet) thick. Skimming of fresh water through tube wells is not technically feasible for a water supply scheme. Nevertheless, it can be utilized through hand-pumps during canal closure period when the surface supply is shut off once in a year.

Additionally, the population draws water from hand-pumps which take water from thin layer of fresh groundwater overlying the main saline layer.

Treatment:

There are slow sand filters, which have not been working for some time due to lack of maintenance and skilled staff, so water is supplied to the town directly after sedimentation only. However, the filter plant could be made operational after rehabilitation and major overhauling. There are two high service reservoirs (HSR): (i) 455m^3 (100,000 gallons operational), and (ii) 230 m^3 (50,000 gallons, not operational due to structural damage).

8.1.2 Issues

The following are issues of water supply in Sanghar Town:

- The old systems have collapsed due to lack of maintenance and poor design in the town.
- The water is supplied intermittently. As the water lines are laid adjacent to the sewers/ drains the wastewater is sucked into the water lines. Often water lines have been tapped informally using poor joints and connections, again leading to contamination by sewage.
- High proportion of non-revenue water
- Dysfunctional water supply and sanitation schemes
- Ageing infrastructure (water pipes on road level)
- Poor water quality from polluted and contaminated sources
- There is also inadequate technical capacity and capability in government agencies to plan and implement and an absence of management information systems

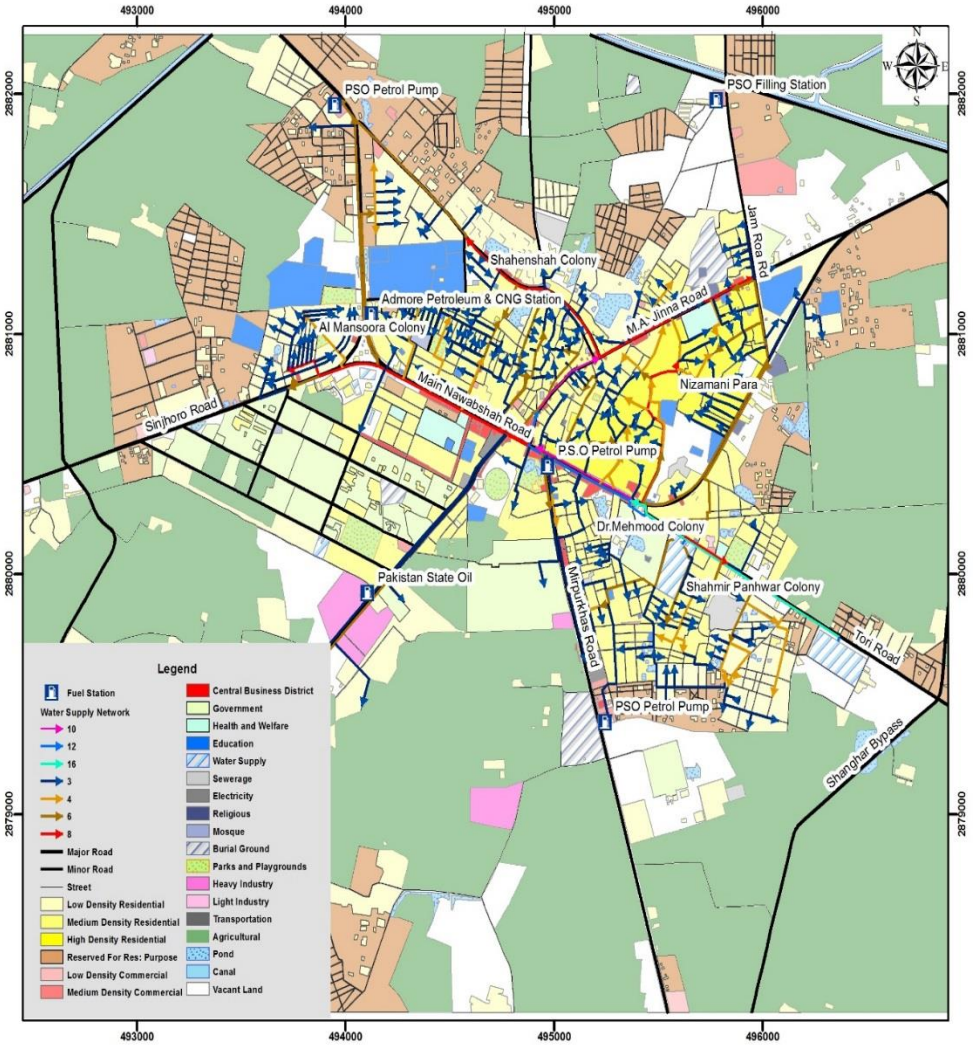


Figure 8-2: Water Supply Network Map of Sanghar

8.1.3 SWOT Analysis

STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
Water Supply & Distribution			
1. Intake sources available 2. The water supply scheme for the town is based on surface supply from Toori Minor off taking from Nara canal Piped supply water is the most popular source of water.	1. Weak institutional arrangements with overlapping of roles and responsibilities 2. Weak coordination mechanisms 3. Dysfunctional water supply and sanitation schemes 4. Poor water quality from polluted and contaminated sources 5. Absence of systematic water supply system and treatment plant	1. Adequate water resources available for water supply system development 2. PPP in service delivery	1. Negative externalities on human and plant health 2. Depletion of water quality due to " "draw down" 3. Ageing infrastructure (water pipes on road level)

8.1.4 Need Assessment

The present supply as reported is 2.25 mgd. Estimated water demand for the period to 2037 is shown below:

Town		2017	2037
Sanghar	**Population**	75,410	114,541
	Per Capita daily demand @30 gped)	2.3 mgd	3.4 mgd

Source: Consultant Estimation

8.1.5 Sindh Drinking Water Policy 2017[29]

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.

[29] Sindh Water and Sanitation Policy 2017

- 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.

8.1.6 Strategic Development Plan

A variety of policy instruments and strategies will be used to achieve the objectives of the Strategic Development plan,

i. Long Term Plan

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

ii. Short Term Plan

- Priority for water supply and sanitation will be accorded to un-served, under-served areas, and disadvantaged areas.
- The design and layout of water supply pipes, storage tanks etc. should ensure that there is no contamination by overflowing sewerage systems, for example by maintaining a minimum distance between the two systems.
- Wherever possible, preference should be given to rehabilitate existing schemes (functioning or not) over the construction of new schemes, unless there are special reasons to justify otherwise.
- 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.

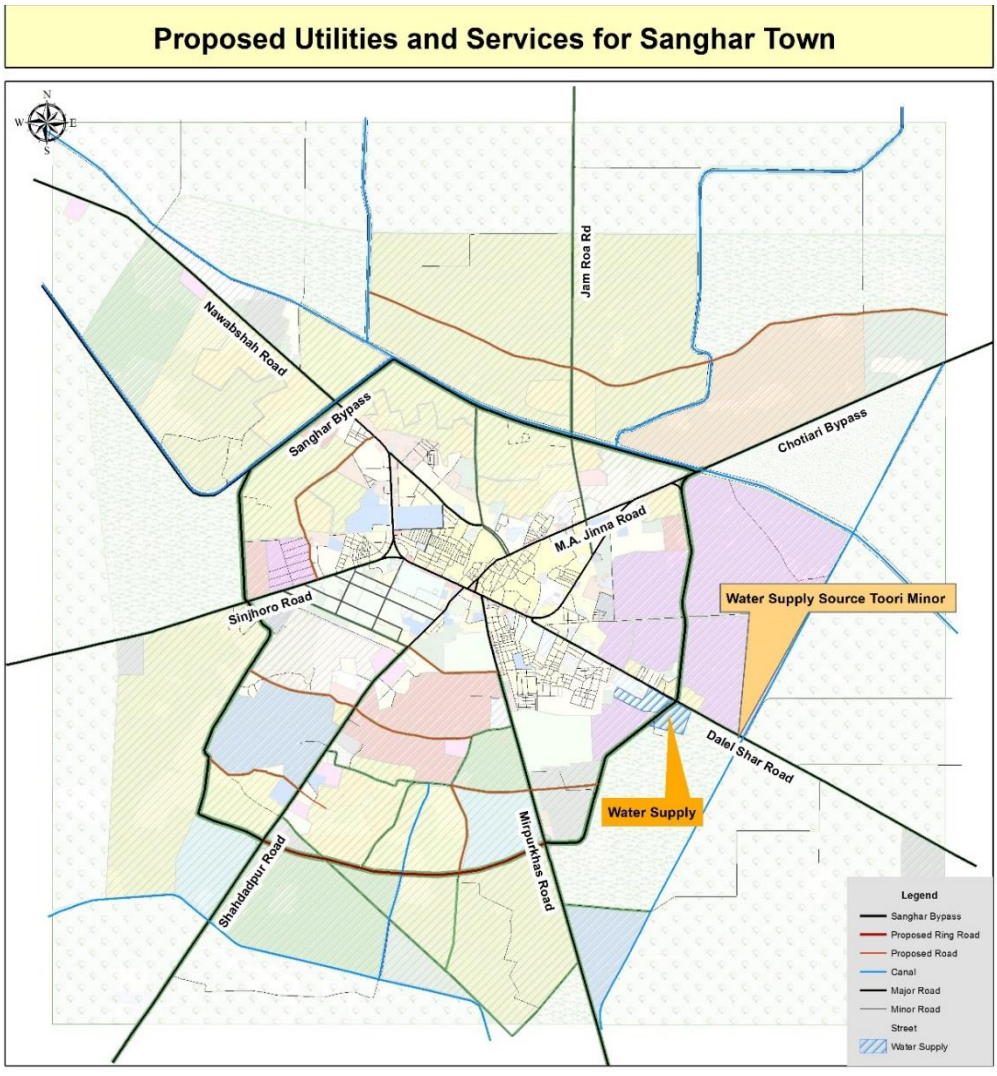


Figure 8-3 : Future Water Storage Proposal Sangar Town

8.1.7 Priority projects

i. Improvement of Water Intake Works

- **Project Justification**

The objective of the project is to get uninterrupted water supply supply potable water to the inhabitants of Sanghar town. The project is to improve the collection of raw water and rehabilitate the infrastructure. This project includes to increase the number of pumping stations and up gradation the sizes of pipe lines for equitable distribution of water.
Currently untreated water is supplied from Toori Minor, which need to be filtered and supplied as per demand. As Toori Minor is count as surface water, hence to improve its quality there is a need of instant water filtration plant /chlorination before supply. 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
- Laying of approx. 1.5 km pipeline from Intake structure to Reservoir including air, butterfly and washout valves

- **Project Benefits**

People of Sanghar are facing shortage of water supply which will be regulated. After implementation of this project the shortage areas will be improved and supply can be distributed on regular basis by arranging supply timings on daily basis.

- **Implementing Authority -** Sanghar MC, Government of Sindh and PHE Department.

Estimated Cost: 50 Million PKR Approx.

ii. Repair & Rehabilitation of Existing Water Supply Network (Excluding Core Town Area 594.5 Acres).

Population	**75,410**
Total Urban Area (excluding Core Town Area 594.5 Acres)	1,374
85% of Total Urban Area	1,167.9
Proposal for Repair & Rehabilitation of Existing Water supply scheme shall help to supply safe potable water to 85% population of Sanghar town. One Million per Acre = 1167.9	1,167.9

- **Project Justification**

Almost All the network of Water Supply in Sanghar is in poor condition and most of it require repair & rehabilitation. According to socio economic survey results approx. according to socio economic survey results about 85% of population of Sanghar has Water Supply Network. This project will help to enhance capacity of existing water supply network via repair & rehabilitation of damaged water supply line of

Sanghar DHQ Town. House to house water network will be expanded for controlled water supply to each zone.

- **Project Benefits**

Sanghar MC have no proper Water Supply network in most of the areas. So after implementing of this project, the Potable water will easily supply by piped water and connection facility will be made available to every household.

iii. Provision of New water supply network for remaining 15% of DHQ Town Sanghar (Approx. 615 Acres)

- **Project Identification & Justification**

Almost All the network of Water Supply in Sanghar is in poor condition and most of it require repair & rehabilitation. According to socio economic survey results approx. 15% of population of Sanghar has no Water Supply Network & dependent on hand pump & community wells. People purchase their potable water through tankers due to unavailability of water supply network. This project will help to supply of water in those areas where the network is not available.

Sanghar MC Population	75,410
Total Urban Area in Acres	1,374
15% of Total Urban Area in Acres	206.1
Installation of New water supply scheme is proposed to cater rest 15% population / Area of Sanghar town @ Rate of 3.0 Million Per Acre	618.3

- **Project Benefits**

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

iv. Up-gradation of Slow sand Filter Plant to Water Ultra Filtration Plant (UF) and Rehablitation of Exsiting HSRs

- **Project Identification & Justification**

At the present, the water being supplied to Sanghar is without any treatment and filtration. This project will help to provide filtered water to inhabitants of Sanghar by upgrading the **Slow sand Filter Plant to Water Ultra Filtration Plant (UF) and Rehablitation of Exsiting HSRs** (i) 455m^3 (100,000 gallons and (ii) 230 m^3 (50,000 gallons,).

- **Project Benefits**

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

Projects Name	Short Term	Area / Lengths	Preliminary Cost in million	Justification
Priority Projects for Water Supply				
Improvement of Water Intake Works	Short Term	-	50.00 Million	Installation of solarized Heavy Duty Motors, installation of additional supply line for improvement in water intake work.
Repair & Rehabilitation of Existing Water Supply Network	Long Term	-	1,167.9 Million	Sanghar MC Population = 75,410 Total Urban Area excluding core town area in Acres = 1,374 85% of Total Urban Area in Acres = 1,167.9 Acres Proposal for Repair & Rehabilitation of Existing Water supply scheme shall help to supply safe potable water to 85% population of Sanghar town. One Million per Acre = 1,167.9
Provision of New water supply network for remaining 15% (206.1 Acres) of DHQ Town	Short Term		618.3 Million	Sanghar MC Population = 75,410 Total Urban Area excluding core town area in Acres = 1,374 15% of Total Urban Area in Acres = 206.1 Acres. "Proposal for Installation of New water supply scheme for rest of town @ Rate of 3.0 Million Per Acre = 618.3 Million"
Up-gradation of Slow sand Filter Plant to Water Ultra Filtration Plant (UF) and Rehablitation of Exsiting HSR	Short Term	-	150.00 Million	Up-Gradation of Existing Water Filtration Plant will Enhance Capacity of Water Purification effectively.

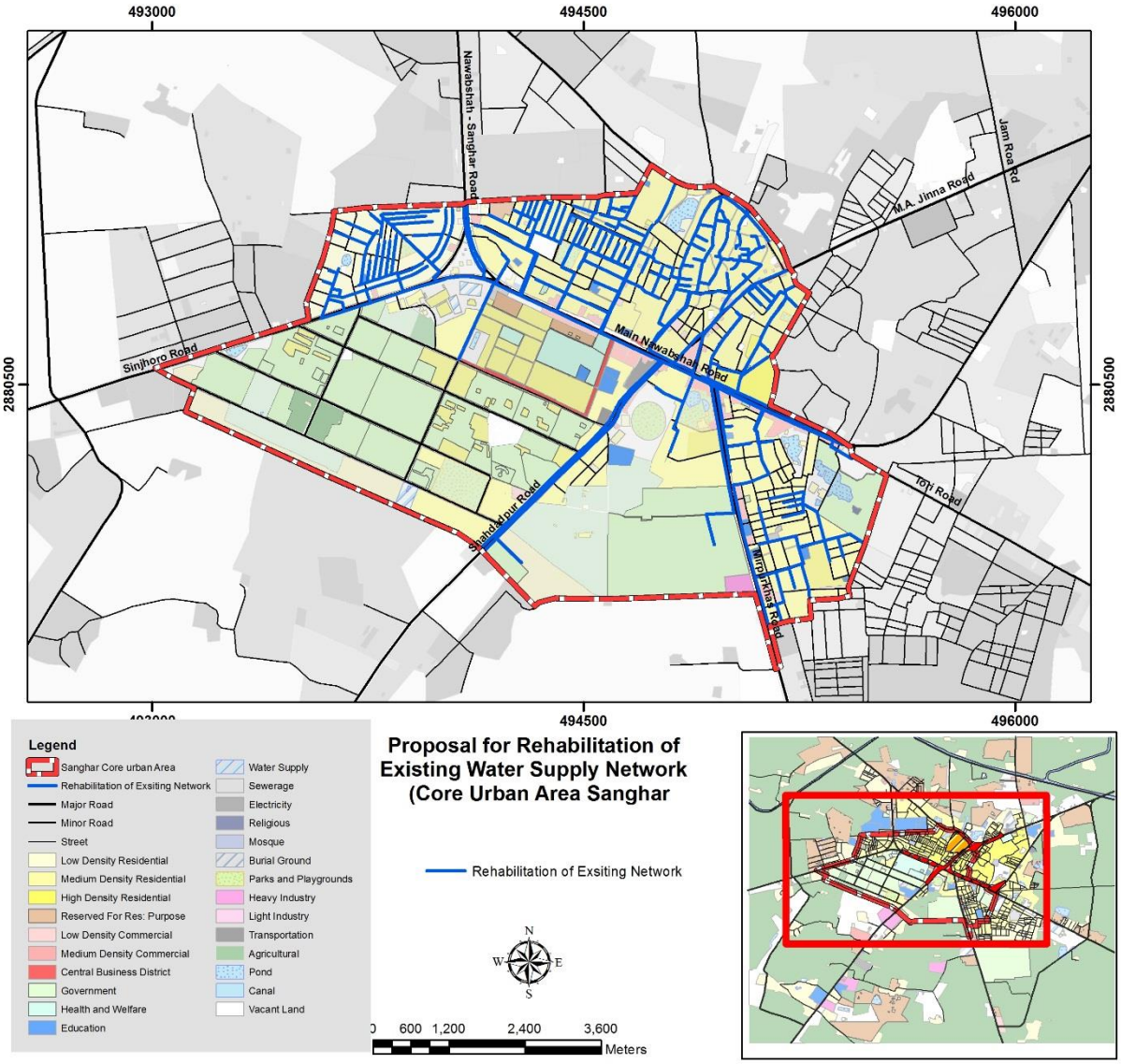
8.1.8 Immediate Action Plan for Core Urban Area

Water supply should be done for the entire town including core urban area. But on immediate basis Keeping in view the requirement of clean drinking water of the community of Sanghar, there is need to rehabilitate the water supply network of Core urban area.

Rehabilitation of Existing Water Supply Network of Core Urban Area Sanghar				
S.No	**Name**	**Area (acre)**	**Per acre cost (PKR) million**	**Cost (PKR)**
Total Core Urban Area : 594.5 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).*	**594.5**	**1.0 million Per acre**	**594.5**
			Total Cost (PKR). Million	**594.5**

Note:

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


493000
494500
496000
2880500
Nawabshah - Sanghar Road
Jam Road Rd
M.A. Jinna Road
Sinjhoro Road
Main Nawabshah Road
Shahdadpur Road
Toll Road
Mirpurkhas Road
Legend
Sanghar Core urban Area
Rehabilitation of Exsiting Network
Major Road
Minor Road
Street
Low Density Residential
Medium Density Residential
High Density Residential
Reserved For Res: Purpose
Low Density Commercial
Medium Density Commercial
Central Business District
Government
Health and Welfare
Education
Water Supply
Sewerage
Electricity
Religious
Mosque
Burial Ground
Parks and Playgrounds
Heavy Industry
Light Industry
Transportation
Agricultural
Pond
Canal
Vacant Land
Proposal for Rehabilitation of Existing Water Supply Network (Core Urban Area Sanghar
Rehabilitation of Exsiting Network
N
W
E
S
0 600 1,200 2,400 3,600
Meters

8.2 Sewerage and Drainage

8.2.1 Existing Situation

The drainage scheme in Sanghar was installed in three phases during 1979 to 1990, and consists of a combination of pipe sewers and open drains flowing to five disposal works. The wastewater is utilized for agriculture purposes in dry seasons.

Figure 8-4: Non Functional Drain

Figure 8-5: Non-functional Drain

Sewerage is pumped to the Left Bank Outfall Drain (LBOD) during normal days. No sewerage treatment plant is available. Details of the existing infrastructure are summarized as under:

Table 8-2: Existing Infrastructure

No.	Item	Qty	Location	Details
1	**Surface drains**			**Type A – 14,661 m (48,100 rft)** **Type B – 10,463 m (34,327 rft)** **Type C – 732 m (2,400 rft)**
2	**RCC sewer pipes**			**9" dia. – 2,164 m (7,100 rft)** **12" dia. – 5,536 m (18,163 rft)** **15" dia. – 2,816 m (9,240 rft)** **18" dia. – 480 m (1,576 rft)** **Total: 10,997 m (36,079 rft)**
Manholes				
3	Collection pumping stations	5 no.	1. Dakh Para, northern edge of town	**Area: 3.2 ha (8 acres)** **1 no. screening chamber** **2 no. collecting tanks, interconnected** **2 no. pump sets 20 HP** **2 no. standby pump sets** **1 no. diesel engine** **Rising main – 8" dia.** **Disposal: agricultural fields, with provision to be connected/directed to LBOD**

No.	Item	Qty	Location	Details
			2. Al Mansoora, north-western corner of town, by road to Nawabshah (Zone C)	**Area: 0.2 ha (0.5 acres)** **1 no. screening chamber** **1 no. collecting tank** **2 no. pump sets 15 HP** **Rising main – 6" dia.** **Disposal: agricultural fields and LBOD**
			3. Near district HQ and district hospital (Zone C)	**1 no. screening chamber** **1 no. collecting tank** **1 no. pump set 10 HP** **Rising main – 6" dia.** **Disposal: agricultural fields and LBOD**
			4. Bakhola Road, eastern edge of town (Zone B)	**No screening chamber** **1 no. collecting tank** **1 no. pump set 10 HP** **Rising main – 6" dia.** **Disposal: LBOD**
			5. Shahmir Panhwar Colony, near Old Waterworks in south-eastern corner of town (Zone A)	**1 no. screening chamber** **1 no. collecting tank** **1 no. pump set 20 HP (8-10 hours operation/day)** **Rising main – 6" dia.** **Disposal: LBOD**
4	**Effluent discharge**			**4,655 m^3/d (1.02 mgd) discharge inot sim Nala**
5	**Treatment plant**			**None** (Non-functional oxidation ponds exist)

The main nala and drainage system is always choked because of garbage, especially plastic bags; there are swamps, and open spaces are full of sewage. The drainage system is damaged, due to the lack of proper planning and maintenance. About 72% of respondents are dissatisfied with the current sewerage system.

8.2.2 Issues

- About 72% of population use roadside drains for the disposal of sewerage:
- Improper operation and maintenance of sewerage facilities.
- 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 and treatment facilities such as flow rates, operation hours, water qualities, facility failures and repairs and so forth.
- The many informal settlements are located in poorly drained low lying land can be subject to flooding, resulting in ponds of stagnant water in their midst and providing breading grounds for mosquitoes and water borne diseases. There is no standby pumping equipment at disposal stations.
- The drainage system and structures are in poor condition with open smelly drains and sewers.

- There is no sewage treatment and untreated sewage collects in ponds / swamps or directly discharge in to irrigation canal. The residents were dissatisfied with current sewerage system.
- No waste water treatment plant, thus raw sewage is being discharged into water bodies.
- Absence of comprehensive sewerage and drainage plans for cities and towns
- Limited O&M budget allocation for sewerage facilities

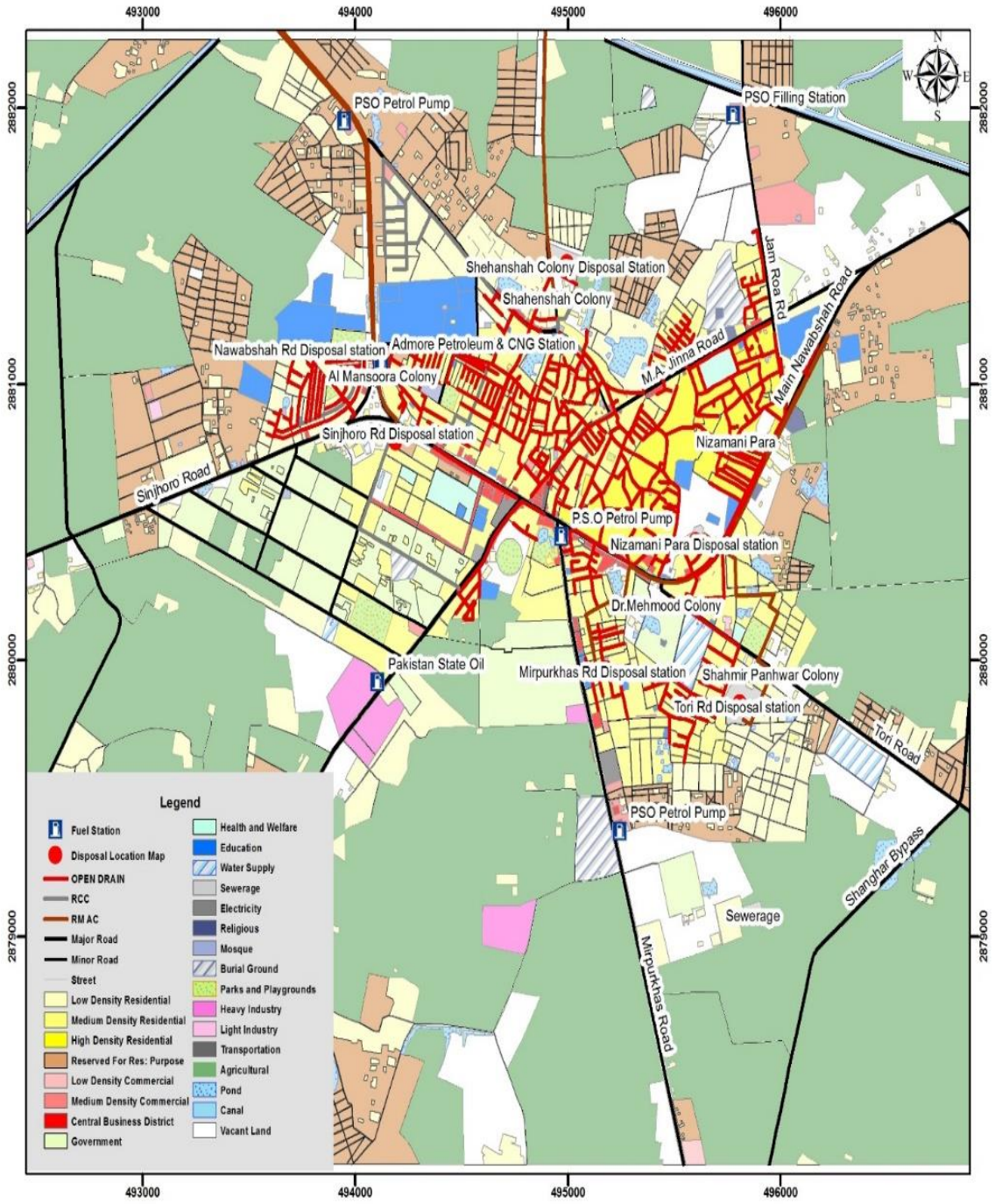


Figure 8-6: Drainage Map of Sanghar Town

8.2.3 SWOT Analysis

Strengths	Weakness	Opportunities	Strengths
Sewage Collection & Disposal			
1. The existing sewerage system facilitates the urban area of the city 2. Sufficient land for disposal sites is available	1. Combine system (open channel and sewer) serving most of the town area. 2. Poor maintenance condition; garbage enters into sewers, which requires desisting 3. Open sewers, outdated and disconnected network 4. No policy for re-cycling, and reduction in generation of sewerage 5. Unavailability of sewage treatment plant	1. An appropriate sewerage system plan should be implemented 2. Improvement of general hygiene/ public health by cleaning sewerage system 3. Canals should be saved from toxic disposals 4. Development of well-designed trunk sewerage network with less number of disposal station. 5. Job opportunities for skilled staff for proper maintenance 6. Revenue can be generated through charging services for cleaning 7. PPP in service delivery	1. Public health 2. Storm water flooding/ over flow of sewers 3. Environmental degradation 4. Funding & policies. 5. Removal of encroachment 6. Land grabbers
Drainage & Flood Control			
1. Most of the town is served by combined drain and sewer system	1. Drainage and sewerage system of the urban areas are not constructed properly and disaster risk reduction measures are not incorporated while such construction is carried out. Consequently even small amount of rain blocks the drains, which inundates the streets, houses and markets 2. Open drain on street 3. Improper channelization of drains 4. Over flow of storm water drains 5. Poor administrative control for operating existing drainage system of the town 6. Depression areas causing permanent ponding 7. Reliance on sewer for flood/storm water	1. The city's old drainage system needs revival through cleaning 2. Flood protection embankments should be enhanced up to greater extent to provide maximum protection to surrounding villages 3. Development of surface drainage network with easy disposal to river/canals 4. Completely removal or treatment of land where temporary ponds have been formed in main town area	1. Canal's water have been contaminated by open drains discharge 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

8.2.4 Need Assessment

Town		2017	2020	2025	2030	2035	2037
Sanghar	Water Demand	2.3 mgd	2.4 mgd	2.6 mgd	3.0 mgd	3.3 mgd	**3.4 mgd**
	Sewerage Flows @70 % Water supply	**1.61 mgd**	**1.68 mgd**	**1.82 mgd**	**2.1 mgd**	**2.31 mgd**	**2.31 mgd**

(Actual = 2.3 X 70 % = 1.61 mgd)

Sewerage is pumped to the Left Bank Outfall Drain (LBOD) during normal days. No sewage treatment plant is available.

8.2.5 Sindh Sanitation Policy 2017 [30]

Targets:

Its key targets are:

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

Principles:

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

[30] Sindh Water and Sanitation policy 2017

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
- Raw sewerage use for agriculture must be stopped.
- Land acquisition of at least 3 acres at this stage for stabilization pond replacing oxidation ditches and swamps.

8.2.6 Strategic Development Plan

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

i. Long Term Plan:

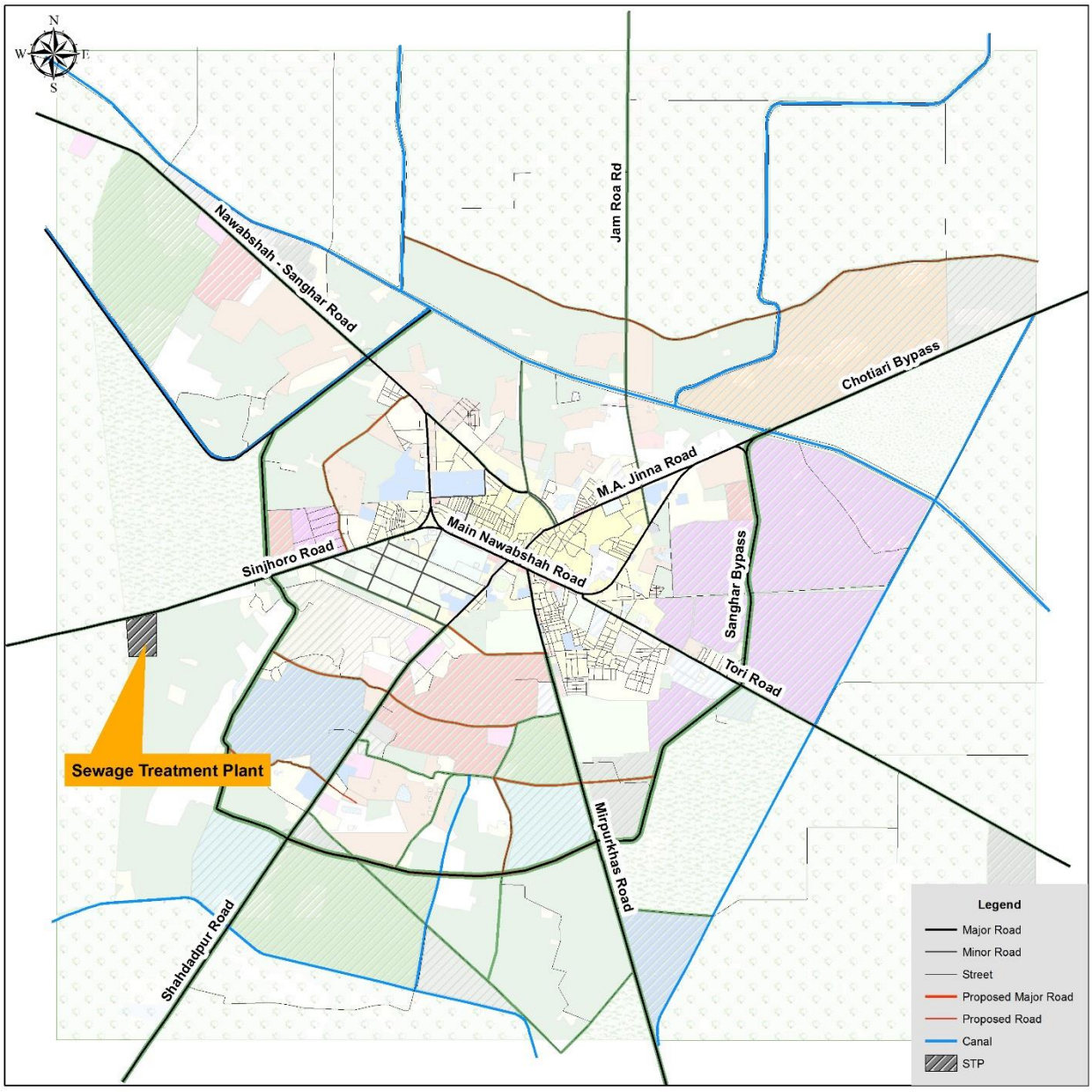
- Acquire Land & Provide Stabilization ponds for full treatment to produce acceptable quality of effluent for re use.
- An overall sanitation plan will be developed for all urban settlements by city District governments and the Town Committee in coordination with all other agencies involved in sanitation.
- The plan will focus mainly on the details of the trunk sewers, treatment and disposals and re-use options. All other sanitation related agencies (cantonments boards, railways, etc.) will develop their plans in accordance with the overall plan

ii. Short Term Plan:

- 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.
- Nonfunctional oxidation ponds to be converted to stabilization ponds
- Wherever existing sewerage systems discharge untreated sewage in storm water drains or irrigation canals it should be treated before discharging, and may be used for agricultural purposes or converted into lakes and ponds as part of recreational areas.
- Gravity flow systems will be used for sewerage schemes so as to avoid pumping and O&M costs.
- Removal of Existing Waste water collection pond from core urban area to secure health of the urban population of Sanghar from hazardous impacts of waste pond.

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

Proposed Utilities and Services for Sanghar Town



8.2.7 Priority Projects

i. Construction / Rehabilitation of Primary, Secondary & Tertiary Drains 1,374 Acres (Phase i – along Primary & Secondary Roads & Phase ii – along tertiary roads & streets)

The drainage scheme in Sanghar was installed in three phases during 1979 to 1990, and consists of a combination of pipe sewers and open drains flowing to five disposal works. The wastewater is utilized for agriculture purposes in dry seasons.

- **Project Scope & Justification**

  Almost All the drains in Sanghar are in poor condition as most of them are open drains. More than 70% of areas of Sanghar has no proper drainage system. Most of the houses has septic tanks in their houses for storage of sewage. This project will help to proper disposal of sewage water of Sanghar town. The drains are needed to rehabilitate and where the drains are not available they should be provided. Underground sewerage system is recommended for the whole area because present system has become obsolete.
  Repair and rehabilitation of sewerage and drainage network of town is a huge task, that's why it is proposed to execute above project in two Phases i.e. phase i and phase ii. Total tentative urban area of town is about 1,374 acres (excluding core urban and non-urban area). Tentatively Phase i and phase ii covers 40% and 60% of total area. Phase i covers 550 acres and phase ii covers 824 acres accordingly.

- **Project Benefits**

  As Sanghar has no proper sewerage and drainage system. After implementing this project, the sewage water of Sanghar town will be collected at treatment plant and the treated effluent will be re used by farmers or for greening the city.

- **Implementing Authority - Government of Sindh- PHE Department, Sanghar**

- **Estimated Cost: Approx. 1,374.00 Million (Phase i 550.00 Million and Phase ii 824.00 Million) (Short Term)**

ii. Rehabilitation of waste water disposal station

- **Project Scope & Justification**

  At the present, the waste water is disposed directly into the LBOD without any treatment. The pumps of disposal stations are not working on their full capacity due to which ponding have been created and causing environmental pollution. This project is to protect the health of the people using irrigation water and to safeguard agriculture land in the area. There is need to rehabilite of five disposal stations. Below mentioned components will be considered for rehabilitation and improvement works.

  - Rehabilitation of existing Septic Tanks and pumping machinery where required.
  - Construction of New septic tanks
  - Construction of Wet well and pump room
  - Installation of Pumps based on solar power
  - Laying of pumping main from new septic tanks to LBOD

- **Project Benefits**

  This project is expected to improve health conditions considerably. This project will have a positive impact over the whole population.

- **Implementing Authority - Government of Sindh - PHE Department and Sanghar MC**
- **Estimated Cost: 200 Million**

S. No.	Project Name	Estimated Cost In Millions	Non ADP	Short Term
Sewerage and Drainage				
1	Phase i- Repair & Rehabilitation of primary and secondary Level Drains (Along with Primary & Secondary Roads) Phase ii- Repair & Rehabilitation of tertiary drains level Drains (Along with Tertiary Level Street) ***"Estimated Cost: Approx. 1,374.00 Million (Phase i 550.00 Million and Phase ii 824.00 Million)"***	1,374	Non ADP	**Short Term / Long Term**
2	Rehabilitation of waste water disposal station	200.00	Non ADP	**Short Term**

8.2.8 Immediate Action Plan for Core Urban Area

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

Core urban area of Sanghar suffering due to unavailability of planned network of drainage schemes. Population of Core urban area is facing lot of problems due to stagnant sewerage water on Narrow Street. Below pictures shows the drainage issues of core urban area.

S.No	Name	Area (acre)	Per acre cost (PKR) million	Cost (PKR)
Total Core Urban Area : 594.5 acre				
1	Sewerage System	**594.5**	**1.0 million Per acre**	**594.5**
2	Storm Water Drain System			
			Total Cost (PKR). Million	**594.5**

Note:

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

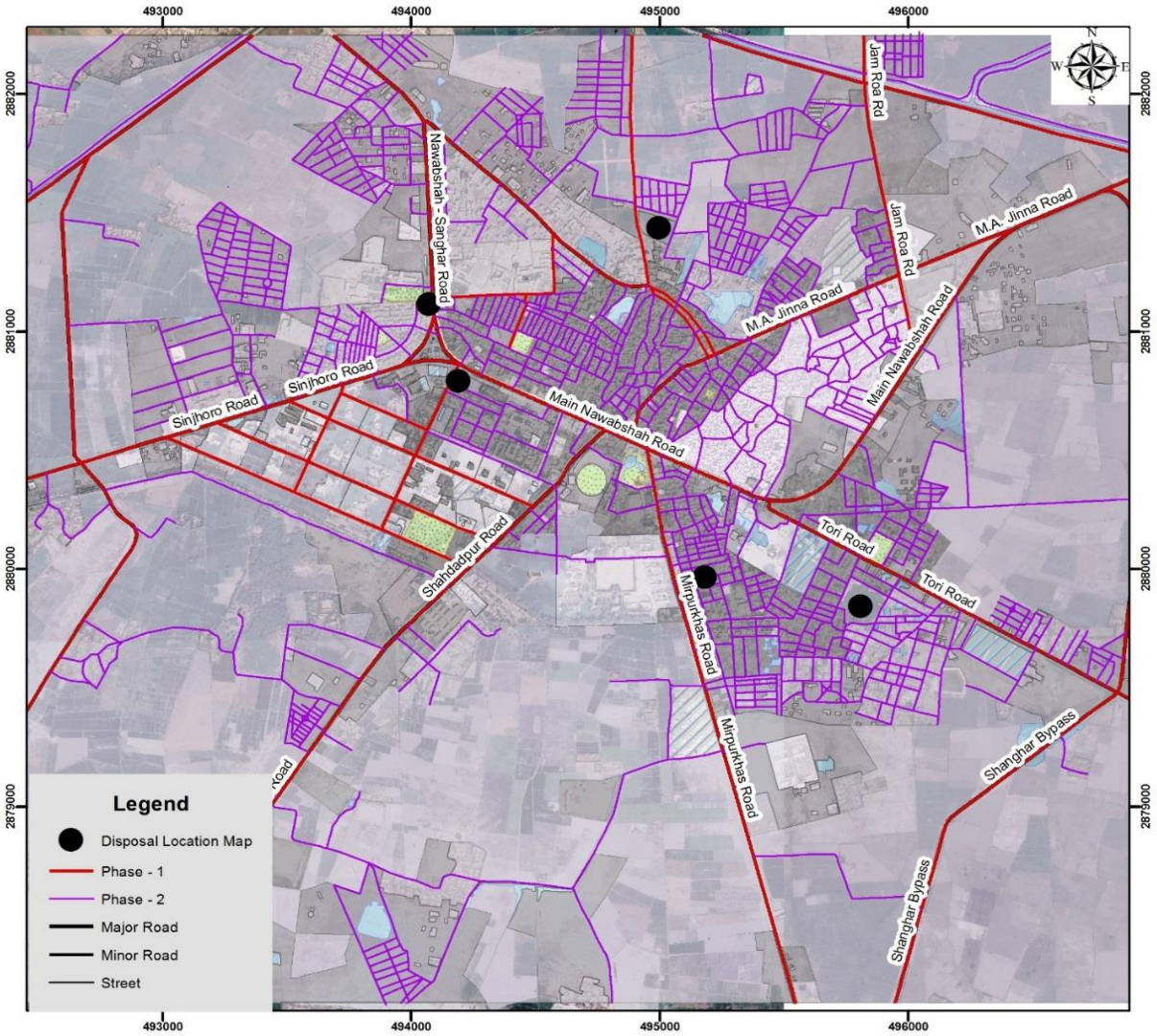


Figure 8-7: Repair and Rehaboilitation of Exsiting Drainage Sytem

8.3 Solid Waste Management

8.3.1 Existing Situation

Sanghar is one of the larger districts having comparatively low population. It occupies the central eastern position in the province. Like other major districts of Sindh, District Sanghar also has no proper solid waste management system right from collection to the disposal at landfill sites due to which, indiscriminate dumping and open burning of waste is a common practice. Salinity, water logging, failures of drainage arrangements, industrial and domestic wastes all combine to exacerbate the situation.

The solid waste management system is of primary type i.e. collection and transport form different community collection points to outside town dumping ground. For MSW collection purpose there are 6 Tractor towed Trolleys and 1 Refuse Van been used for transportation of garbage.

MSW collection is done 6 days a week. Street sweeping is carried out by the municipality sanitary workers twice daily. MSW of all UCs of Sanghar is finally dumped at a single Dumpsite in area, known as Khad Bekhoro Road. This waste is burnt intermittently by the sanitary staff to reduce its volume.

The collection points are more or less permanent structures however majority points are empty corners or vacant places. Besides, every locality has got throw away sites in the form of depressions, empty areas, cuttings areas etc.

It was studied that nearly 65-75 % of the generated solid waste is collected and disposed off through municipal resources, leaving 25-35 % solid waste unattended (Solid Waste Management Studies of Towns of Central Cluster of Province of Sindh, 2013).

An effective and well linked scavenging business operates in Sanghar. Almost all reusable items like, glass, paper, PET bottles, metal pieces and other usable items are picked up in three stage scavenging i.e. from door to door scavenging, scavenging at secondary collection points and at final disposal point.

152 numbers of field sanitary workers carry out daily street sweeping with brooms, collect waste in hand trolleys and other mechanical means and shift it to nearby collection points.

Identification of Disposal Points

As mentioned above, there are more than 36 collection points however 7 points are primary collection (disposal stations) and designated locations namely;

1. Duck para
2. Al Mansoora Colony
3. Hospital
4. Zahid Town
5. Shah Latif Colony
6. Peer Sahib jo Thalla
7. Gulshan-e-Latif

Garbage collection points are more or less permanent structures however majority points are empty corners or vacant places. Besides, every locality has got throw away sites in the form of depressions, empty areas, cuttings areas etc.

There had been little if any planning in the location of the landfill sites and there has been no planning for the replacement of existing dumping ground(s). Those sites were originally located at some distance from the town, but have now been enveloped by increasing urbanization. None of the sites had undergone EIA as required by SEPA Review of IEE & EIA Regulations 2000.

There are no special arrangements for the handling, storage and disposal of clinical or hazardous waste except for the breaking of needles and their collection. Hospital waste is internally collected and disposed of by the hospital sweepers.

The disposal of untreated municipal and industrial effluent into water bodies wreaks havoc for water quality especially near and downstream from the outfall points. Pulp and paper, textile, fertilizer, cement and sugar factories are responsible for this pollution. This is also damaging the aquatic system and also reducing revenues from fisheries, causing diseases and contaminating groundwater.

8.3.2 *Issues*

- No care is taken to separately dispose of health care and other type of hazardous waste. Commingled MSW along health care and other type of hazardous waste is dumped at disposal point. Soil cover neither spread on the dumped waste nor it is compacted at any of the dump sites.
- Intermittent but open and uncontrolled burning of waste is done on discretion of sanitary staff whenever desired or ordered. There is no arrangement of leachate control or collection at any of these dump sites.
- Though Sanghar is comparatively a larger town with all basic amenities like electricity, natural gas, water supply, waste collection, street sweeping etc but the general public lacks basic awareness on negative impacts of improper waste disposal and related health issues.
- So far no concern has been shown by municipal committee or provincial government to establish a sanitary landfill. Some places however be considered as potential landfill sites. Its further study can qualify the site for establishment basing on socio-economic, aesthetic and health aspects. Besides the water table is very high in the area, making surrounding area unfit for Sanitary Landfill establishment. Hence some area in outskirts of Sanghar with impervious ground layers may be selected as potential landfill.

Some of the other issues faced by Municipal Committee are as follows:

- Shortage of machineries and equipment
- Lack of properly organized waste Collection System
- Arrangement of segregation, collection and disposal of infectious hospital waste
- Segregation of Organic waste from Municipal Solid Waste (MSW) and Treatment

- Safe disposal of hazardeous waste in an environmentally sustainable manner
- Directives for implementation of waste policy framework and execution of its management system.

8.3.3 SWOT Analysis

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

8.3.4 Need Assessment

The waste generation rate estimated from the studies conducted earlier in SCIP-3 project suggests to be around 0.4 – 0.45 kg per capita per day[31]. However it is recommended to undertake the field study for the determination of waste generation and characterization for Sanghar in order to plan and design the solid waste management system. Considering waste generation rate for design purpose as 0.45 kg per capita per day with the current (2017) population of the municipal committee of Sanghar as 75,410 the total municipal solid waste load arising in the municipality is approx. 33,935 kg or 34 tons per day. Projecting this need till 2037 ,where municipal population will be 114,541 ,the municipal solid waste will be 52 tons. Based on National Refrence Manual (NRM): on population of 10, 000, one acre of landfill area is required. So for the population of 75,410 in 2017, landfill area of 7.54 acre is needed and for the projected population in 2037 of **114,541** landfill area of approx. 11.45 acre is required.

8.3.5 Policy Guidelines[32]

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

Principle

- Develop integrated solid waste management system.
- Conduct a study on wastewater and solid waste to develop town level profiles (including Infrastructure, equipment and staffing)
- Conduct waste characterization studies.
- Smooth and efficient Solid waste collection and disposal by providing door to door collection services.
- Ensure Effective solid waste management by developing a list of staffing, hardware and equipment for solid waste management.
- Efficient Solid waste disposal and recycling by establishing transfer stations to reduce disposal time.
- Recycle solid waste by systematic separation.
- Sanitary landfill options identify for towns where it is feasible.
- Formalize contracts with companies for waste to energy options.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.

[31] SCIP-03 Program Management, Project Preparation and Implementation Support for Planning & Development Department, Solid Waste Management Studies of Towns of Central Cluster of Province of Sindh, 2013, Brisbane City Enterprises Pty Ltd, & MMP

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

8.3.6 Strategic Development Plan

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

i. Long Term Plan

- The collection and disposing of solid waste is the responsibility of the Sanghar MC. The mechanism for solid waste management is not available in Sanghar so therefore a detailed feasibility is proposed to develop an efficient solid waste management in Sanghar town.
- Allocation of proper landfill sites outside of the urban area and Final disposal of waste at least 500m from housing to a contained area chosen and designed according to geological conditions, water table, wind etc.
- Community and Private Sector Involvement in SWM: The active involvement of local communities and the private sector is essential for an effective waste management system. It would be beneficial to start involving local communities and the private sector in waste management, which has been a slow process. This process needs to be accelerated in a well planned manner.
- Public Awareness and Education: It can be brought about in many different ways through the electronic and printed media and street talks, through community organizations such as schools, institutions, and households, using a public-address system, distributing leaflets, for public awareness.
- 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

- Municipal Committee has already initiated some work on biomedical-waste management. It should immediately start segregation practice for biomedical waste collection system.
- Perform daily sweeping of streets and roads in urban areas using appropriate tools and equipment.
- Daily removal of all garbage / waste from primary-secondary collection / transfer points, and cleaning is to be carried out where necessary.
- Where possible, zero direct human contact with waste from primary collection to disposal, and covering of waste during transportation.
- Shops, restaurants, healthcare centers etc. to contribute towards waste management costs.
- The collection system needs to be made more effective and efficient.
- 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.

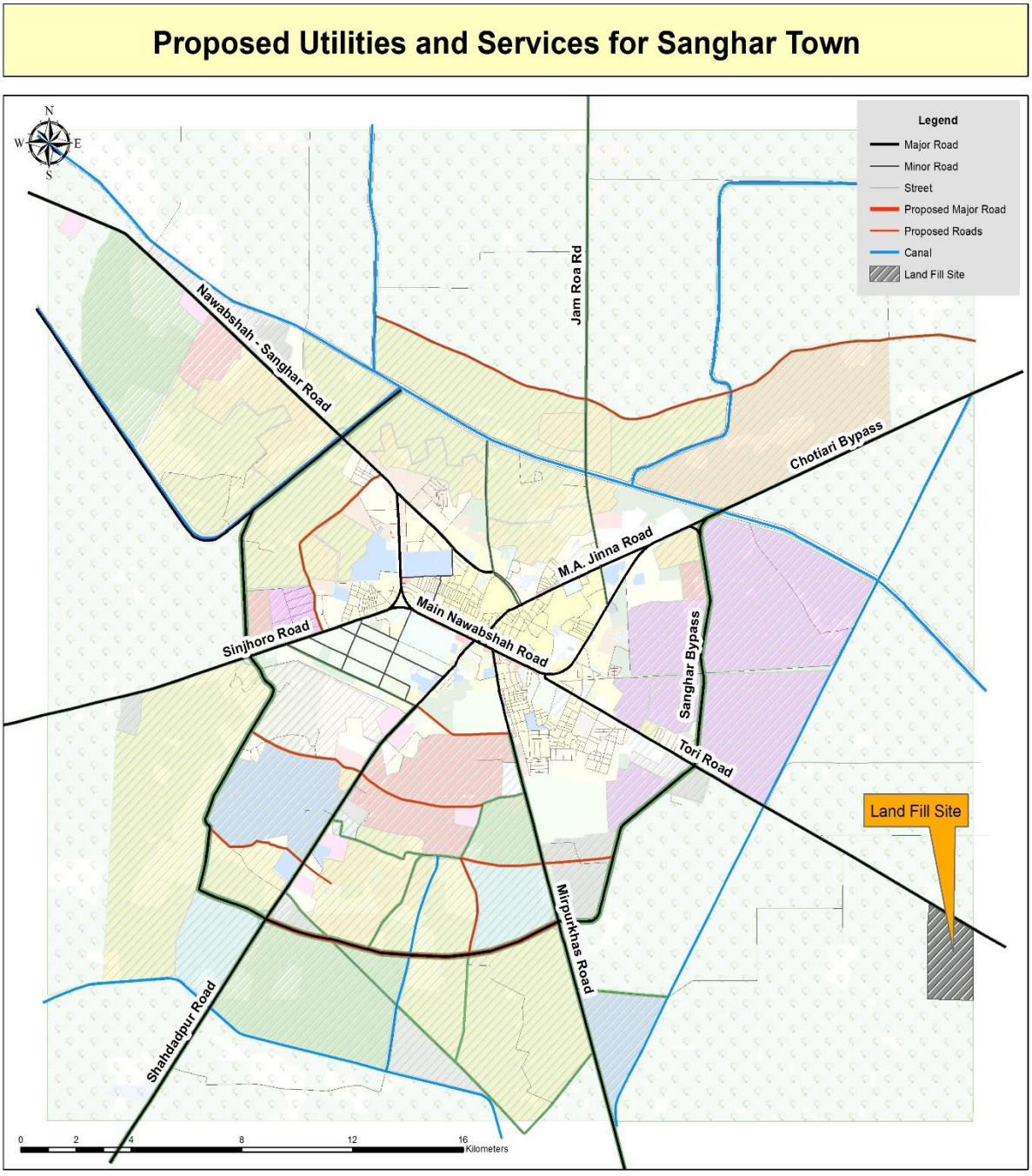


Figure 8-8: Proposed Landfill Site landuse

8.3.7 Priority Project

a) Feasibility Study for Solid Waste Management Mechanism

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

Estimated Cost: 70 Million PKR Approx**.**

However, a Feasibility study is required for the designing and costing of the project.

Sr. No.	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Solid Waste						
1.	Feasibility study for Solid waste management Mechnasim	30.00	-	Non ADP	**Short Term**	-
2.	Procurement for land acquisation process for Landfill Site.(Along toori Road)	40.00	-		**Short Term**	-

Central Composting Plant: In order to handle a large quantity of waste it is essential that organic waste is segregated from the municipal solid waste (with possible recovery of recyclable items) for which a set up of large-scale central composting plant is required. This should be done with privatesector participation.

Landfill Site: Landfill is an ultimate safe disposal option for Municipal Solid Waste and is imminently required.Land fill should be in the radius of 4-5 km of the town. A suitable land is proposed along the Toori Road. This may be changed after feasibility study.

8.3.8 Immediate Action Plan for Core Urban Area

Suitable locations for Disposal Points

There are number of recognized / established active primary collection points in the town.

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

S.No	Name	Containers No.s	Cost / Container	Cost (PKR)
Total Core Urban Area : 594.50 acre				
1	Placing of Garbage Container at different sites/locations in core town area	30	520,000.00	**15,600,000.00**
			Total Cost (PKR). Million	**15.60**

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.

8.4 Firefighting

8.4.1 *Existing* Situation

Currently there is one fire brigade station situated in Sanghar with 23[33] firefighting staff and one functional firefighting vehicle. The Municipal committee Sanghar 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 Sanghar is 75,410 which will be 114,541 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 vehicles available with municipal committee. So two more vehicles are needed for Sanghar 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.

[33] MC office Sanghar

9. INFRASTRUCUTRE

9.1 Transportation

9.1.1 Regional Connectivity (Air, Rail, Road)

- **Airport**
  Sindhri Airport is located at Tando Gondal near Sindhri, a town in the MirpurKhas District of the Sindh province of Pakistan. Presently it is not in use by any passenger airline, due to some technical reasons Sindhri Airport is now closed for commercial traffic. In actual, Hyderabad airport is more suitable for public of Sanghar to travel by air. Travel time from Sanghar to Hyderabad airport is approx: 112 Km which is 1 Hour and 30 minutes of travel.

- **Railway Station**
  Unfortunately Sanghar city itself doesn't have any direct access with railway station but it passes from its sub-divisions like: Shahdadpur and Tando Adam Tehsils.

- **Bus and Truck Stand**
  There are no major Bus and Truck stands within Sanghar. Inter-city buses are very limited and do not operate with regulations or proper stands. Illegal bus and Qinqui stands of public transport are evident in Sanghar. Unregistered Qingqi and Rikshaws are more than buses. Some bus and truck stands are observed on the periphery of District Sanghar.

9.1.2 Local Road Network

- **Condition of Road**
  Sanghar district covers an area of 10,608 sq. kms yet it has only 868 kilometers of good quality roads, which are inadequate for the area and its population. Just like most of the Sothern districts of Sindh, there is no national highway which could connect Sanghar with other major cities of the province, only a metaled road exist, which serves this purpose. The district headquarter of Sanghar is linked with its talukas.

  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.

9.1.3 Issues and Problems

- No formal Bus Terminal
- Traffic Congestion at intersections
- Unavailability of Traffic signals and street furniture

- Bad condition and shortage of Public Transport
- Lack of Road Safety
- Unregularized Qinqui system
- Drainage and parking issues

*9.1.4 **SWOT Analysis***

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

*9.1.5 **Policy Guidelines***

- Decrease in private vehicles, especially during peak hours and in CBD areas.[34]
- Decrease in traffic delay.
- Decrease/stability in air and noise pollution.
- Involvement of private sector in transportation infrastructure and services projects.20
- Infrastructure development and up-gradation.
- Integration of public transport services and networks.
- Modernize goods transport and freight facilities.
- Planning for Unplanned street network

[34] Sustainable Urban Transport Policy-Sindh 2016

- Measures to provide effective public transport
- Ribbon type commercial development in residential neighborhoods.
- Provision of parking space for rest hours for drivers.
- provision of street furniture
- Removal Encroachments around bus bays and railway land sites

9.1.6 *Sindh* Empowerment of 'Persons with Disabilities' Act, 2018 [35]

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

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

i. Universal access to destination:

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

ii. Equal Right of use:

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

iii. Accessible surfaces:

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

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

[35] 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)

store assistive devices such as wheelchairs and strollers. Tra-c signal timing should provide adequate clearance intervals for safe crossing by pedestrians and slow vehicles.

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

9.1.7 ***Strategic Development Plan***

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

i. Long Term:

- 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.

9.1.8 Priority Projects

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

- **Project Justification**

  The existing condition of secondary and tertiary roads of Sanghar are in very poor condition. Due to un-availability of drainage network the sewage water is damaging the roads. All the tertiary roads are also damaged due to sewage water. So it is proposed to improve and rehabilitate the roads of Sanghar.

- **Implementing Authority -** Works and Service Department government of Sindh, Local Government

Estimated Cost: 152.0 Million PKR Approx. (Short Term).

ii. Construction/ Rehabilitation of Street furniture on Roads

- **Project Justification**

  Most of the Streets of Sanghar are without street lights in over all the town and all roads 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 –** Communication & Works Department Government of Sindh,

Estimated Cost: 100.00 Million PKR Approx. (Short Term).

S. No.	Priority Projects	Estimated Cost In Millions	Non ADP	Status
Roads and Communication Network				
1	Repair & Rehabilitation of Major & Minor Urban Roads (Excluding Core Urban Area) (Approx. 33.81 Kms @ rate of 4500 per running meter) 152 Million • Repair & Rehabilitation of Major & Minor Roads i.e. M.A Jinnah Road, Main Nawabshah Road, Tori Road, Mirpurkhas Road, Sinjhoro Road & Shahdadpur Road. **Lump sum Amount 100.00 Million for below facilities** • Pedestrian pathways • Designated Parking Spaces Provision of Footpaths and Street Furniture (signals, sign & new solar Street Lighting on main roads)	252.00	Non ADP	**Short Term**

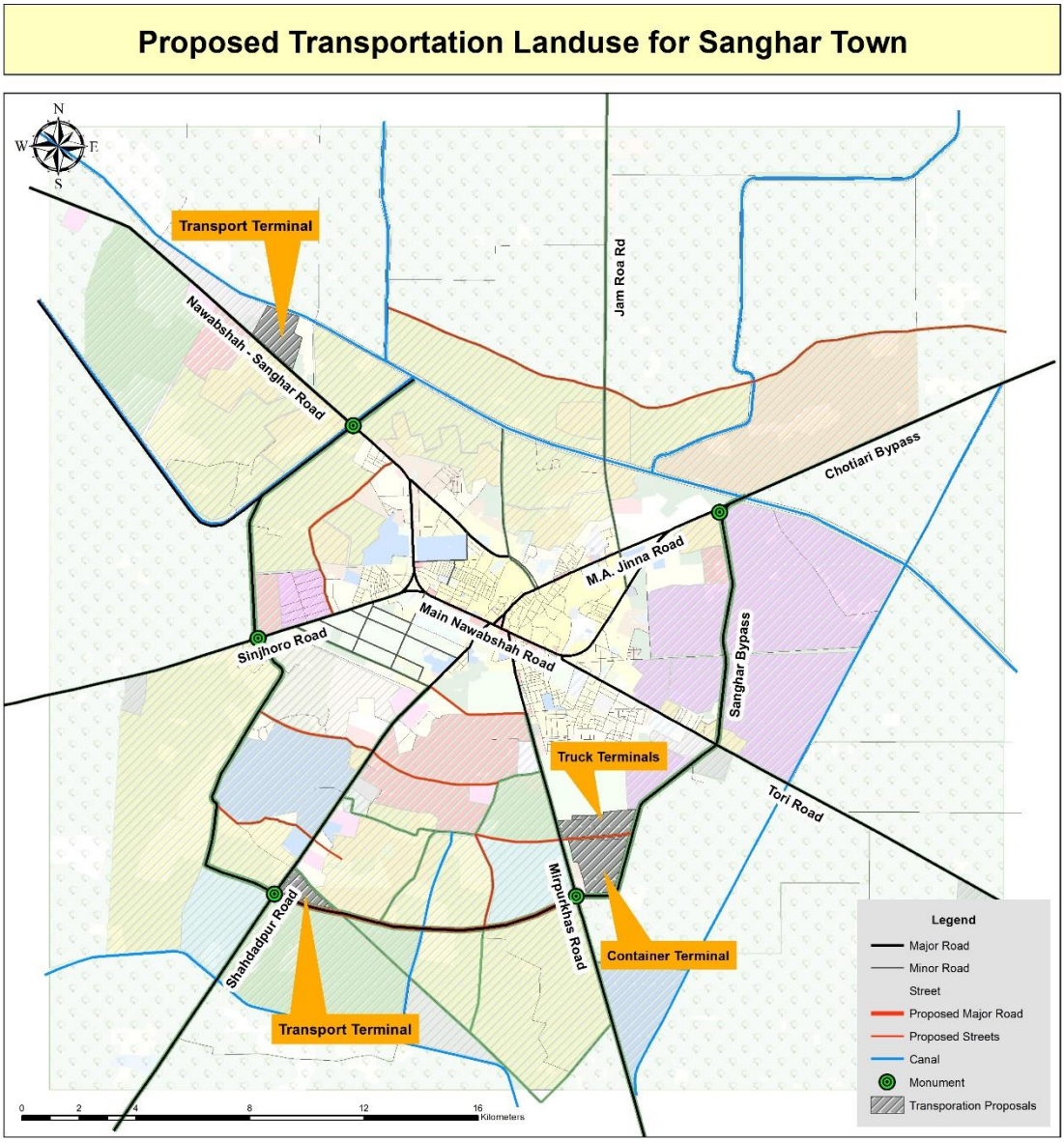


Figure 9-1: Future Transportation Proposal Sanghar Town

9.1.9 Immediate Action Plan

I. 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 massivse 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.

Sanghar - Core Town Area Repair & Rehabilitation of Roads								
S.No	**Area / Locality / Address Major Roads**	**Length (km)**	**Length (m)**	**Width (feet)**	**Width (m)**	**Area (sq.m)**	**Per sq.m cost (PKR)**	**Total Cost (PKR)**
1	Mirpur Khas Road	0.86	860.00	40.00	12.20	10,487.80	4,332.34	45.44
2	Shahdadpur Road	0.92	920.00	40.00	12.20	11,219.51	4,332.34	48.61
3	Main Nawabshah Road	1.68	1,680.00	40.00	12.20	20,487.80	4,332.34	88.76
4	Sinjhoro Road	1.00	1,000.00	40.00	12.20	12,195.12	4,332.34	52.83
							Total PKR Rs. Million (A).	235.64
Minor Roads								
1	M A Jinnah Road	0.14	142.76	20	6.10	870.49	2,475	2.15
2	D.C Office Road	0.50	498.23	20	6.10	3,037.99	2,475	7.52
3	Civil Hospital Road	0.58	582.61	20	6.10	3,552.50	2,475	8.79
4	Kiyani Road	0.37	371.82	20	6.10	2,267.20	2,475	5.61
5	Circuit House Road	1.33	1334.28	20	6.10	8,135.85	2,475	20.13
6	Panjati Road	0.46	464.47	20	6.10	2,832.13	2,475	7.01
7	Special Education Road	0.48	481.51	20	6.10	2,936.04	2,475	7.27
8	Katchi Abadi Road	0.64	638.61	20	6.10	3,893.96	2,475	9.64
9	Imam Bargah Road	0.39	387.01	20	6.10	2,359.82	2,475	5.84
							Total PKR Rs. Million (B).	**73.96**
Streets								
1	Wideninig and Pavement of Streets	10.07	10070.00	20	6.10	61,402.44	941	57.78
							Total PKR Rs. Million (C).	**57.78**
							Total PKR Rs. Million (A+B+C).	**367.52**

- **Monuments**

  Repair & Rehabilitation of Existing monuments should be takes placed for the beautification purposes.

- **Pedestrian Movement and Street Furniture**

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

Figure 9-2: Model walkways with Street Furniture

- **Provision of Footpaths and Street Furniture**

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

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

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

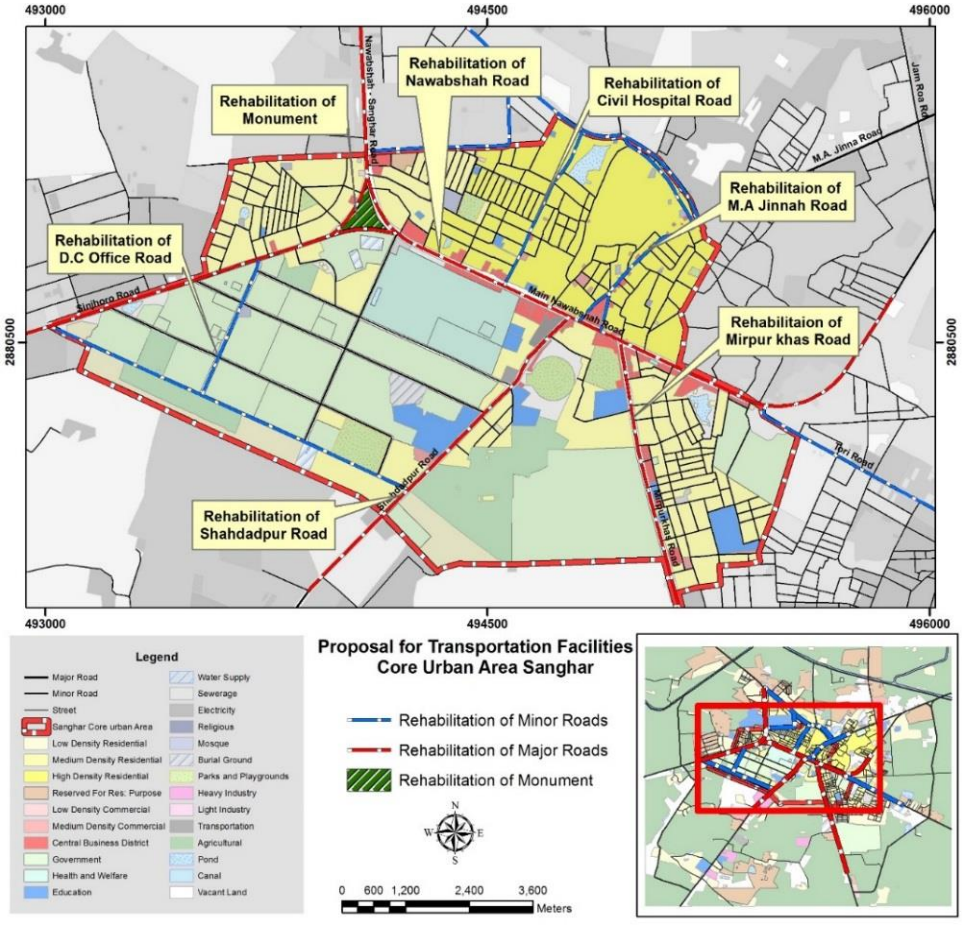


Figure 9-3: Proposal for Rehabilitation of Transportation Sector

9.2 Energy

*9.2.1 **Existing Situation***

There is no power generation facility in Sanghar (MC) vicinity. The power supply is through HESCO-WAPDA transmission system. Results of primary data reveals that 91% of the households have availability to electric power, whereas 9% of the households does not have electric power and use alternate source for their daily living. Some of them are far from the supply feeder and other cannot afford the heavy bill of electricity.

As per secondary data provided by HESCO there is one grid station in Sanghar and inside grid 3 transformers two of 1200 KVA and one 7.5 KVA are installed.

The survey also bring the fact that about 184 Nos. households in Sanghar have no alternative power source in addition to HESCO supply, some 20 houses have solar energy and only one household has wind power out of 274 respondents.

The Power Supply to District Sanghar is through Hyderabad Electric Supply Company (HESCO) WAPDA via 132 KV Sanghar Grid station feeding district by 11 KV feeders.

Electric power network exist in the city, but the production is going through a national energy crisis and power supply has become erratic.

There is also vast power demand by industrial sector and it was very clear when HESCO provided the present supply of power as 114 MW.

The electricity consumers in the district Sanghar are categorized as domestic, commercial, industrial, agriculture and other services. The major portion of electricity is being consumed by industrial sectors, followed by domestic. In the current national energy crisis electricity is facing shortage. 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.

*9.2.2 **Need Assessment:***

The secondary data provided by HESCO indicate the total present supply to Sanghar Grid is 114 MW whereas the demand is about 200 MW. This shows that there is shortage of 86 MW of power. This shortage reflects the load shedding in the Sanghar, not affecting the domestic consumers only but for business, street lighting, industry and irrigation. The main industrial units are sugar mills, flour mills, and cotton ginning factories, ice factories, and exploration and production companies like OGDCL, PPL, and UEPL & PEL.

*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. There is no power generation facility in Sanghar (MC) vicinity 2. Shortage of electricity & power supply 3. Poor maintenance of electricity supply infrastructure 4. Power shortage due to non-payments of bills 5. Line losses and power theft. 6. Outdated network in old town areas 7. Existing capacity of electricity supply is short to meet the growing demand of utility 8. 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

- Transmission and Distribution losses should be curtailed as Sanghar is facing 20 to 25% transmission and distribution losses.
- Success in achieving fuel efficiency, adopting new technologies and altering existing fuel-use habits depends largely on women who are the primary users of fuel wood. They must be made aware of the long-term ramifications of adopting these innovations
- Addition of sub stations as per requirement
- Encourage energy efficient building construction

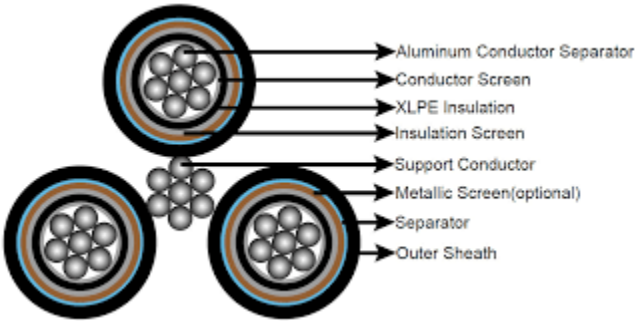
- Up gradation of grid station
- Promote energy efficient appliances and devices
- Feasibility study for alternate energy sources (Solar, wind, biogas etc.)

9.2.6 Immediate Action Plan

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

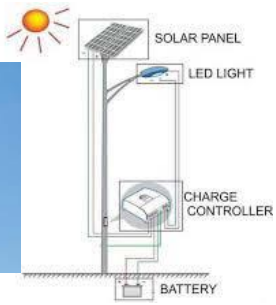
i. Arial Bundle Cable wires

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.



ii. Streetlights

It is proposed to installed streetlight in all over core urban area. It is suggested to use streetlights with LED panel and solar power battery support. This can save energy and light can be lit even during the load shedding hours, but need regular maintenance.



Considering Narrow Street and road width, it is recommended to use wall mounted poles in narrow streets, while floor mounted poles on other roads.

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

Proposed wall mounted street lights				
S. No.	**Name**	**Length (km)**	**Length (m)**	**Cost (PKR)**
1	Proposed Total Length of Street (km) for wall mounted streets lights.	16.00	52,493	13,123,360.00
			Total Cost (PKR). Million	**13.12**

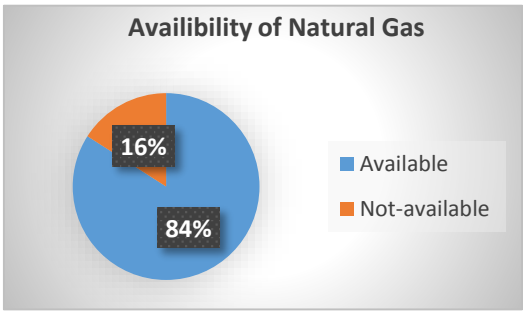
Note:

- ✓ Wall mounted street lights should be placed on distance of 20 feet apart.
- ✓ Each wall mounted street light cost (Rs. 5000/-).
- ✓ As per total length of streets for this proposal 2,624 No.s of street lights/wall mounted streets should be placed in core town area.

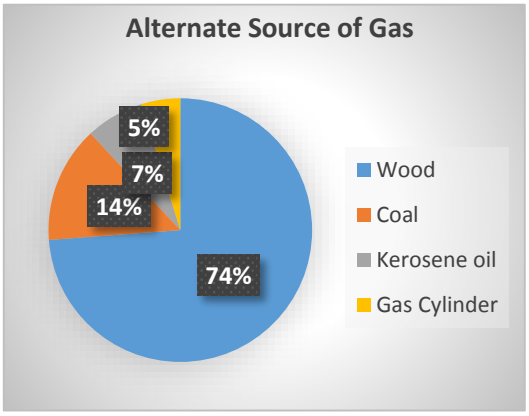
9.3 Gas Supply

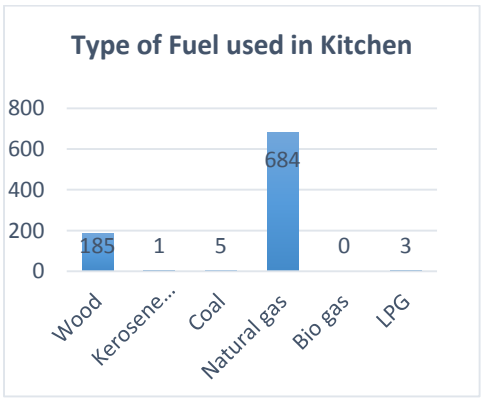
9.3.1 Presence of Gas

A maximum of 276 houses residents had responded to the questions asked on availability of Gas. As given in the Table below, 84% houses had the gas available to them, while the gas was not available to 16% of the houses. Therefore 16% were using alternate source of fuel for their daily household needs.



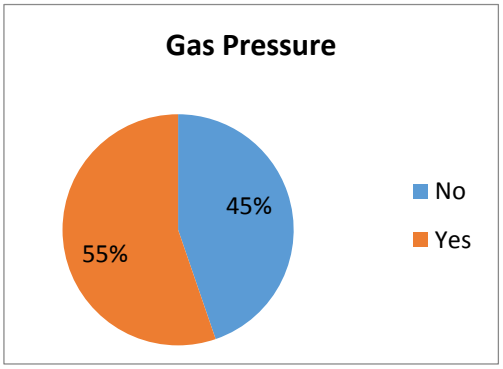
Households not having Natural Gas provided by SSGC are dependent of alternate sources. 42 out of 276 respondents not having gas availability are using following alternate resources.





Sufficiency of Gas Pressure

The Table below shows the sufficiency of gas pressure as provided by 275 houses. Around 45% of the households suffer with low gas pressure whereas 55% of the households are satisfied with the Gas pressure.



Survey results also reveal that 57% 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 (%)
No load shedding	155	57%
11-12	29	11%
More than 13 hours	4	1%
5-6	9	3%
9-10	13	5%
3-4	30	11%
7-8	17	6%
1-2	17	6%
Total	**274**	**100**

Source: Consultant's Survey, July 2017

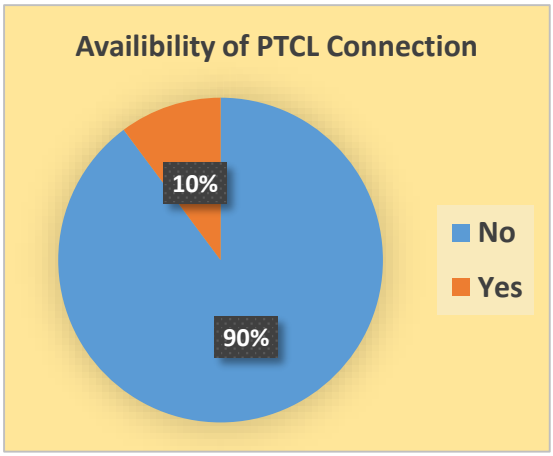
9.3.2 Strategic Development Plan

- Feasibility study for alternate resources available
- Measures to cater Load Shedding of gas.
- Measure to appropriately priced the energy resources

9.4 Communication

9.4.1 Telephone, Mobile, Internet

The PTCL offices are located near anti-corruption office on Shahdadpur road Sanghar. The present-day situation of Sanghar falls in the developing urban area; as per the survey there are about 10% i.e. 28 households using PTCL land line out of 275 households surveyed. Others 90% household use public call offices in the area or cell phone.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.



9.4.2 SWOT Analysis:

STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
Information & Communication Technology			
1. Strong networks available for advanced technologies, e.g. internet, cellular networks, broadcasting, satellite communication 2. All cellular service provider offer facilities and service station. 3. Town is covered by PTCL services, station and network	1. Lack of information sharing regarding agricultural activities, public health, veterinary, disaster forecasting etc. 2. The internet usage is limited to educated families	1. Media can play important role in economic development and prosperity 2. Immediate disaster forecasting through disaster emergency response centre 3. Marketing campaign support of development initiative	1. Negative cultural and ethical exposure to young minds (youth), if not regulated properly 2. No check and balance of non-authorized/ non-biometric SIM's usage

Importance of Communication Infrastructure in Agriculture Sector:

Swift transportation facilities, farmer friendly marketing arrangements and, above all, a well-maintained. Communication network are the basic requirements for an efficient and profitable agricultural sector. The district government needs to improve market and support service infrastructure including farm-to market roads. This sector will need increased and sustained investments in communication infrastructure in rural areas.

10. ENVIRONMENT

10.1 Existing Situation

District Sanghar can geologically be divided into two parts, a fertile plain area in the west and desert area in the east. The Nara canal flows from northwest to southeast. The western plain has been formed by rich alluvial deposits of the river Indus. Sanghar city lies at the middle of the district. The western part of the city is fertile land irrigated by the Nara canal while the eastern part is desert Thar. The general elevation of the plain is about 50 meters above sea level. Originally, soil of the area is composed of alluvial deposits having various proportions of sand, silt and clay at different places. The layers of soil formation are generally uniform varying in depth from 5 to 20 feet.

Barani lands are subjected to heavy soil erosion, primarily due to improper land use by crop cultivation, livestock grazing and illegal removal of vegetation cover.

Deserts have acute problems of shifting sand dunes and salinity. The irrigated areas are infested with the twin-menace of water logging and salinity.

According to the Seismic zoning map of Pakistan (2015), Sanghar district lies in Zone 2A which corresponds to peak ground acceleration (PGA(g)) of 0.08 to 0.16 and a possibility of minor to moderate seismic hazards i.e. probability of earthquakes of intensity (MM Scale) 6 to 7.5.

The western fertile side of the district, that constitutes half of the total district area, there is a well-established canal system emanating from Sukkur Barrage. Nara canal is also a massive source of water in this district. The tributaries of Nara canal include Khipro Canal, Jamrao Canal and Mithrao canal. Two major canals i.e., Rohri and Jamrao irrigate the western half of the district. Taluka Sanghar, Jam Nawaz Ali, Sinjhoro and some parts of Khipro are irrigated from Jamrao canal, whereas, Rohri canal irrigates the talukas of Shahdadpur and Tando Adam.[36]

Contrary to the fertile western part, the eastern half of the district is barren desert and has no canal irrigation network. Almost entire Khipro taluka lie in the barren eastern part of the district.

Common practices (e.g., frequently discharge municipal, agricultural and industrial wastewater) into water bodies further deteriorates environmental classes. Furthermore, the use of the polluted water exposed due to biological and chemical contamination of water bodies in Sindh province is a common practice in rural areas. The major source of water pollution is industrial wastewater, municipal wastewater, seepage of fertilizers and pesticides from agricultural fields. Further, the seawater intrusion and highly toxic laden industrial effluents disposal into surface drains of the main drainage Left Bank Outfall Drain (LBOD) system, have directly affected on drinking water quality, aquatic life and soil.

[36] PESA, Sanghar district

The drainage and sewage system of the city is inadequate and inefficient. Shallow open channels along the streets carry sewage and domestic waste water from households. The drain lines lead to canals or wasteland. Thus causing groundwater and surface water contamination.

In terms of agriculture and floral growth, Sanghar can be divided into three major parts. In the Desert region wild vegetation is found. While in the area around the Chotiari dam thick forest has grown due to good irrigation. And in fertile agricultural land, different seasonal crops grow in abundance.

Eastern Sanghar or Khipro Taluka is desert (Achhro Thar). It is a part of the Nara Desert and located along the eastern border of India. Because of loose white sand, this part of the desert is named as Achhro Thar. The rapid shifting of dunes is the distinct feature of this part of desert. The desert is spread over 4,508 km2 (Anon., 2008). The climate of this area is tropical to subtropical.

10.1.1 ***Wildlife***

1) There are four distinct habitats for wild animals in the study area viz. desert, wetlands/dhands/Jamrao Canal and associated marshes, agricultural lands and villages. The desert area comprises of sand dunes, interdunal valleys, and scrub land. The sand dunes lie in the NS direction with interdunal valleys, rising to an elevation of 10 – 15m.
2) There are more than 36 dhands in the study area adjacent to Jamrao Canal which supplies water to the adjacent lands. These wetlands are very significant as they provide refuge to the large concentrations of migratory waterbirds during the season and some of them also support Marbled Teal and Marsh Crocodile.
3) There are more than 10 villages in the study area. These support a number of wildlife species accustomed to the near abouts of human habitations due to the availability of food and water in the area.
4) The agriculture fields are located in the south and SW of the study area. Crops of wheat and mustard are generally grown in the season. There are orchards having Mango, Date Palm, and Citrus trees. This habitat is important for such species as Grey Partridge, Black Partridge, Common and Jungle Babblers, Indian Myna, Indian Roller and Doves.

10.1.2 ***Birds***

It has been recorded from Saledi, Waeil,Bolahi,Khararo, Murkhi, Waso,Waddo, Chambh, Baro, Khenwari, Sanahri-1, Mureedwaro, Morakhi, Chach, Drigh, Taka, Hora and Ganjo (Chang et al.2012). Recently, it was recorded from Allahdinaywari, Chugri,Wasoowari, Khararho, Bolai, Waddo Chhimbh, Manki and Khewari wetlands.

10.1.3 ***Ecologically Sensitive Areas***

Chotiari Reservoir lies in the province of Sindh, on western flanks of Achro Thar desert (white sandy desert) at about 30 - 35 km northeast of Sanghar City. The Reservoir occupies an area of about 18,000

hectares and has water storage capacity of 0.75 Million Acre Feet (MAF) flooding an area of approximately 160 km2. Chotiari reservoir is created in a natural depression that exists along the left bank of the Nara canal. The depression area is bounded by sand hills towards north, east and south-east, while towards the west and south lays the Nara canal. This reservoir is established to improve the irrigation supplies during lean months when Indus flows are at minimum. It is an off canal storage reservoir retaining Indus flood water collected during the peak flow period (June to September) and releasing it for use during the dry season (mid-October to mid-April). This reservoir is replenished from the Nara canal through a 6,500-cusec capacity channel, the Ranto Canal, off-taking from the Nara Canal at Jamrao Head.

The aquatic features of the reservoir area comprise of numerous small and large size freshwater and brackish Lakes, smallest being of 1 Hectare area and largest of about 200 Hectares which occupy about 30% of the total reservoir area. These Lakes are a source of subsistence and commercial fisheries for the local people.

The local population is engaged in fishing, agriculture, jobs in different sectors and livestock rearing. A large area is being used for livestock grazing, which is a major occupation for the local communities. According to one estimate, nearly 400 families are associated with livestock rearing in the reservoir area. The majority of livestock includes, buffalo, cattle, goat, sheep and camel. A variety of non-timber forest produce that grow naturally in the reservoir area are used by local people for hut making, mat making, sweep sticks, roof thatching, medicinal and food purposes. Women living in those areas where reeds are abundant are associated with mat making as a source of their livelihood.

*10.1.4 **Forest resource***

Khipro Reserve Forest

Khipro Reserve Forest is an artificial forest that was established by the British in the 1920s near Khipro, a taluka of District Sanghar in Sindh. Spread over 24,000 acres at its prime, the forest, now much reduced in size, is a reserve for indigenous plants and provides locals with a livelihood. But it remains vulnerable to the timber mafia and acute water shortages, and is in need of a concerted conservation effort.

For several decades, Khipro Forest comprised Acacia (known in the vernacular as babul or babur), Shisham (also known as talhi) and neem trees as well as a variety of indigenous plants.

In 1986, the Sindh Forest Department initiated a program of social forestry under which eucalyptus trees were planted on 5,000 acres of the forest. Now, Khipro is the largest eucalyptus forest in Pakistan with the trees being used as wood for fuel and for the pulp industry.

Makhi Forest

Makhi Forest surrounds the Chotiari reservoir. It is named after the small bees which make their honeycombs in the trees inside the forest. Makhi Forest was once famous for its rich reserves of quality honey, commercially valued wood and plants with medicinal values. The forest had dried up

due to acute water shortage but it has now been recovered by 50% due to recent water flows through Nara Canal. Release of fresh water into Chotiari Dam in Sanghar district boosted up natural flora and fauna in Makhi Forest besides enhancing sources of livelihood of local community whose major economy depend on livestock.

10.1.5 Issues and Problems

The following are the key issues for Sanghar District related to soil loss and degradation:

- **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.

- **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 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 logging 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.

  Total waterlogged area with water table depth of 5-10 feet in Pakistan is about 11 million hectares. Salinity and sodicity are associated with irrigation but these also occur as a consequence of soil formation process over the centuries.

- **Drought and Flooding**
  The effects and impacts of drought in fragile eco-systems assume serious proportions of land due to misuse of marginal areas, unwise land use practices and overexploitation of natural resources. Adverse effects of drought on human activity usually last for many years.

- **Soil Nutrient Degradation**
  A significant portion of cultivated soils are low in retained important plant nutrients. This nutrient deficiency, mainly of nitrogen, phosphorus, potassium, sulphur, zinc, copper, iron and manganese, has been indicated by various fertilizer experiments conducted on soils in different parts of the country. The problem is particularly severe in the case of irrigated sandy soils, moderate in the case of irrigated loamy soils of old river terraces, and of a minor degree in other soils.

*10.1.6 **SWOT Analysis:***

STRENGTH	WEAKNESSES	OPPORTUNITY	THREATS
ENVIRONMENT			
Urban Area & Areas Suitable For Urban Development			
1. Land available for future development within town urban boundary 2. The land use analysis indicates that majority of the area is covered by agricultural fields	1. Loss of agricultural land through land development for housing purpose 2. Water logging 3. Unplanned growth inside town 4. Lack of utility services	1. Mixed land uses may create activity centres 2. High density will overcome housing shortages	1. Land grabbing 2. Slums 3. Unplanned growth 4. Threat to agricultural land 5. Private sector may increase the cost of services
Land			
1. Flat fertile land suitable for development 2. Rural rich fertile agriculture land that produces quality crops 3. Soil of Sanghar 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

Climate			
1. Climate of Sanghar is suitable for producing crops.	1. Rainfall shortages affect the efficiency of canal system 2. Hot winds blow from May to August from south to north which disturb the inhabitant's life very badly	1. Agricultural practices can be changed in accordance with weather condition for maximum production	1. Droughts 2. Heavy rains affects agricultural production
Air			
1. Air quality in the rich agricultural belt is good for human health, and also keeps ecological balance in atmosphere 2. Most of the area is air pollution free	1. Inner city air is polluted by high volume of traffic	1. Development planned with respect to air circulation can provide relief to inner city's polluted environment 2. In future the town can be planned as Green City	1. Air pollution 2. Respiratory diseases
Fresh Water Bodies			
1. Huge irrigation canal based network available 2. Inland of fisheries water ponds exists	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. 5. Issuance of district angling licenses 6. Local publicity and awareness	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

10.1.7 Policy Guidelines37

- 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.

10.1.8 Strategic Development Plan

i. Long Term Plan

- Drainage can be improved on many sites and is the first thing to consider once a waterlogging problem has been identified. Options might vary from shallow surface drains (ie. Spoon- and 'W'-drains) to more intensive drainage using wide-spaced furrows, to the intensive drainage form of raised beds
- Achieving sustainable development, while overcoming environmental challenges such as land degradation, watersheds and marine fisheries, deforestation, waste management and pollution control, and climate change
- Multi-pronged approach to fisheries management should be adopted that takes account of economic, environmental, and social performance
- Rehabilitate degraded ecosystems and create environmental awareness
- Alleviate poverty through creation of forest based income generating opportunities
- 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

ii. Short Term Plan

- 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;
- 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
- Strengthening forestry education and research institutions to cope with the emerging challenges of deforestation and climate change

[37] National Forest Policy 2010

- Increase the productivity of rangelands
- Provide recreational facilities for public by improving forest parks
- Rehabilitation of Irrigated plantation
- Enhance Rangeland production and planting fodder trees for farmer community
- Improvement and Rehabilitation of Forests Parks
- Afforestation of Blank Reaches along Important Highways
- Measures to reduce waterlogging and salinity
- Measures against drought and flooding hazards
- 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. Measures should be taken to reduce biodiversity.

11. DISASTER RISK MANAGEMENT

11.1 Existing Situation

Sanghar is the main city and DHQ of Sanghar District in Sindh, Pakistan. It lies left of the Indus River. District Sanghar can geologically be divided into two parts, a fertile plain area in the west and desert area in the east. Sanghar district was hit by 2010-2011 and 2012 rains/floods. According to the seismic zone map of Pakistan, the Sanghar district is situated at zone where moderate to severe damage can occur. The Seismic zoning map of Pakistan (2015) places Sanghar in Zone 2A and 2B which corresponds to possibility of minor to moderate seismic hazards i.e. probability of earthquakes of intensity (MM Scale) 6 to 7.5.

Sanghar is a highly disaster prone area and disasters of different types have occurred in the past. The most frequent and damaging disasters are the floods. District Sanghar is vulnerable to floods and heavy rainfalls. Sanghar has been affected by floods due to precipitation and drainage.

11.2 Impacts of floods

11.2.1 ***Food Security***

Apart from well spread desert Achhro Thar in Khipro taluka, the remaining portion of district Sanghar is booming with agricultural activity and small industries. Sanghar contributes significantly in agriculture sector of Sindh because its climate is suitable for production of various crops including the Kharif crops of cotton, rice, Jowar and sugarcane and the Rabi crops of wheat, gram and oil seeds. In addition to these, fruit orchards are abundant in this district. Taluka Shahdadpur and Tando Adam are famous for the production of a variety of fruits including banana, mango and dates. The fish of Jamrao canal is also another source of livelihood for the people of Sanghar district.

In a nutshell, this district has sufficient availability of food, poor socio-economic access; and relatively poor food utilization environment. Combining all the indicators of food security i.e. availability, access, utilization and stability; it can be ascertained that district Sanghar is a food insecure district of Pakistan[38]. Due to the destruction of roads, transport and market infrastructure, the floods had a significant negative impact on commodity market. As a result, the functioning capacity of the markets (transporters, processors, wholesalers and retailers) decreased with upward movement of transaction costs and shortage of food commodities. This phenomenon hindered the socio-economic access to food in the district.

11.2.2 ***Health***

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

[38] PESA Sanghar District, June 2014

Sanghar district was badly hit in 2011 heavy rains, resulting in damage to the public health infrastructure. A large number of people suffered from waterborne diseases, epidemics, malaria, diarrhea, gastro, fever, eyes and many other skin diseases. Deaths of children were also reported due to waterborne diseases. In many camps there was no medical assistance. Drinking water sources were contaminated due to which there were fears of Dengue and other such diseases spread.

11.2.3 ***Education***

Due to the floods/rains of 2011, 1,575 school facilities were damaged, out of which 307 were fully destroyed and 538 were partially damaged. 730 schools were occupied by the IDPs. Also, heavy rains affected the school going children. Due to the damages to the schools, houses and roads; education of 126,000 students was affected

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 Sanghar which are potential crowd pulling places.

Table 10-11-1 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

- **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.

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

- **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.

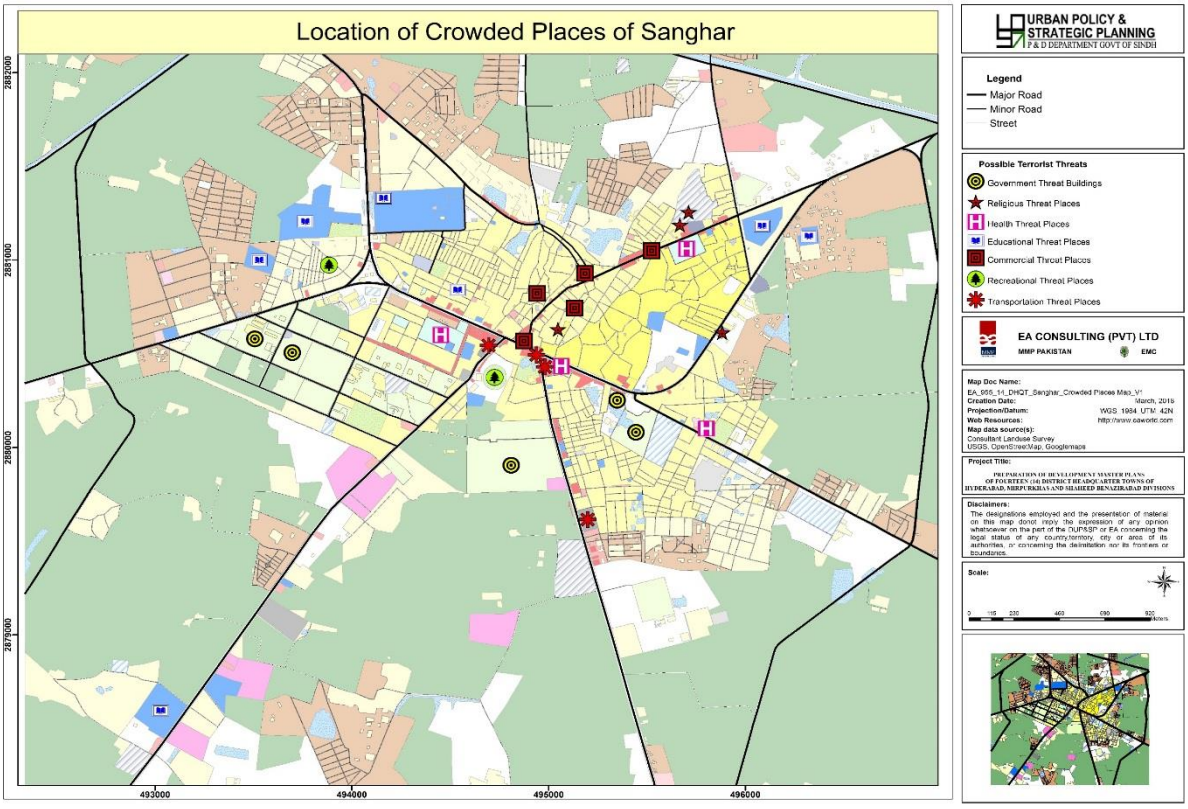


Figure 11-1 Crowded Places of DHQ Town Sanghar

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

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.

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.

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.

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

11.3.1 Issues and Problems

- Low levels of risk awareness and knowledge.
- Development not "risk conscious" and DRR not yet effectively integrated.
- Insufficient DRR capacity at all levels of society.
- The involvement of the private sector in DRR is as of yet negligible.

11.3.2 Policy Guidelines[39]

- 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.

11.3.3 Strategic Development Plan

The aim of the policy is to advocate an approach to disaster management that focuses on reducing risks – the probability of losing one's life or health, assets and livelihoods.

Some of the objectives in this aspect includes:

i. Short Term Plan:

- Develop coordination mechanism with PMD for ascertaining flood discharge.
- Develop mechanism for regulation of water discharge into canals, distributaries and drains before onset of monsoon season.
- Develop monitoring mechanism for inspection of embankments, weak parts of drains, IPs (inspection parts) and NIPs (Non-Inspection Parts) of all irrigation channels.
- Provide necessary medical facilities at relief camps.
- Close coordination and communication with DDMA.

[39] National Disaster Risk Reduction Policy 2013

- 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.

ii. 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.

iii. 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.

11.4 Climate Change Emergency Contingency Plan

11.4.1 District Level Plan

Sanghar 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.

11.4.2 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.

➢ **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.

11.4.3 Health Department

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

- **Education Department**

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

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

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.

11.4.4 Agriculture Department

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.

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.

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.

11.4.5 Livestock ad Fisheries Department

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.

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.

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

11.4.6 Planning and Development Department

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

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

*11.4.7 **Revenue Department***

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.

During Disaster

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

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.

*11.4.8 **Police Department***

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.

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.

Post-Disaster

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

*11.4.9 **Civil Defense***

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

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.

Post-Disaster

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

11.4.10 ***Civil Society and Private Sector Response***[40]

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.

11.4.11 ***Scouts***

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.

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

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

Post-Disaster

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

11.4.12 ***Standard Operating Procedures (Sops)***

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

coordination with Civil Defence, Boy Scouts Association and Police Department if needed and mobilize the village staff in the pre-and-post emergency work. He/She shall also ensure proper distribution of relief material among the actual needy persons.

- The Executive Engineer Irrigation Department shall ensure availability of bulldozers, excavators and earthmoving machines in sufficient quantity and in proper working condition in case of emergency.
- The Director Agriculture shall arrange for protection of standing crops from damages and diseases that may be caused from the stagnant rainwater in the fields. He/She shall manage required machinery from mechanical wing and must have the inventory of such machinery and equipment.
- The Deputy District Officer Livestock and his/her staff shall ensure safety of livestock from flood diseases and losses and Veterinary Officer shall ensure regular and timely vaccination of cattle in the district. They shall make all necessary arrangements for fodder for the livestock to be shifted from marooned areas.
- The Deputy Controller, Civil Defense should ensure the enrolment of volunteers as early as possible in order to avoid any chaotic situation during emergency. He/She will continuously remain updated of weather forecast reports and with meteorological departments and will arrange for warnings in emergency through sirens, loudspeakers and media at Taluka and town level. He/She shall ensure presence of the volunteers and scouts for rain relief and rescue activities in case of any emergency.
- The Deputy Director Food shall ensure availability of sufficient stock of wheat and other grains and shall coordinate with Deputy Commissioner for supply of food grains from local food grain dealers in case of need. He/She will also ensure that no stocks of government wheat, placed at depots, are damaged due to water accumulation, fire or rioting.
- The Divisional Engineer Telephone should ensure full function ability of telephones all over the district and provide assistance to all departments on demand at the time of need.
- Continuous supply of gas and proper safety of gas lines in the district must be ensured. Immediate repair work should be performed in case of any damage to the gas lines.
- The Deputy Commissioner shall ensure mobilization of the NGO's and business community in the rescue and relief activities in case of emergency and shall depute volunteers on different emergency tasks.
- The Regional Director Information shall keep close liaison with all control rooms of the district to provide correct and exact information to media regarding emergency. He/She shall also arrange briefings about the latest situation in case of emergency.
- The Red Crescent Society and other welfare associations and NGO's of the district shall provide food packets and other required material to the affected persons in relief camps in case of emergency.
- Proper arrangement for lifting of trees fallen due to heavy rain and gusty winds from the main roads shall be made by the Executive Engineer Provincial Highways department.
- The in charge Utility Store Corporation shall ensure the availability of sufficient stock of edible items in case of need.

- The Revenue Department shall also conduct the survey of any loss of life, houses, cattle, standing crops and other infrastructure after the disaster. In the event of the highest degree of emergency, Pakistan Army may be requested to help the district administration in rescue and relief operations.

11.5 Implementation and Monitoring

*11.5.1 **Indicators***

- **Quantitative Indicators**
  OECD (2002) defines an indicator as a ‘‘quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor.’’ Quantitative indicators are numerical representations of complex phenomenon. Quantitative indicators can be useful in determining the level of achievement at all stages of a resilience project and can even be used to measure the strength of resilience characteristics, though this is better attained by using qualitative indicators[41].

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

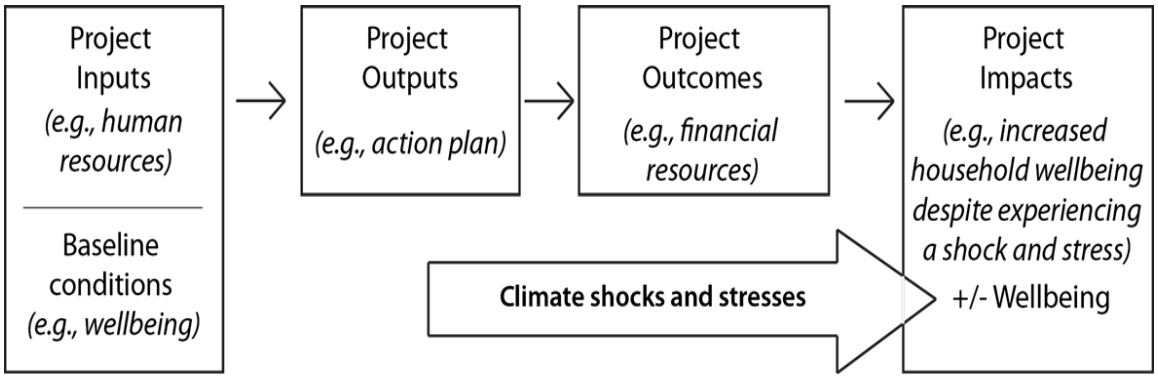


Figure 11-2 : Four phases of a resilience initiative, and the timing of baseline and post-shock measurements of wellbeing (Brown, et al., 2018)

[41] 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

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.

- **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).

- **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.

- **Identified Indicators[42]**

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.

[42] 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

Building Technical Capacity to Generate Vulnerability Assessments to Floods

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

Institutional Framework and Mechanisms to Support Adaptation and Adaptive Capacity

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

11.5.2 Responsibility of Plan Implementation

Table 11-2 : 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

11.5.3 Monitoring and Evaluation[43]

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

- Measuring against project objectives
- Measuring against baselines
- Measuring against emerging understanding of good adaptation measures

a) Measuring against Baselines

Baseline comparisons can be used to monitor and evaluate the effectiveness of climate resilience initiatives. During this process, an initial measurement is taken (e.g., number of civic organization per 10,000 people). This measurement is then taken at different stages of the project to measure the effectiveness of strategies used to improve that particular indicator. This approach could be applied to resilience characteristics (e.g. flexibility). In order to do this, a more qualitative assessment (subjective scoring from 1 to 5) could be employed to create a baseline value.

b) Measuring against Definitions

Relatively straightforward definitions exist for climate adaptation, but in the context of resilience – with its emphasis on system level interaction and inherent qualities – this approach can prove to be much more difficult. How you define resilience is a key determinant in how the monitoring and evaluation approach will be adopted. For example, if resilience is defined as a decrease in post-disaster recovery time, specific indicators will be evaluated which would not be useful when concerned with the resilience characteristics with cities.

c) Measuring against Project Objectives

As mentioned above, the objectives of a resilience program differ depending on the way resilience is defined and also at which phase of the project the assessment is being made. Alexander et al. (2016) define process as the ‘‘inputs, throughput and outputs of the decision-making process,’’ outcomes as ‘‘the implementation of the outputs from the decision-making process’’ and impact as ‘‘the resulting effect of the decision-making process and outcome’’. Similarly, Spearman and McGray (2011) use the following sequence: inputs, initiatives, outputs, outcomes, and impacts. Monitoring and evaluation can take place at each of these temporal locations (i.e., process, outcome, impact). Many people also advocate that monitoring and evaluation be carried out throughout the duration of the project rather than just at the beginning and the end of the project.

[43] 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

d) Key Principles of Monitoring, Evaluation and Reporting System[44]

- **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.

- **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.

- **Stakeholder Engagement**
  Empowering stakeholders and ensuring their active contribution to the monitoring and reporting process is a key feature of the monitoring and evaluation system. The monitoring and reporting system is rooted in the desire to maintain a programmatic approach in the implementation of the investment plans through projects and programs. It aims to engage the stakeholder groups, including government institutions at national, sub-national and local levels, as well as civil society, local communities and the private sector, in discussing progress with the implementation of the monitoring plan. The monitoring and reporting process will also be used to share lessons learned and discuss the challenges encountered with a view to identify feasible solutions.

- **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.

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

12. 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 Sanghar DHQ town up to 2037, under the present governance framework of Government of Sindh.

12.1 Process of Implementation

The implementation of development plan is basically the process of prioritizing, phasing, coordinating, budgeting, scheduling, monitoring and making adjustments. There are number of management systems and charting procedures available to help a city manager to control this process. Issues that must be addressed in this regard are:

- Determine priorities within and among the sub plans
- Determine the phasing or sequence of activities among the sub plans.
- Address timeframes and budget availability
- Creating master schedule of activities with a progressive cost table so that the program can be appropriately expanded or contracted to meet implementation contingencies and budget fluctuations.
- Assign the various activities to be undertaken by qualified managers.
- Establish a timely monitoring and report system to keep the city officials and the public informed of progress and activities.

12.2 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 Sanghar 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 Sanghar. The concerned agency must ensure that the overall process must go after following themes of implementation process.

The overreaching theme of the implementation of Strategic Development Plan Sanghar 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.

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

12.3 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.

i. ***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.

ii. ***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'*.**

iii. ***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.

iv. 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 Sanghar may develop their own regulatory frameworks/ building codec's to regularize the status of development with consent of local/provincial government authorities, if necessary.

12.4 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 Urban Management Unit would also facilitate the office of district coordinator/ deputy commission for all development/ implementation related (a) needs identification (b) revision of annual

plans (c) coordination (d) financial management and (e) monitoring of all development activities assigned to developers or government departments.

12.5 Implementation Schedule

Strategy:	**Programs/ Policies**
Balanced Urban Growth	**Land Use Zoning** Being away from the major transportation and development axes (National highway, Indus River, Pakistan railway), Sanghar is severely handicapped to facilitate industrial and commercial development. For this reason Sanghar does not benefit from a rich agricultural production which could support several agro-based industries in the city **Development Control** Amendment in Zoning Bye laws Restrict the provision of utility services for approved planned areas Land Use Control especially regularization and formation of Kactchi Abadis. The housing density is quite high in the core urban area of causing congestion and issues of poor light and ventilation (Proposed Vertical growth options) **Transportation** Strong network of inter and intra city Transport. **Roads** Need Dualization & Rehabilitation of Existing Roads.
Responsibilities to Plan: Detailed Urban Design Strategy Development Assessment Impact of property Assessment Environmental Impact Study (EIA,IEE)	**Implementation Responsibilities:** Public Sector/ Private developers
Concerned Agencies: P & D Department Government of Sindh/ District Government/ Line Departments of local Government /Private Developers	**Time of Implementation:** Short Term (1 year to 5 Years) Long Term (5 years to 20 Years)

Strategy:	**Programs/ Policies**
Future Transport Sector Development & Improvement	**(A)Traffic Management Program** 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 **(C) Congestion Reduction in Core Urban /CBD Area** 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). Construction / Rehabilitation Of Water Supply Network Improvement of Water Intake Works
Responsibilities to Plan Need Assessment/Demand & Supply Study Separate Master Plan for water supply and infrastructure development plan	**Implementation Responsibilities** Public Sector/ Private developers
Concerned Agencies Provincial / Local Government/ Public Health Engineering Department	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (above 5 years)

Strategy: **Drainage & Sewerage System Improvement**	**Programs/ Policies** Improvement and reconstruction of existing Combined system of sewerage and drainage (Phase-wise approach of replacing open drains with covered sewers of PE pipes). Provision of wastewater treatment plant.
Responsibilities to Plan Need Assessment/Demand & Supply Study	**Implementation Responsibilities** Public sector / Private developers

New Master Plan for Drainage & Sewerage services improvement.	
Concerned Agencies Provincial / Local Government/ Public Health Engineering Department Municipality (MC)	**Time of Implementation** Short Term (1 year to 5 Years)

Strategy: **Solid Waste Disposal System Improvement**	**Programs/ Policies** Immediate designation of walled Landfill *Site* with special attention for hospital waste disposal. Collection and disposal of solid waste through specialized waste management companies.
Responsibilities to Plan Disposal Generation Assessment Study New Master Plan for Solid Waste Disposal System improvement.	**Implementation Responsibilities** Public / Private Sector
Concerned Agencies Provincial / Local Government/ Public Health Engineering Department Municipality (MC)/ Sindh Solid Waste Management Company SSWMB	**Time of Implementation** Short Term (1 year to 5 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)

Strategy: **Improving Fire Fighting Capacity**	**Programs/ Policies** Establishment of fire-stations to accommodate required number of fire vehicles. Establish sub-stations at different locations to ensure short response time for the whole city. Increase service efficiency through number of vehicles, dedicated staff and financial mechanism. To ensure readiness of all vehicles with ample stocks of POL and spares.
Responsibilities to Plan Assessment on Municipality's firefighting potential	**Implementation Responsibilities** Public Sector
Concerned Agencies Sanghar Municipal Committee.	**Time of Implementation** Short Term (1 year to 5 Years)

Strategy:	**Programs/ Policies**
Energy (Gas, Electric Power, Energy Generation through Alternate Resources)	Development of alternative energy resources such as wind, solar and bio-gas etc. To Improve existing infrastructure of WAPDA Solar street lights project Energy generation through solar panel system for residential and commercial purpose. Installation of Gas Network for entire DHQ Town.
Responsibilities to Plan	**Implementation Responsibilities**
Demand and Assessment of various energy resources. Feasibility study for solar Park Rehabilitation of solarized street lights.	Public/ Public Private Partnerships
Concerned Agencies	**Time of Implementation**
SSGC-Sui Southern Gas Company WAPDA Developers	Short Term (1 year to 5 Years)

Strategy:	**Programs/ Policies**
Health Sector **Improve access to healthcare facilities & minimize the long journeys to access basic medical facilities**	Check and balance to accomplished existing health care projects. Addition of 5020 beds to achieve the target of 2 beds per 1000 district population Hiring of 2229 doctors and paramedical staff to cater future population. Installation of incinerators.
Responsibilities to Plan	**Implementation Responsibilities**
Health reforms	Public Sector and Welfare Agencies
Concerned Agencies	**Time of Implementation**
State Government/District Health Department. Provincial and District Health Department	Short Term (1 year to 5 Years) Long Term (above 5 year)

Strategy:	**Programs/ Policies**
Education Sector Strategy	Short term plan provision of 231 classrooms at school and college level. Repairing of school existing buildings with furniture Training of teaching staff 10,548 additional classrooms (school and colleges) by 2037 New schools and colleges for estimated population of 1, 14,541.
Responsibilities to Plan	**Implementation Responsibilities**
Education Infrastructure Improvement Mater Plan	Public Sector
Concerned Agencies	**Time of Implementation**
Provincial Government/District Education Department.	Short Term (1 year to 5 Years) Long Term (more than 5 years)

Strategy:	**Programs/ Policies**
Improving Recreation Sector	Repairing of existing recreational facilities and completion of under construction work. Introduce financial mechanism i.e. facility use charges, to generate revenue to make them self-sustaining. Special arrangement for security, parking and alternate route during religious and cultural activities in the city. Provision of missing facilities in existing Gymkhana Rehabilitation and construction of family parks and playground Feasibility Study For Conservation/ Rehabilitation Of Heritage Site Facilitate annual festivals that are being celebrated in this district.
Responsibilities to Plan	**Implementation Responsibilities**
Provisions of New Recreation sites	Public Sector

Concerned Agencies	**Time of Implementation**
Provincial Government / Culture, Tourism & Antiquities Department/ Government of Sindh/ District / Local Government / TMA	Short Term (1 year to 2 Years) Long Term (More than 5 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.

Responsibilities to Plan	**Implementation Responsibilities**
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.	Public Sector and National /International Welfare agencies
Concerned Agencies	**Time of Implementation**
NDMA/PDMA/ P & D department Gos/ SUPARCO/ Provincial Irrigation Department Gos/ Line departments of local government/District Disaster Management Authority.	Short Term (1 year to 5 Years)

Strategy	**Programs/ Policies**
Economic Development	Rehabilitation of Infrastructure in existing Small Industrial Estate (roads, street lights, parking for loading/unloading goods vehicles, etc.) Increase strategic storage through construction of cold storage / Godowns for agro products to cater drought situation. Provide good incentives near peripheries for shifting / re-location of whole sale markets from the inner city to reduce congestion. Encourage Local Private Investors by giving them subsidies. Consider changing trends of crop production through periodically revise Economic Policy Framework (feasible studies for economic potentials) Ensure measures for security / risk recovery plan for economic zone. Market and logistics should also be added to enhance trade and commerce. Livestock and dairy sector needs to encourage and facilitated. Centralize wholesale markets to create connectivity with regional markets. Drought measures

Responsibilities to Plan	**Implementation Responsibilities**
Feasible studies for economic potentials	Public /private developers
Concerned Agencies	**Time of Implementation**
Provincial Government/District Government/Local Government/Mithi Chamber of Commerce and Industries	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
Sanghar 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, Governement of Sindh with effect from May 2017. The Unit

[1]United Nations Development Group, Reference Guide to UN Country Teams -Mainstreaming the 2030 Agenda for Sustainable Development, March 2017 Update

contributes towards accelerating progress on SDGs in the province by working through following four approaches:

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 - Sanghar 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]17.3% of the DHQ town Sanghar 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 Katchi 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	75% 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 Sanghar DHQ town in the future.	o The total extent of the area included in the overall proposed Sanghar Master Plan is 41,200 acres approx. for a population of 416,000 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	• Mir Shahdad Jo Qubo, the tomb of Mir Shahdad Talpur, who is	• Protection of historical places and cultural heritage • Development and preservation of 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)	regarded as one of the finest military commanders of Sindh, is one of the historical heritages of Sindh and is located in Shahpur Chakar, at a graveyard of the family members of Mir Shahdad Talpur. • Mansura, ruins from the seventh century A.D. • The Hameer Faqeer Dargah. • Jheol • Sohni Mahiwal Tomb of Sohni in Shahdadpur		(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 Sanghar DHQ town is 34 tons per day. Regular collection	- The collection and disposing of solid waste is the responsibility of the TC. - The collection system needs to be made more effective and efficient. - Town Municipal Committees has already initiated some work on	The Sindh Solid Waste Management Board Act, 2014 [11]

[10] Municipal Committee Sanghar
[11] http://www.pas.gov.pk/uploads/acts/Sindh%20Act%20No.IV%20of%202014.pdf

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	including by paying special attention to air quality and municipal and other waste management	total urban solid waste generated, by cities	by municipal is about 65-75%	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 particular for	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% (18.7 acres)park area is available in Sanghar DHQ Town	• Existing open spaces in core urban area should be restored and maintained. New open spaces should be identified and created. • Development and preservation of cultural heritage	Adopt-a-park policy 2019 (PPP unit, Finance dept. GoS) is still in progress

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	women and children, older persons and persons with disabilities	persons with disabilities	(1968 acres) 7.96 Sq KM[12]	• 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. • 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.	• 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 • Consolidation of services, for improved service deliver and better impact.

[12] Based on Landuse Calculations
[13] Poverty Reduction Strategy for Sindh

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
				• 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	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	11.b.1 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line	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	National Disaster Risk Reduction Policy 2013[14]

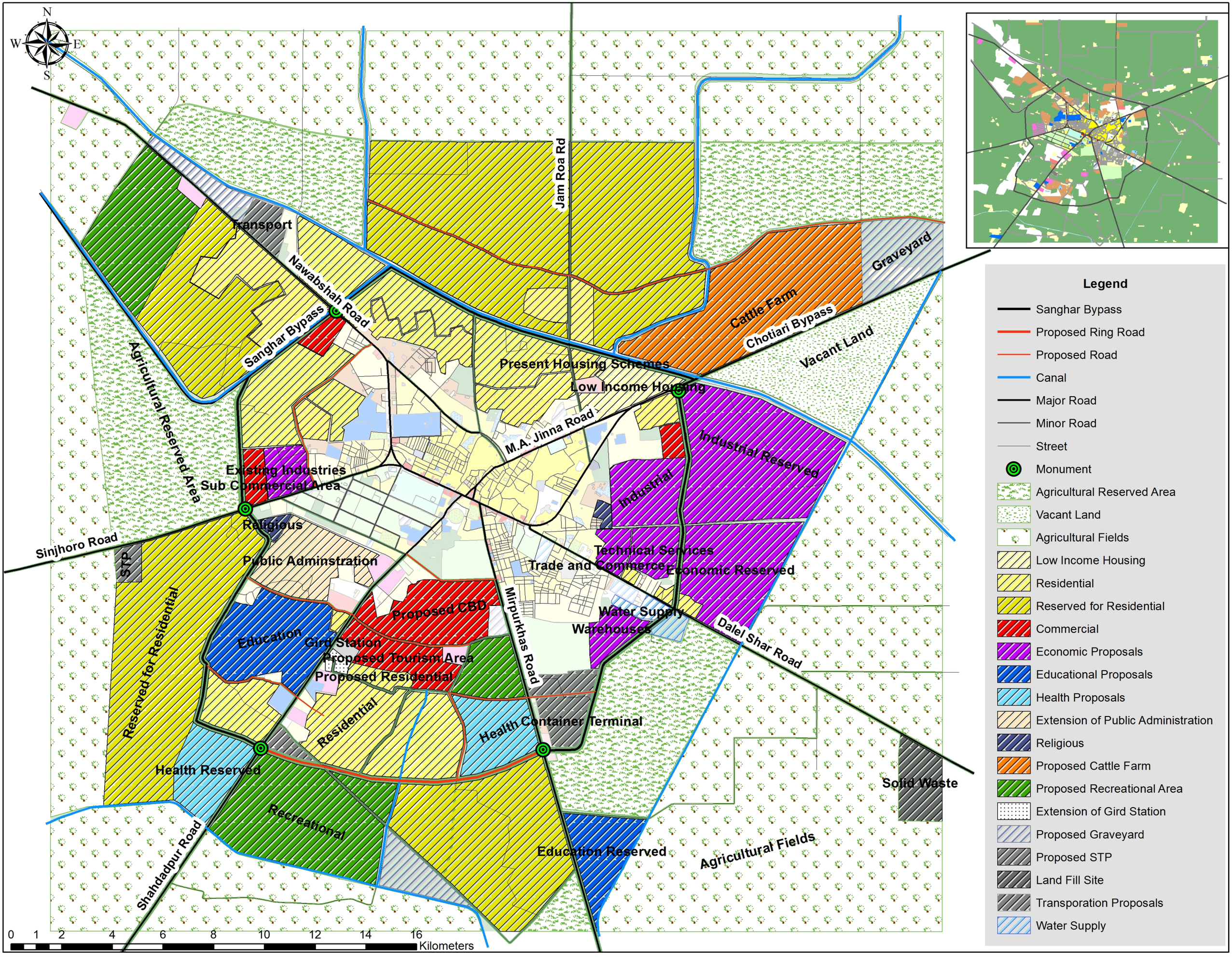
[14] http://www.pdma.gos.pk/new/resources/Sindhidrr-policy.pdf

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, 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	with the Sendai Framework for Disaster Risk Reduction 2015-2030a 11.b.2 Number of countries with national and local disaster risk reduction strategies		prioritization exercises and/ or disaster preparedness planning. • Arrange medical teams for providing medical cover to the IDPs settled in any relief camp. • Fumigate the affected areas and areas at risks of spread of any of epidemic disease. • Ensure that all ambulances are in working order and road worthy conditions. • Ensure vacant possession of all schools buildings at the time of emergency for setting up relief camps.	

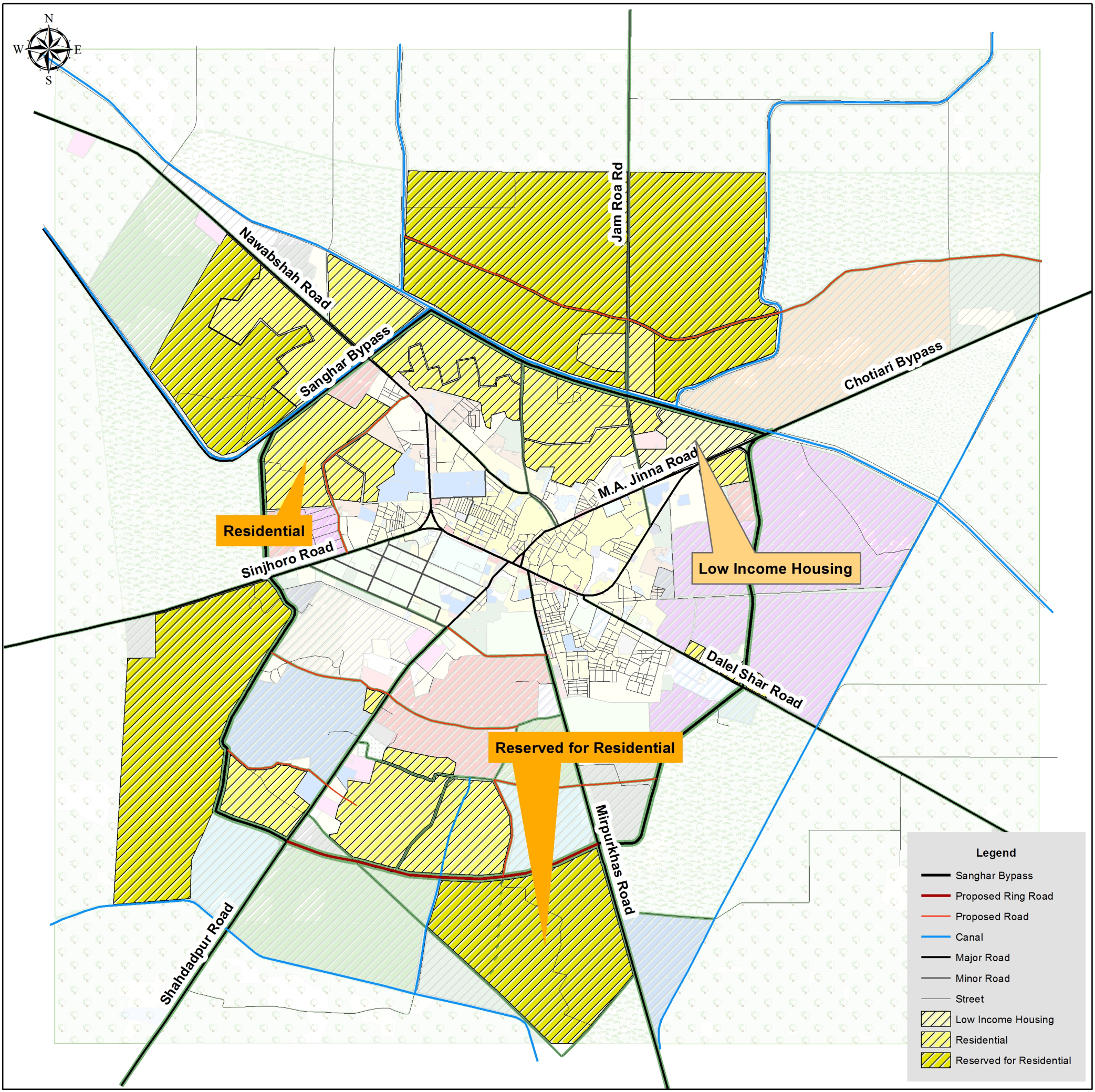
Annexure – B

Atlas

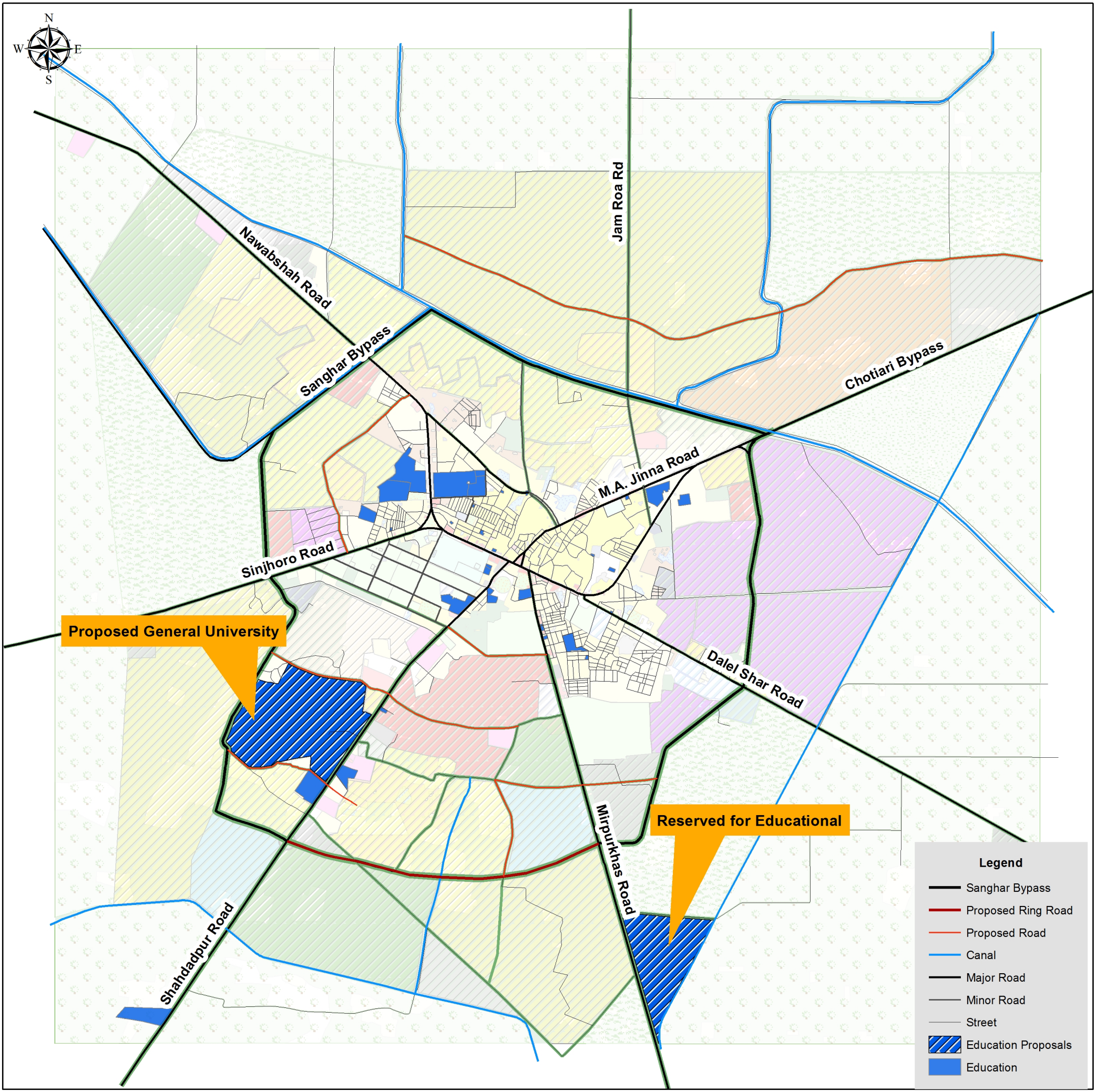
Proposed Master Plan for Sanghar Town



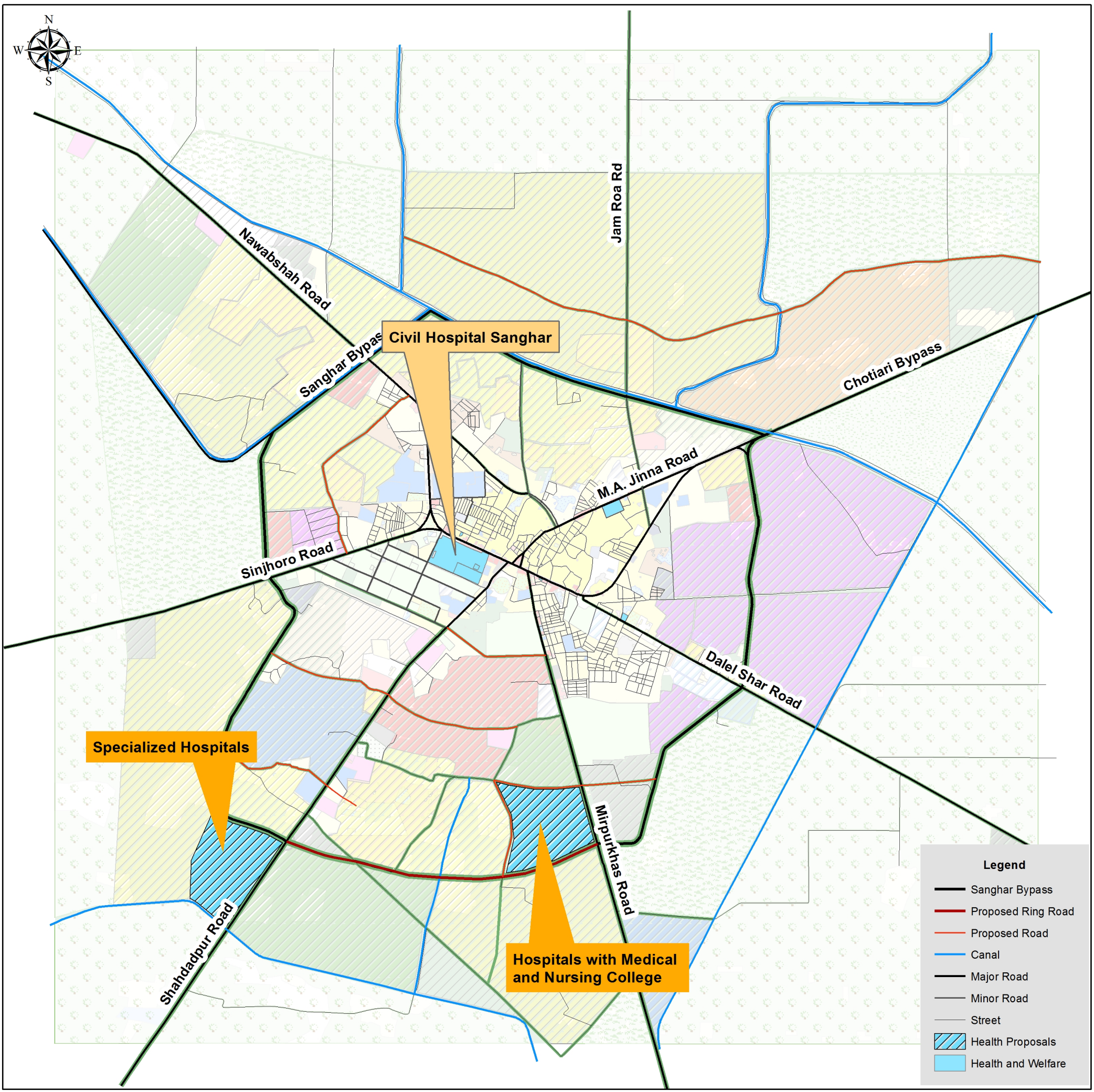
Proposed Residential Landuse for Sanghar Town



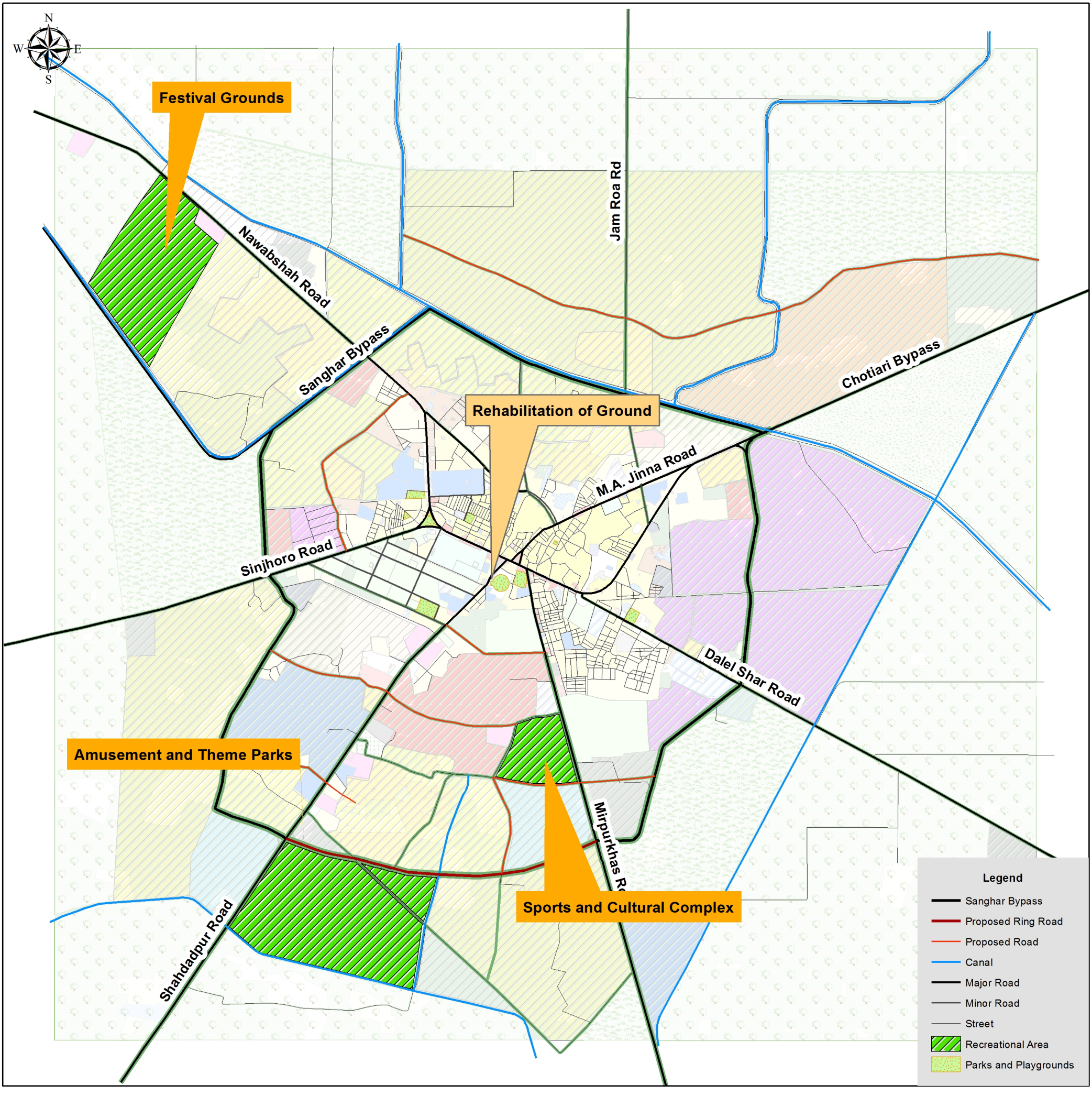
Proposed Education Landuse for Sanghar Town



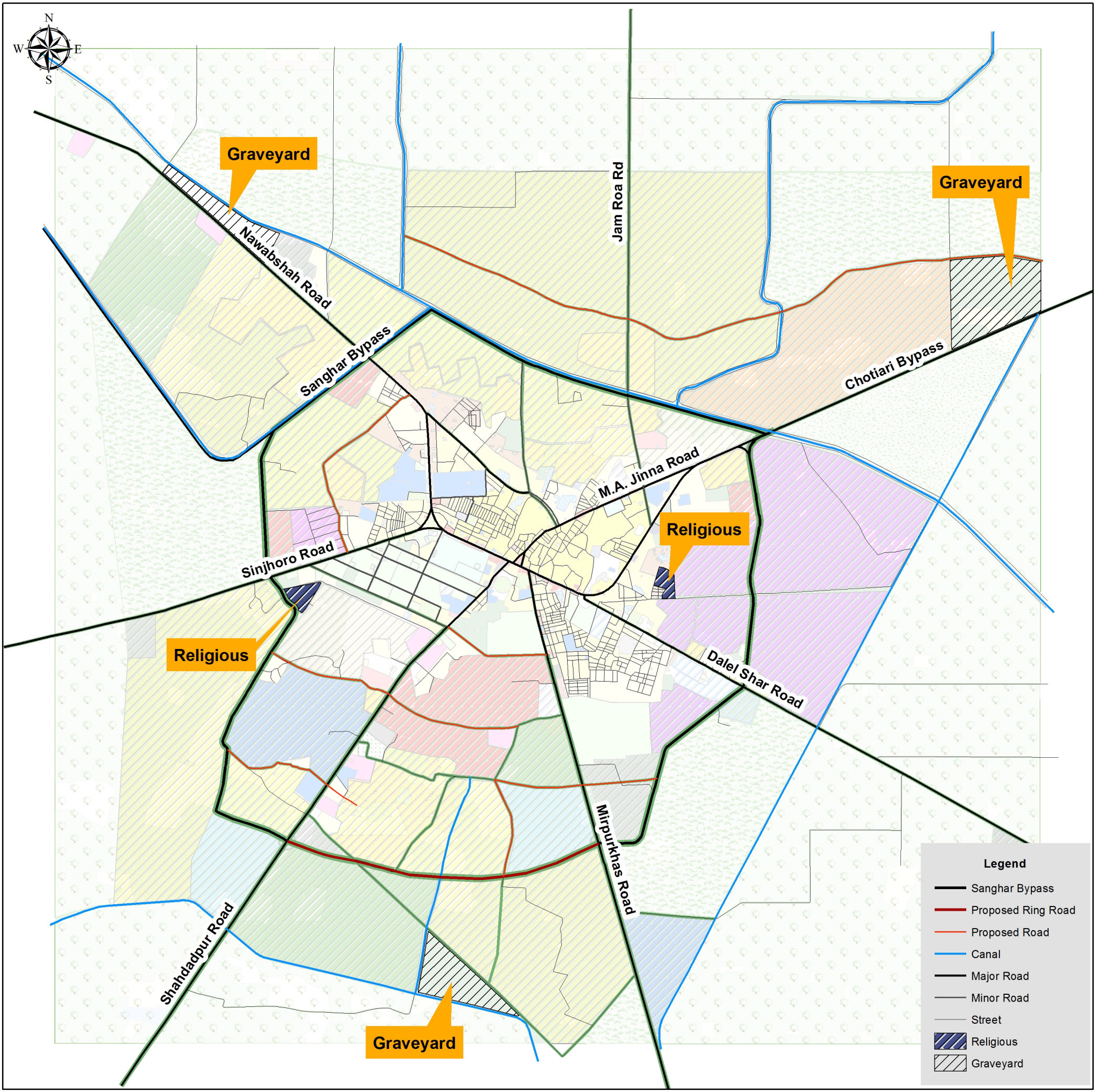
Proposed Health Landuse for Sanghar Town



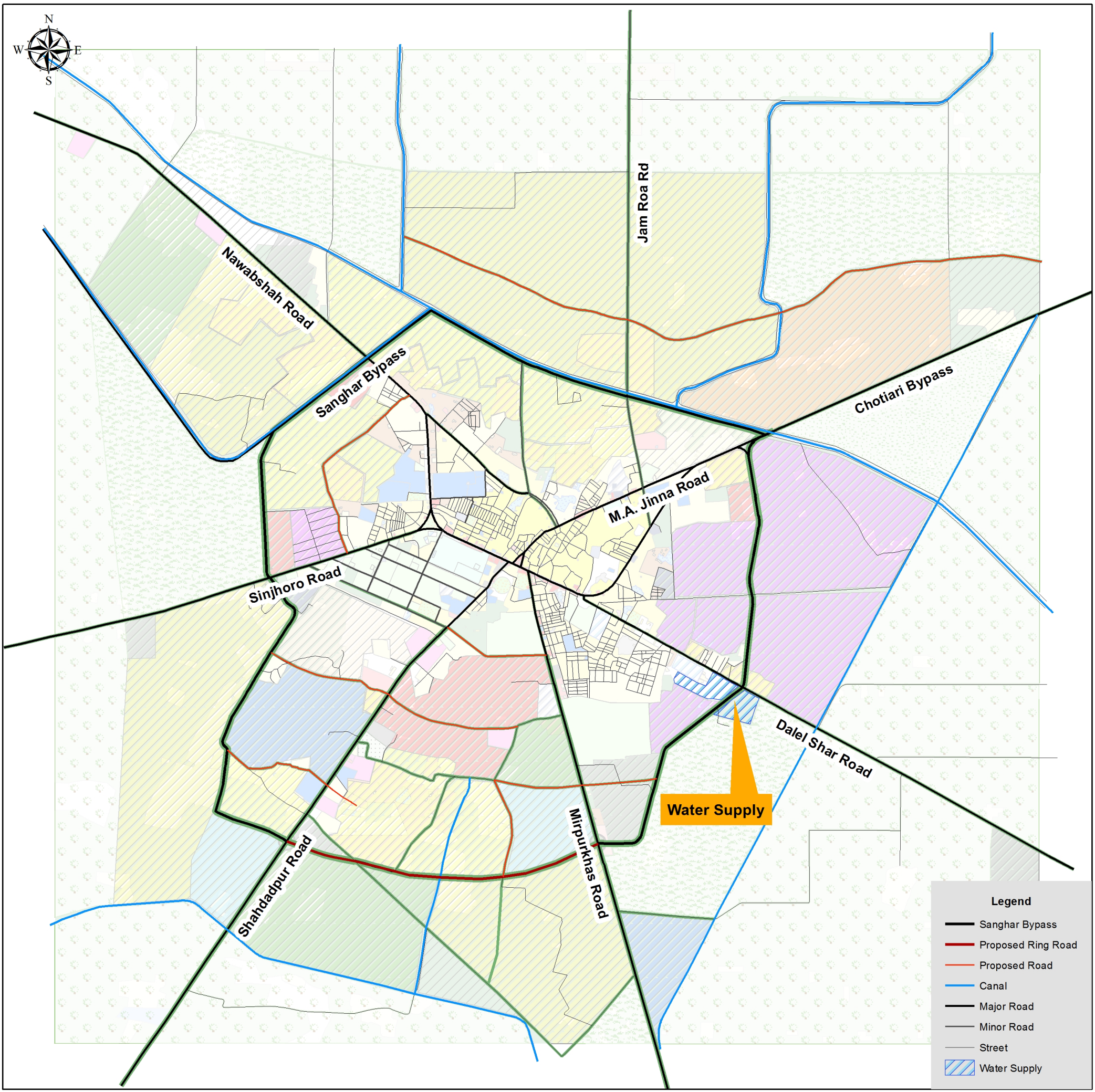
Proposed Recreational Landuse for Sanghar Town



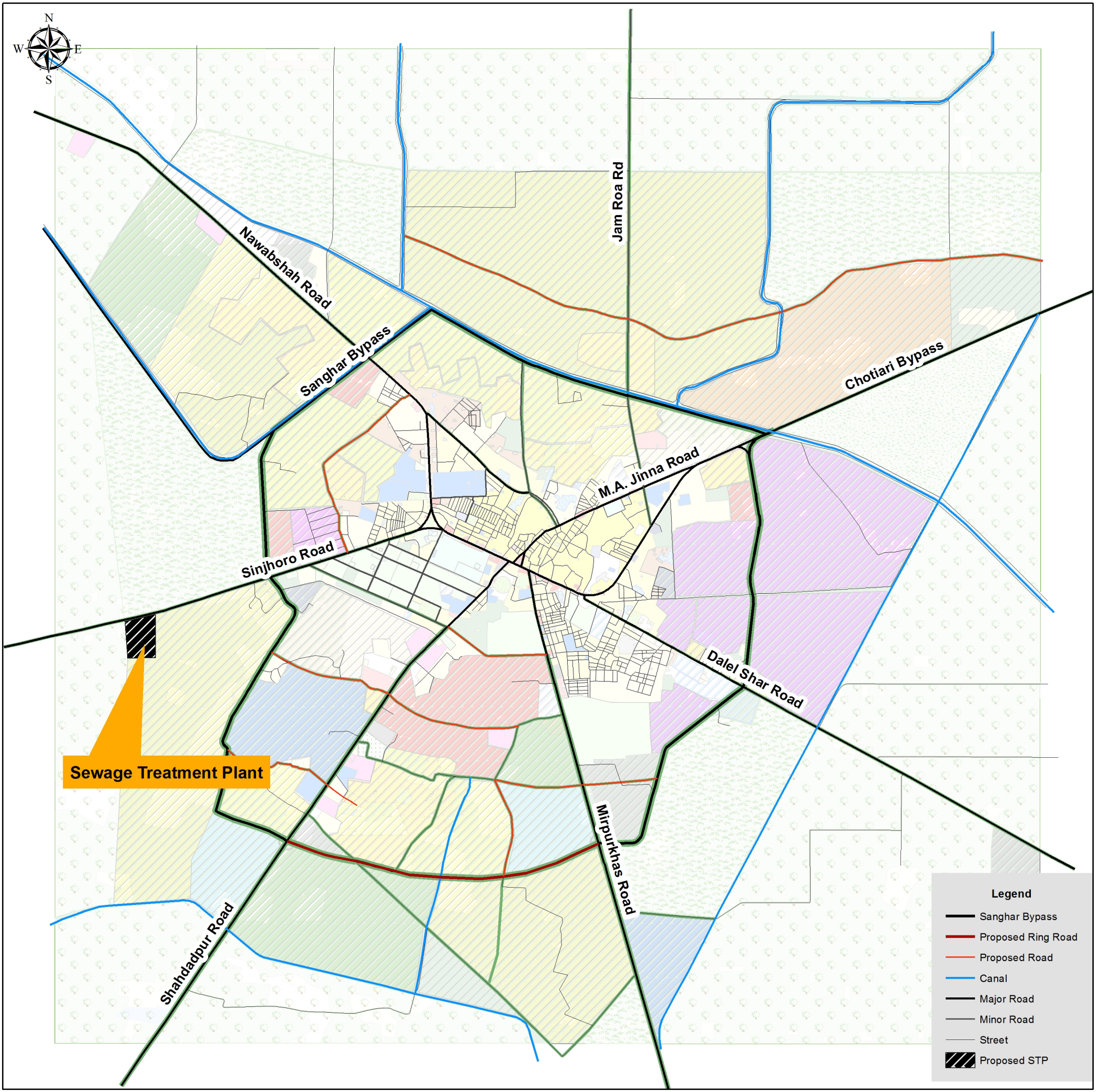
Proposed Religious Landuse for Sanghar Town



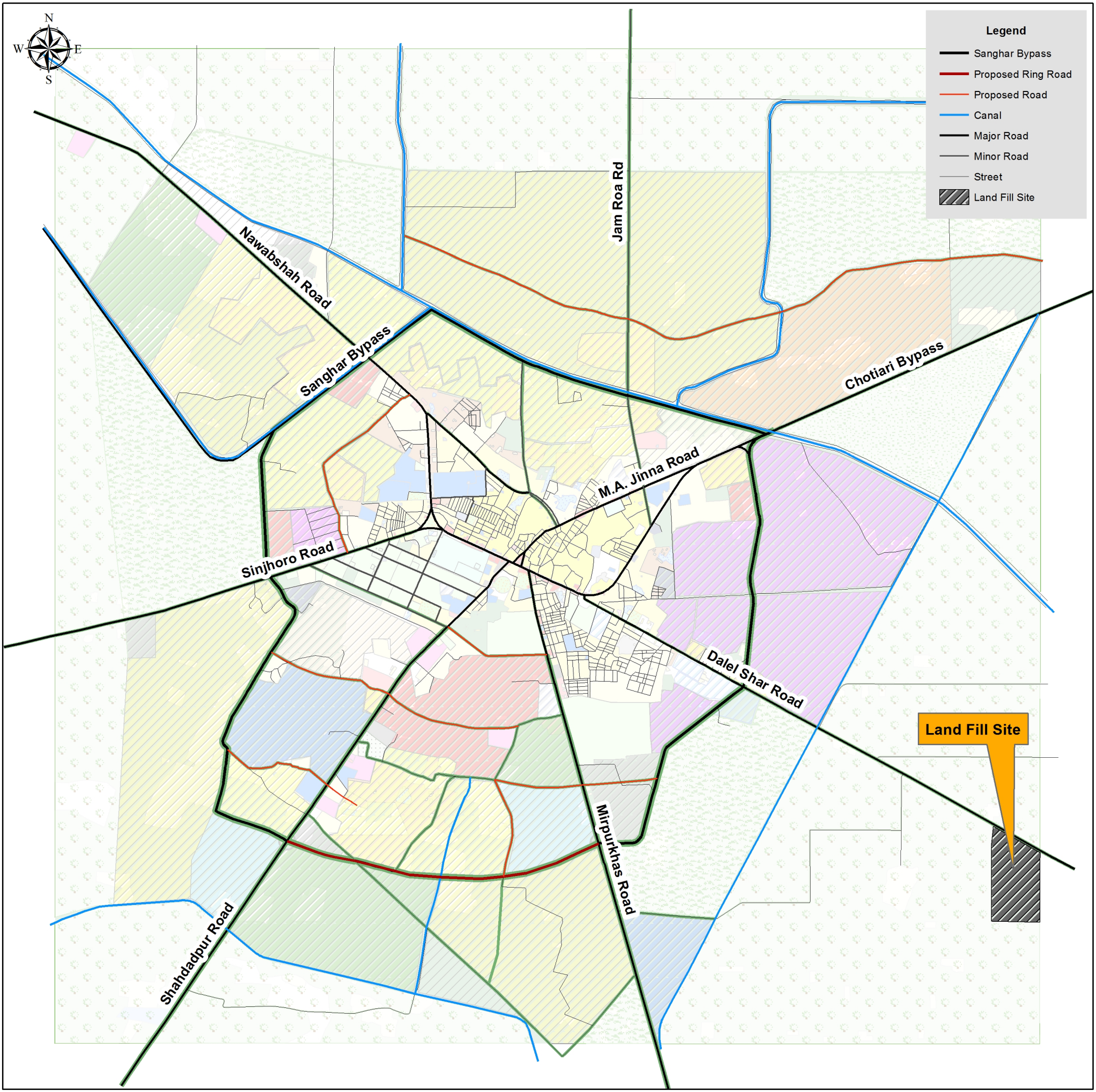
Proposed Utilities and Services for Sanghar Town



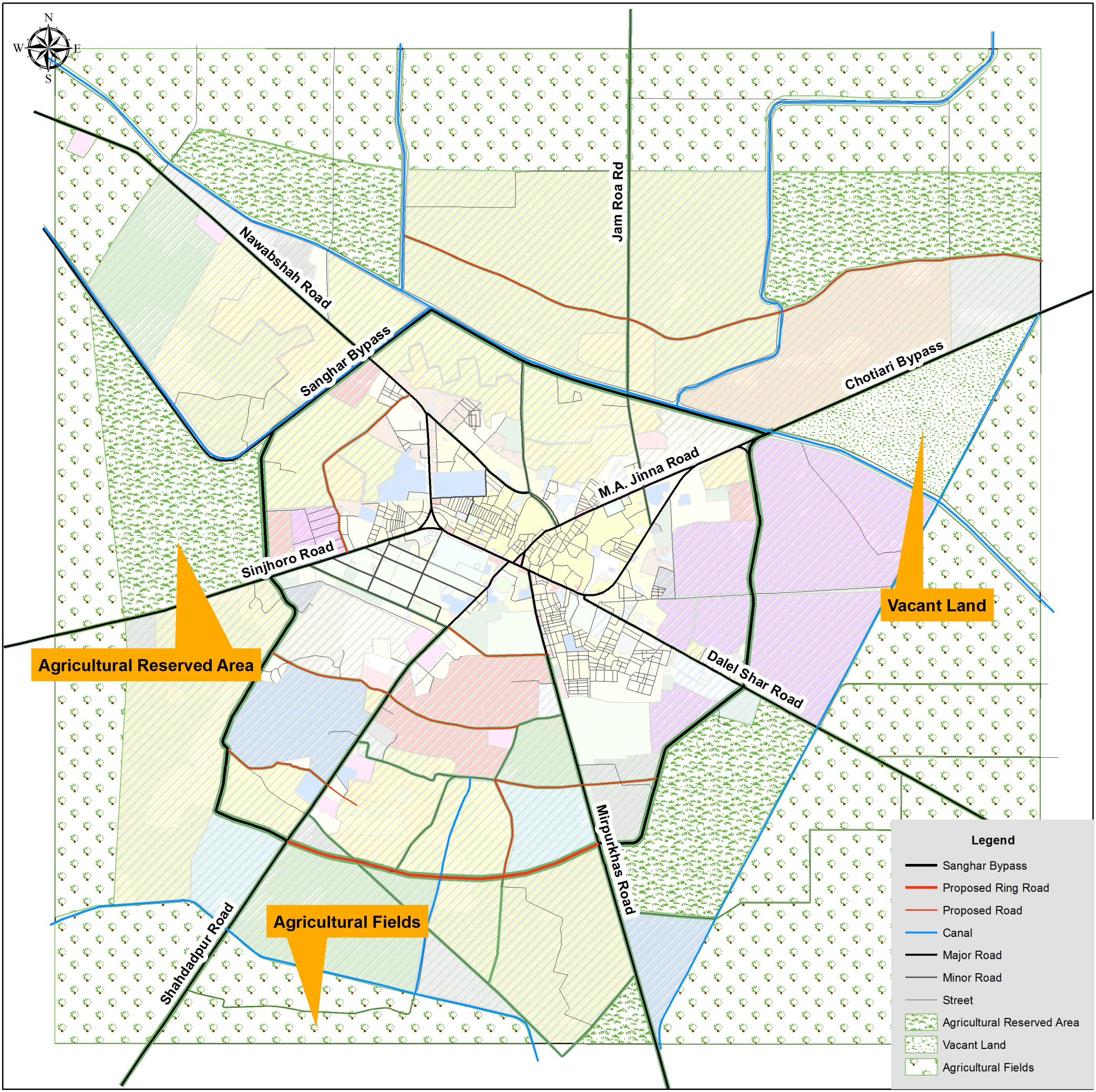
Proposed Utilities and Services for Sanghar Town



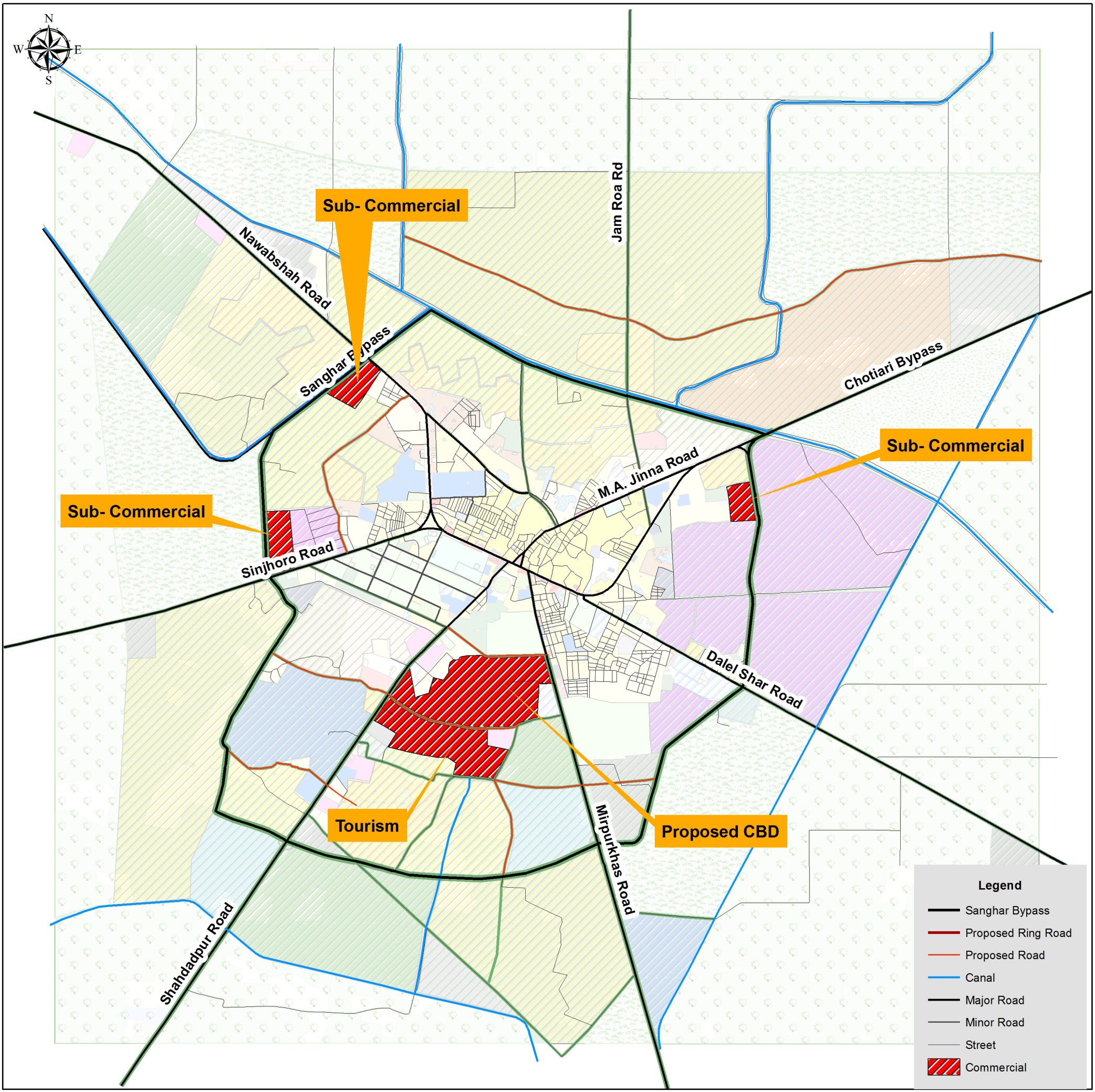
Proposed Utilities and Services for Sanghar Town



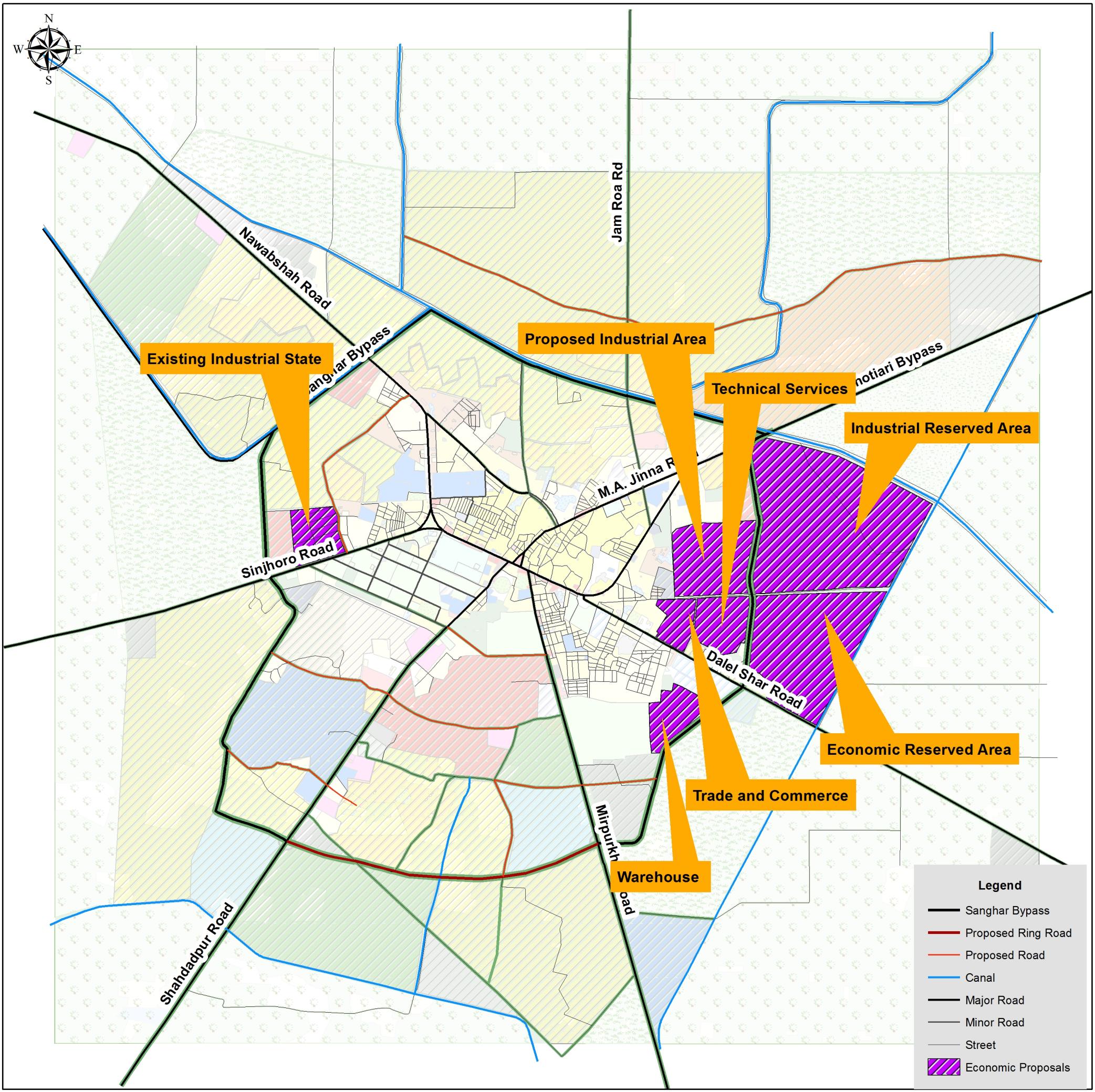
Proposed Agriculture Landuse for Sanghar Town



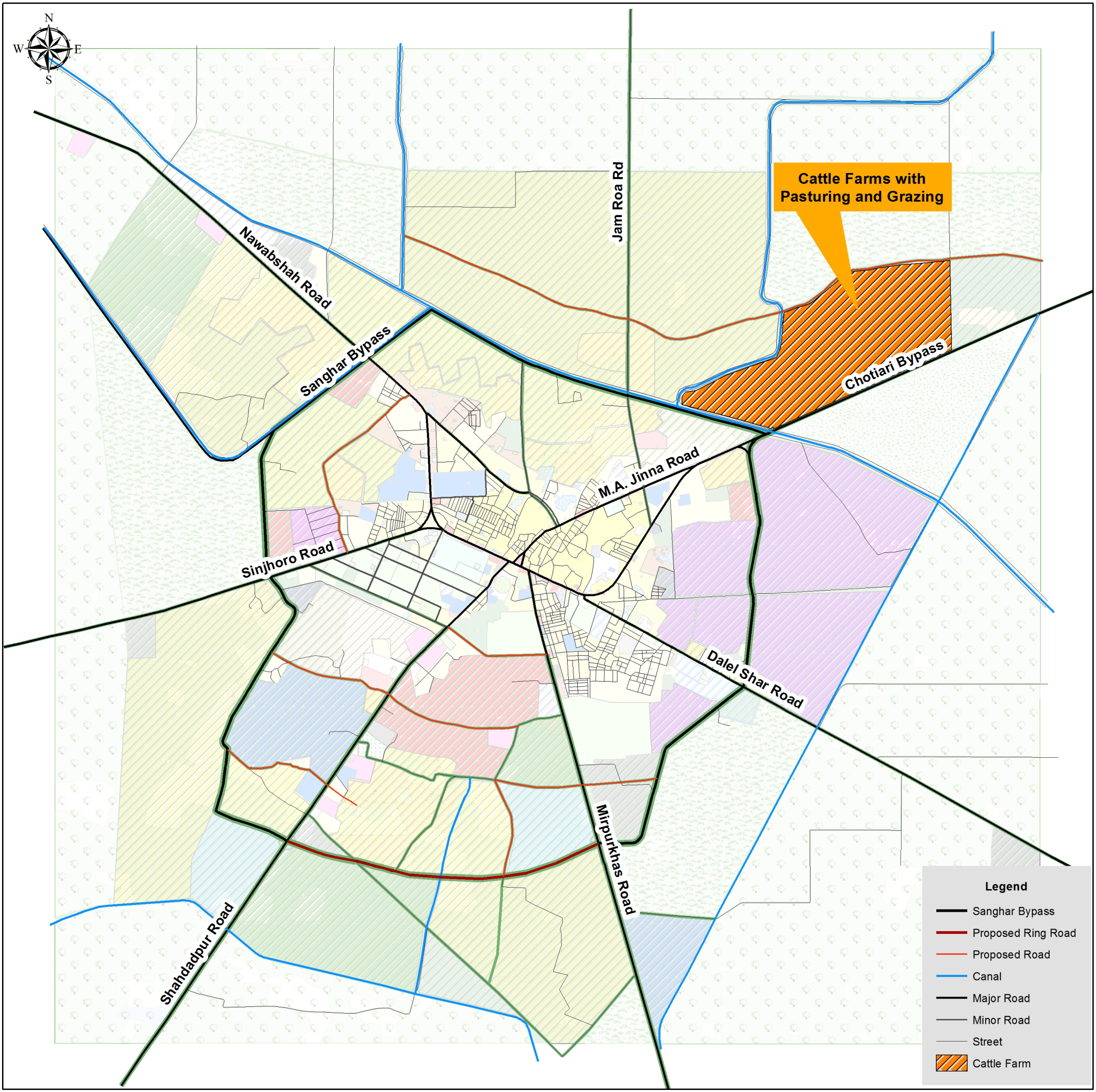
Proposed Commercial Landuse for Sanghar Town



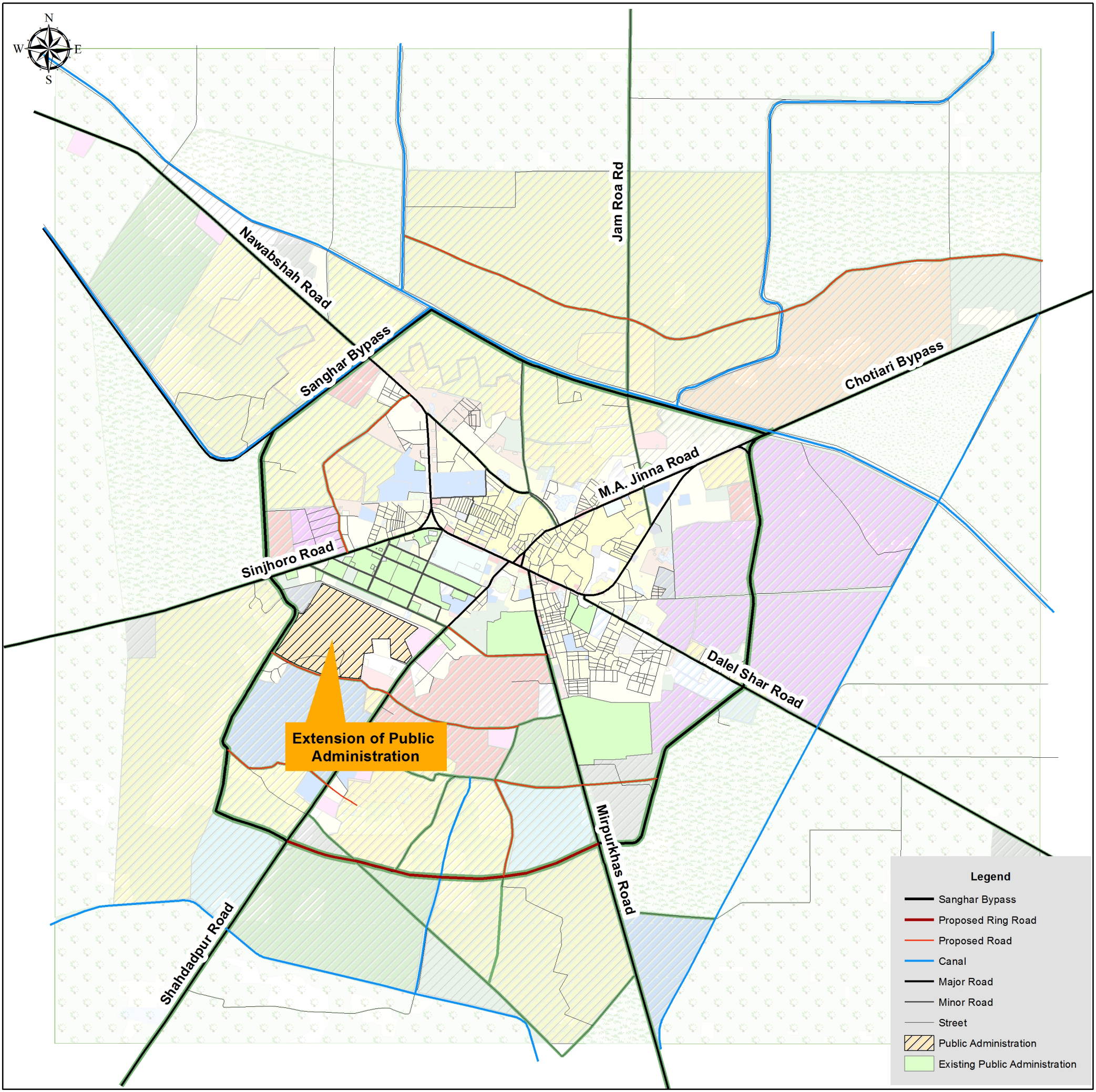
Proposed Economic Landuse for Sanghar Town



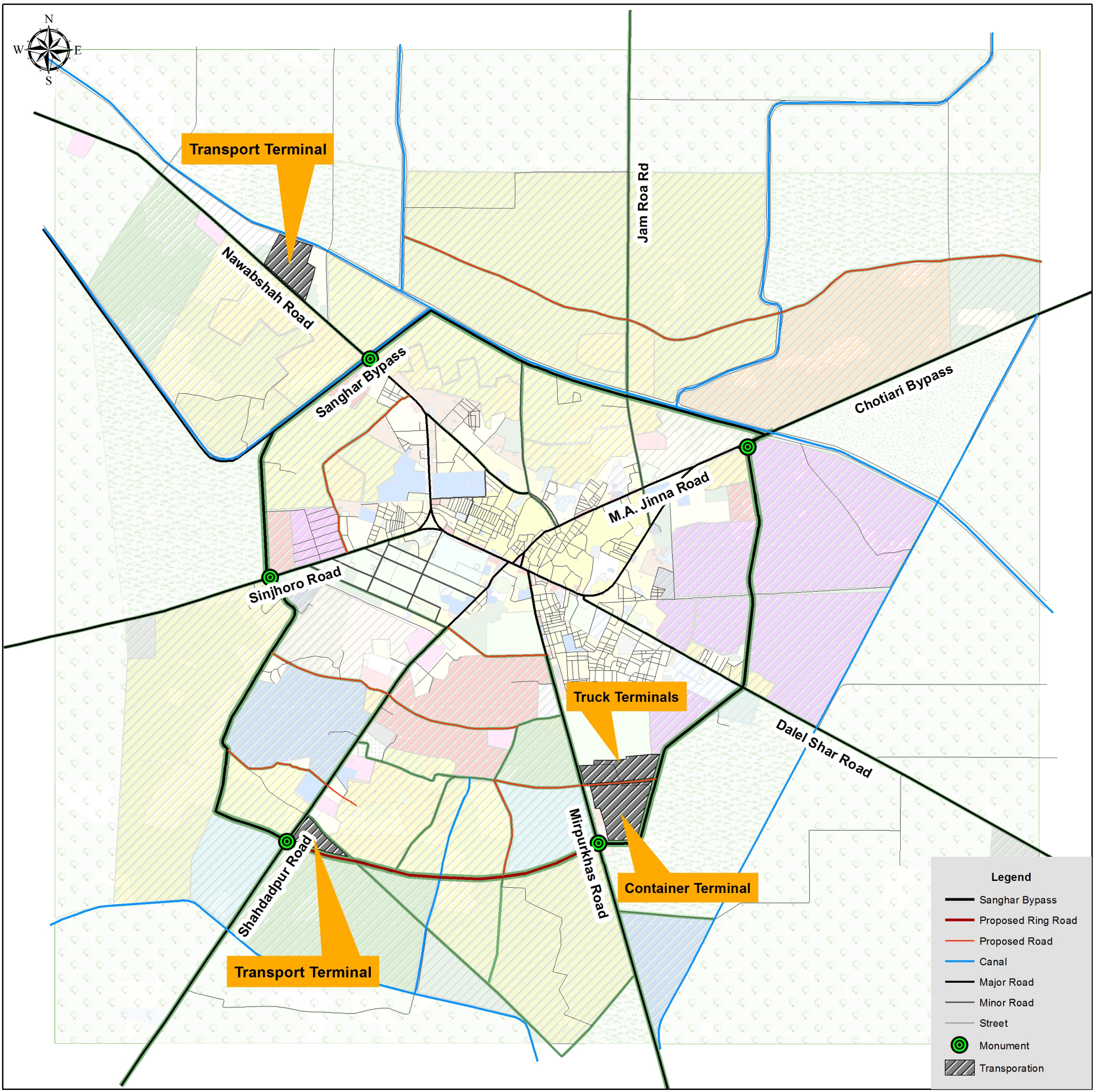
Proposed Livestock Landuse for Sanghar Town



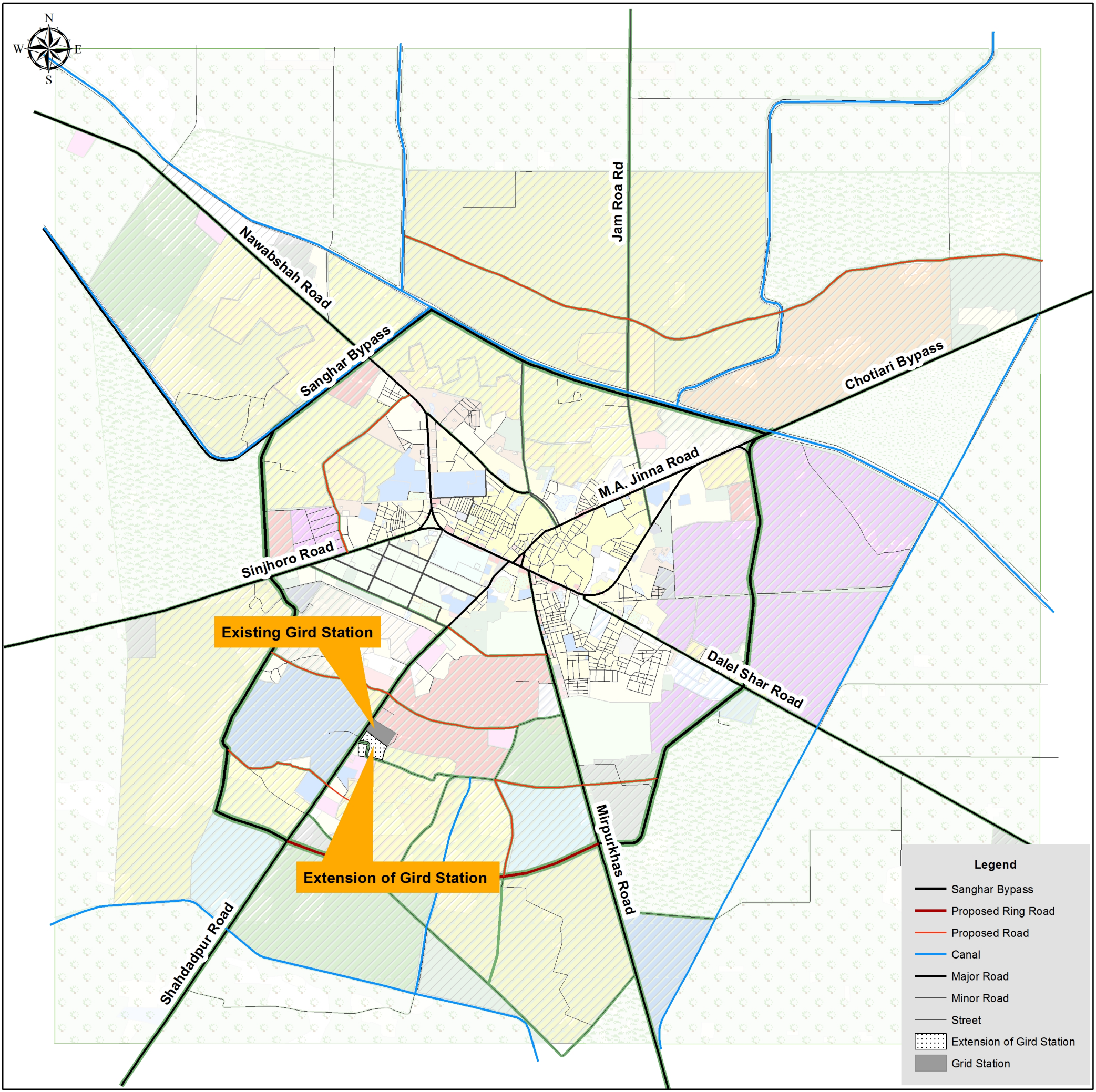
Proposed Public Administration Landuse for Sanghar Town



Proposed Transportation Landuse for Sanghar Town



Proposed Utilities and Services for Sanghar Town



Proposed Public Administration Landuse for Sanghar Town