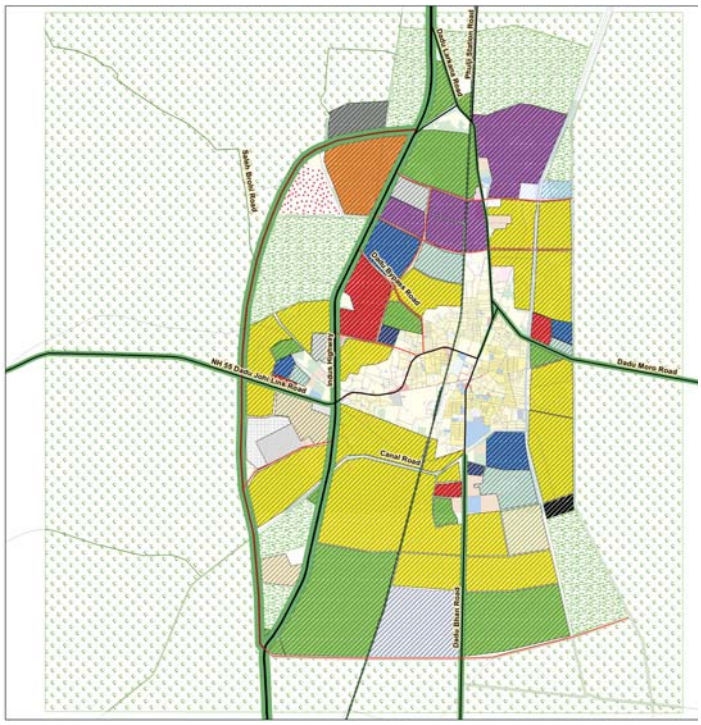
Directorate of Urban Policy Strategic Planning,
P & D Department, Government of Sindh

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)











Dadu

February, 2021

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MMP
MMP Pakistan (Pvt) Ltd.

TRANSMITTAL LETTER

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

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

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

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

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

STRATEGIC DEVELOPMENT PLAN REPORT – DADU

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LIST OF ACRONYMS AND ABBREVIATIONS

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

NPDMP	National & Provisional Disaster Management Policy
NRM	National Reference Manual
O&M	Operation & Maintenance
OH	Over Head
P&D	Planning & Development Department
PCU(s)	Passenger Car Units
PDAO	Planning & Development Act Ordinance
PDMA	Provincial Disaster Management Authority
PGS	Population Growth Scenarios
PH	Peak Hour
PHED	Public Health Engineering Department
PMTs	Pole Mounted Transformers
PR	Public Representative
PTCL	Pakistan Telecommunication Limited
RAP	Resilience & Adaptability Plan
RCC	Reinforced Cement Concrete
SAR	Situation Analysis Report
SB&TPR	Sindh Building & Town Planning Regulation
SBI	Sindh Board Of Investment
SDI	Spatial Data Information
SECP	Securities & Exchange Connection Of Pakistan
SED	Socio Economic Data
SES	Socio Economic Survey
SEPA	Sindh Environmental Protection Agency
SME(s)	Small Medium Enterprises
SOP	Standard Operation Procedures
SPPRA	Sindh Public Procurement Regulatory Authority
SS	Sample Survey
SSGC	Sui Southern Gas Company
STP	Sewerage Treatment Plant
SWM	Solid Waste Management
SWOT	Strength Weaknesses Opportunities Threat
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 AREA BRIEF

Dadu District is located in the west of Sindh Province. Dadu remained the largest district of Sindh till it was bifurcated and a new district of Jamshoro was created in 2004. Dadu District comprises of four talukas i.e. Dadu, Johi, Mehar and K.N. Shah. There are a total of 52 Union Councils. The climate of the district is extremely hot.

Dadu has its district headquarters at Dadu City. Mostly Dadu City is expanding towards the north-east and north-west directions. The built-up area of Dadu Town comprises of around 3,353 acres compared to expected urban sprawls over future urban area of 9,979 acres. The land use analysis indicates that almost 55% of the total urban boundary is in agriculture use. The zonal map of Dadu comprises of eight zones as; administrative zone, low density residential zone, industrial zone, institutional zone, zone consisting of schools, colleges and railway, security zone, new development zone and zone consists of old and new bus stations and NCHD office.

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 08, 2018. The stakeholders were mainly local citizens, government officials, businessmen and members 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 collection 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 most livable cities in the world."

C. DEMOGRAPHY

According to 1998 census the population of district was 1,106,717, population of Taluka was 327,972 and the population of Dadu MC was 102,550 with average growth rate of 2.65%, 3.34% and 5.80% respectively. According to 2017 census, the population of the district is 1,550,266, population of Taluka is 460,481 and the population of Dadu MC is 171,191 with an average growth rate of 1.79%, 1.80% and 2.73% respectively during 1998-2017.

Dadu has gone through a massive transformation so much in terms of infrastructure but mainly in terms of population dynamics. Projected population of Dadu MC works out to be 293,589 souls by 2037, at 2.73 AGR of 2017.

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, Dadu municipal area had household size of 5.5 persons and a total housing stock of 30,953. The major issues of the housing sector are inadequate supply of developed land, poor land administration, and housing in dilapidated condition, unaffordable housing cost for low income groups and unchecked growth of squatter settlements.

On the basis of projected Population for year 2037 the number of households have been estimated around 53,084 on fixed household size of 5.5 persons out of which additional housing requirement will be 22,131. The strategies for short term plan need to focus on incremental housing schemes, land bank formation, regularize notified Katchi Abadis, increase in number of small size plots and establishment of low income housing funds. The long term plan includes the development of cost effective approaches, fulfill the need

of small house units, affordable housing programme and formulation of green building byelaws. The priority projects should focus on the construction of housing schemes for low income people. The immediate action plan includes the regularization of land tenure, urban face lifting program, provision of modern street lights and development of green median.

2. Social Amenities

2.1 Education

53,546 children are enrolled in 538 schools with 1,255 classrooms and 13,826 students are enrolled in 25 high schools with 313 classrooms. According to present requirement schools are short of 530 classrooms and high schools are short of 148 classrooms on the basis of 30 students per classroom. The major issues are shortage of classrooms and teachers, low enrolment level, lack of provision of basic facilities, poor condition of educational institutions and lack of allied facilities.

The future need is 3,395 classrooms in schools and 2,934 classrooms in high schools by the end of plan period in 2037. The educational authorities should plan gradually by increasing the classrooms in existing schools in high density areas and new schools in low density areas. The spatial distribution of schools and other educational institutions should be that our schools, especially girl's schools are within easy walking distance. The strategies for the short term plan includes improving quality of learning outcomes, strengthening governance and enhancing the equity of resource allocation. The long term plan focus on the construction of new educational institutes, rehabilitation and improvement of existing schools and colleges and participation of private sector. The priority projects should focus on the addition of classrooms, improvement in the quality of education, training programme for teachers and establishment of vocational and skill training centres. The immediate action plan involves the rehabilitation of schools and colleges. The project for economic development plan is that the education department has initiated a programme in January 2018 for the rehabilitation, expansion and improvement of 4,560 Schools

2.2 Health

In district Dadu, there is one civil hospital, four THQ, 46 BHUs at district and five RHCs, 75 Dispensaries and 10 M.C.H.C. There are 48 private hospitals. The total number of bed are 500 serving the District Dadu. The NRM recommends 2 bed per thousand as the medium term target. On this basis approximately 2,601 beds will be required to be provided gradually. According to WHO (World Health Organization) standards doctor to population ratio is 1:1000 so taking that as reference, currently there are 1,114 doctors required for the present population of district. The major issues are insufficient health facilities, diagnostic and health equipment, difficulty in transferring patients from rural to urban area, large number of vacant posts of doctors and difficult access to healthcare facilities in rural area.

On the basis of NRM recommendation 3,921 beds will be required to be provided gradually until 2037. According to WHO standards the future requirement of doctors comes out to be 1,774. The strategies for short term plan includes to improve access to healthcare facilities, improve the quality of healthcare services, improving availability of quality medicines and effective implementation of Health Insurance Programme. The long term plan focus on the provision of specialized hospitals, enhancement of Mobile

Healthy Unit, availability of ambulance network, accommodation facilities for doctors and paramedic staff, construction of additional hospitals and rehabilitation of existing hospitals. The priority projects should focus on the extension of Civil Hospital, improvement in existing facilities, provision of Mobile Health Unit, provision of a quick response ambulance service with all health units, up gradation of BHUs, RHCs and MCHCs, research programmes for doctors and provision of diagnostic facilities. The immediate action plan includes the rehabilitation and upgradation of Civil Hospital Dadu. The economic development includes that the financing of the social sector schemes are done by both the government and private sector. The foreign aid agencies are also participating in the social sector to improve the services.

2.3 Recreational

According to cultural Department of Dadu, there are no cricket grounds, Hockey ground, Football ground or separate park for families. There are only 03 general parks in Dadu. A theatre is also under construction in Dadu. The major issues are shortage of water, no reserved area for sports facilities, no place for doing exercise, poor management for organizing cultural events, lack of infrastructure to accommodate visitors into such events, less heritage preservation and less commercialization from tourism point of view.

The strategies for short term plan need to focus on the maintenance and restoration of existing open spaces, development and preservation of cultural heritage and touristic places, promote tourist attraction and revenue generation through tourism. The long term plan includes the establishment of sports complex, extension of graveyards, protection of historical places, youth development programme and promotion of rich heritage of town. The priority projects are rehabilitation and construction of family parks, provision of missing facilities in Gymkhana, construction of auditoriums, upgradation of art councils, lake converted into entertainment spot and development of Gorakh Hills. The immediate action plan includes the rehabilitation of parks, provision of open green spaces, provision of community centre, development of different touristic places and rehabilitation of mosques.

3. Economic Development

3.1 Irrigation

The district is irrigated by Sukkur barrage except for a small portion, which is irrigated by Kotri Barrage. There are 02 main canals in the district namely Rice Canal and Dadu Canal. Agriculture in Dadu mainly depends on canal irrigation however, land is also irrigated by tube wells and spillover of river Indus.

3.2 Agriculture

The all crops of Kharif and Rabi are grown in District and such crops are wheat, Rice, Cotton, Sugarcane, Maize, Barley, Pulses, Juwar, Bajra, and Grams & Seasum. The total geographical area of district Dadu is 667,000 hectares out of this cultivated area is up to 314,000 hectare. Some of the major issues are short supply of irrigated water, high price of inputs, lack of agriculture credit facilities and research centres, water logging and salinity, irrigation and drainage.

The strategies for short term plan need to focus on modernizing agriculture, improved food production, agriculture technology development and promotion of home based industries. The long term plan should focus on the enhancement of crop productivity, increase the supply and quality of agricultural crops and provision of ware houses. The priority projects include provision of agriculture credit facilities, regular supply of irrigation water, increase in crop production, installation of tube wells, rehabilitation of canals and measures to reduce water logging and salinity. The projects for economic development plan are included in the priority projects.

3.3 Livestock and Fisheries

District Dadu is richly populated area having animal's population 2,826,000 of large and small animals. Animal population 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 55 veterinary Hospitals and veterinary centres. A substantial growth in livestock products such as milk, meat, beef, mutton, poultry and eggs have been noticed in District Dadu. The major issues include subsistence farming, limited knowledge and facilities, secondary source of income, reduced area for natural grazing and climate change. The production of fish annually in district Dadu is approx. 4,015 M.Tons. There is need to develop broad-based fisheries policy to modernize the fisheries sector.

The strategies need to focus on improving the production performance of livestock, enhancement of livestock production, establishment of model livestock, new cattle and dairy farms, increase veterinary services, large pasture land, extension in private sector, lease of fishing rights, training through schools, local publicity and awareness, enforcement of fisheries enactment, fish seed stock replenishment, aquaculture development and collection of statistical data of fish. The recommendations for economic development plan are; increasing the number of livestock and dairy farms and similarly establishment of new fish and poultry farms to generate production and income of the people engaged in this business, including construction of landing areas business halls.

3.4 Industries

Most of the industries in Dadu are pertaining to the agriculture and oil field. Famous among these are the sugar, oil fields, Cotton ginning factories and Rice Husking mills since Rice and sugarcane is cultivated on large scale in this district. The majority of population of District Dadu is rural & they are involved in agriculture cultivation, while towns are providing business opportunities to residents. Vocational training for women should be encouraged.

The strategies for short term plan need to focus on sufficient market infrastructure, accommodation of oil refineries, development and establishment of industrial Estates and provision of vocational training and employable skills. The long term plan includes the provision of infrastructure for establishment of new industries, enhancement of colonization, physical revival of existing oil fields and support industrial development. The priority projects include revitalization of industrial Estate, increase warehouses, construction and extension of Industrial Estate. The projects for economic development plan includes the addition in industrial units, provision of incentives to private investors and extension of area for small industrial estate or another industrial estate will be required.

3.5 Trade and Commerce

A registered chamber of commerce is functioning in Dadu District. The district is well known due to its characteristics of agriculture engine which serves all over Sindh. Some of the major issues include failure of Public Private Partnership, demise of local agriculture market, un-planned business activities, lack of infrastructure, lack of production, un-planned growth of business sector and increase of encroachments.

The priority projects should focus on providing opportunities for Public Private Partnership, provide support to local economy, promotion of home grown handicrafts, facilitate large number of business interest groups, provision of slaughter house and provision of parking. The immediate action plan includes the up gradation of old bazaar area and relocation of wholesale markets. The long term plan need to focus on the establishment of fruit and vegetable market, specialized wholesale markets, construction of building for service industry and provision of warehouses. An important step towards economic development will be encouragement for the establishment of micro financial services in Dadu.

4. Basic Utilities

4.1 Water Supply

The current water supply to Dadu is 1.32 mgd against the demand of 5.1 mgd. The issues related to water supply includes deterioration of old systems, contamination of water, high proportion of non-revenue water, dysfunctional water supply schemes, ageing infrastructure, absence of management information systems, absence of treatment plant and low water storage capacity.

Dadu has one of the highest population growth rates, and is estimated to have the highest population by 2035. Estimated per capita water demand at 30 gped by the year 2037 would be 8.8 mgd. The strategies for short term plan need to focus on providing access to safe water and sanitation, priority given to un-served areas, frame a policy framework and rehabilitation of existing schemes. The long term plan includes that the design of water supply pipes should ensure no contamination of water. The priority projects are the improvement of water intake works, construction of RO plant, installation of tube wells, rehabilitation of existing water supply network, installation of new water supply network and construction of OH tanks. The immediate action plan should focus on the rehabilitation of water supply network, construction of OH tanks and filtration plant, extension of existing water irrigation system and Public Private Partnership in service delivery.

4.2 Sewerage and Drainage

There are 09 disposal pumping stations. The major issues are improper operation of sewerage facilities, inefficient record of operation and maintenance works, informal settlements, poor condition of drainage, absence of waste water treatment plant, improper construction of drainage and sewerage system, over flow of storm water drains, lack of interest of stakeholders in disaster relief activities, poor administrative control, limited budget allocation and absence of sewerage and drainage plans. Sewage flows at 70% of the water supply, so presently against 5.1 mgd of water demand the sewage flows is 3.6 mgd.

Estimated sewage flow in the next twenty years against the water supply of 8.81 mgd is 6.17 mgd. The strategies need to focus on the provision of improved drainage and sewerage services, need based interventions, facilitate un-served areas, development of sanitation plan and sewage to be treated before discharging. The long term plan includes the usage of gravity flow systems, facilitate sewer system rehabilitation, acquire land provide proper sewage treatment plants leading up to recycling of treated affluent for landscaping. The priority projects includes construction and rehabilitation of drains and sewage treatment system, provision of stabilization ponds and use of effluent for irrigation purposes. The immediate action plan should focus on the construction of WWTP and use of effluent in agriculture.

4.3 Solid Waste Management

Some of the major issues are the unsafe disposal of hazardous waste, open burning of waste, lack of awareness, absence of landfill site and organized waste collection system, shortage of machineries and implementation of waste policy framework. Considering waste generation rate as 0.45 kg per capita per day with the current population, the total waste production is 77,063 kg per day.

The strategies for short term plan includes the collection and disposing of solid waste is the responsibility of MC, develop an effective and efficient collection system and segregation biomedical waste collection system. The long term focuses on the community and private sector involvement, public awareness, encourage on-site reuse and recycling and implement waste minimization. The priority projects need to focus on the feasibility study for construction of composting plant, procurement for land acquisition process for landfill site and introduction of 4Rs. The immediate action plan involves the recycling and segregation of solid waste.

5. Infrastructure

5.1 Electricity Power

The power supply to District Dadu is through Sukkur Electric Power Company (HESCO) WAPDA. The major issues are: of persisting supply short fall, frequent breakdowns and load shedding, less public awareness about fuel conservation, scarcity and costly availability of alternate fuel sources, no power generation facility, shortage of electricity and power supply, poor maintenance of power supply infrastructure, power shortage, power theft and outdated network.

The aim of the strategic development plan is to curtail the transmission and distribution losses as Dadu is facing 20-25% of these losses. The long term plan includes achieving fuel efficiency, adopting new technologies, altering existing fuel use habits, addition of sub-stations and encourage energy efficient building construction. The priority projects should focus on the up gradation of grid station, promote energy efficient appliances and feasibility study for construction of solar power plant.

5.2 Transportation

Dadu District has an airport which is used occasionally. The city is also linked with the main national network of Pakistan Railways. Indus Highway (N-55) passes through this district, with a total length of 127km within the district. The major issues are no formal Bus Terminal, traffic congestion, unavailability of traffic signals, and shortage of public transport, lack of road safety, regularized Qinqui system, drainage and parking issues.

The strategies for short term plan need to focus on creating Traffic Engineering Bureaus (TEBs), develop modern route permit, improve road design, prevent encroachments, declaring private vehicles free zone, reduce traffic growth, satisfy mobility needs, improve service delivery, dualization of main arteries and road design according to specifications. The long term plan includes the building of transportation system, rehabilitation of existing roads, wider road space to facilitate multiple transport activities, proper management of public transport services and ensure smooth flow of traffic. The priority projects should focus on the rehabilitation of major roads, improved market access, maintaining sustainable traffic flow, timely supply of industrial goods and adequate space available for street furniture installation. The immediate action plan involves the dualization of main roads, rehabilitation and widening of roads, widening and pavement of streets, provision of parking space and installation of monument.

5.3 Communication

The preliminary survey of household shows that only 6% households have PTCL landline. The survey showed that only 17% households are using internet and Wi-Fi. A well-maintained Communication network are the basic requirements for an efficient and profitable agricultural sector.

6. Environment and Disaster Risk Management

6.1 Environment

Seismically, Dadu lies in zone 2A and 2B of seismic zoning map of Pakistan corresponds to minor to moderate seismic hazards. The major issues include thinning out of forest density, unplanned land uses, limited availability of government land for future spatial growth, scattered agricultural growth, poor administration by agencies, water contamination, contamination of stagnant water bodies, no area associated with fisheries department and rainfall shortages affect the efficiency of canal system.

The strategies for short term plan need to focus on ensuring environmental sustainability, setting up of National Environment Council (NEC), enforcement of permit to discharge waste, preserve ecological cycles, strengthening forestry education, increase productivity of rangelands, create awareness, conserve biodiversity and fostering Public Private Partnerships. The long term plan includes the improvement of drainage, sustainable development and multi-pronged approach to fisheries management. The priority projects should focus on the rehabilitation of plantation, enhance rangeland production, improvement of forest parks, afforestation, measures to reduce water logging and salinity, measures against drought and flooding hazards and measures taken to reduce biodiversity. The immediate action plan should be that the

local trees like Balm, Siras, Kandi, Babool and Pipal should be planted adding beauty and providing better environment.

6.2 Disaster Risk Management

Dadu District is vulnerable to heavy rainfalls and floods. It was consecutively hit by heavy floods in 2010, 2011 and 2012. The major issues include low level of risk awareness and knowledge, not "risk conscious" development, insufficient DRR capacity and negligible involvement of private sector in DRR.

Some of the strategies in this aspect includes develop co-ordination mechanism with PMD, develop mechanism for regulation of water discharge, develop monitoring mechanism, provision of medical facilities, close co-ordination with DDMA, D.H.O will declare emergency at all medical units and requiring medical health cover during any disaster. The priority projects should focus on the smooth flow of canals and drains, prompt dewatering of stagnant water, HESCO shall ensure uninterrupted supply of electricity in order to drain out water, provision of adequate stock of medicines, arrangement of medical teams, fumigate the affected areas, ensure that ambulances are in working condition, ensure sanitation and cleanliness. The long term plan includes provision of medical cover by District Health Department, disaster preparedness planning, involvement of local level actors and need to clarify mutual roles and responsibilities.

E. STRATEGIES FOR FUTURE DEVELOPMENT

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

F. MASTER PLAN PROPOSAL

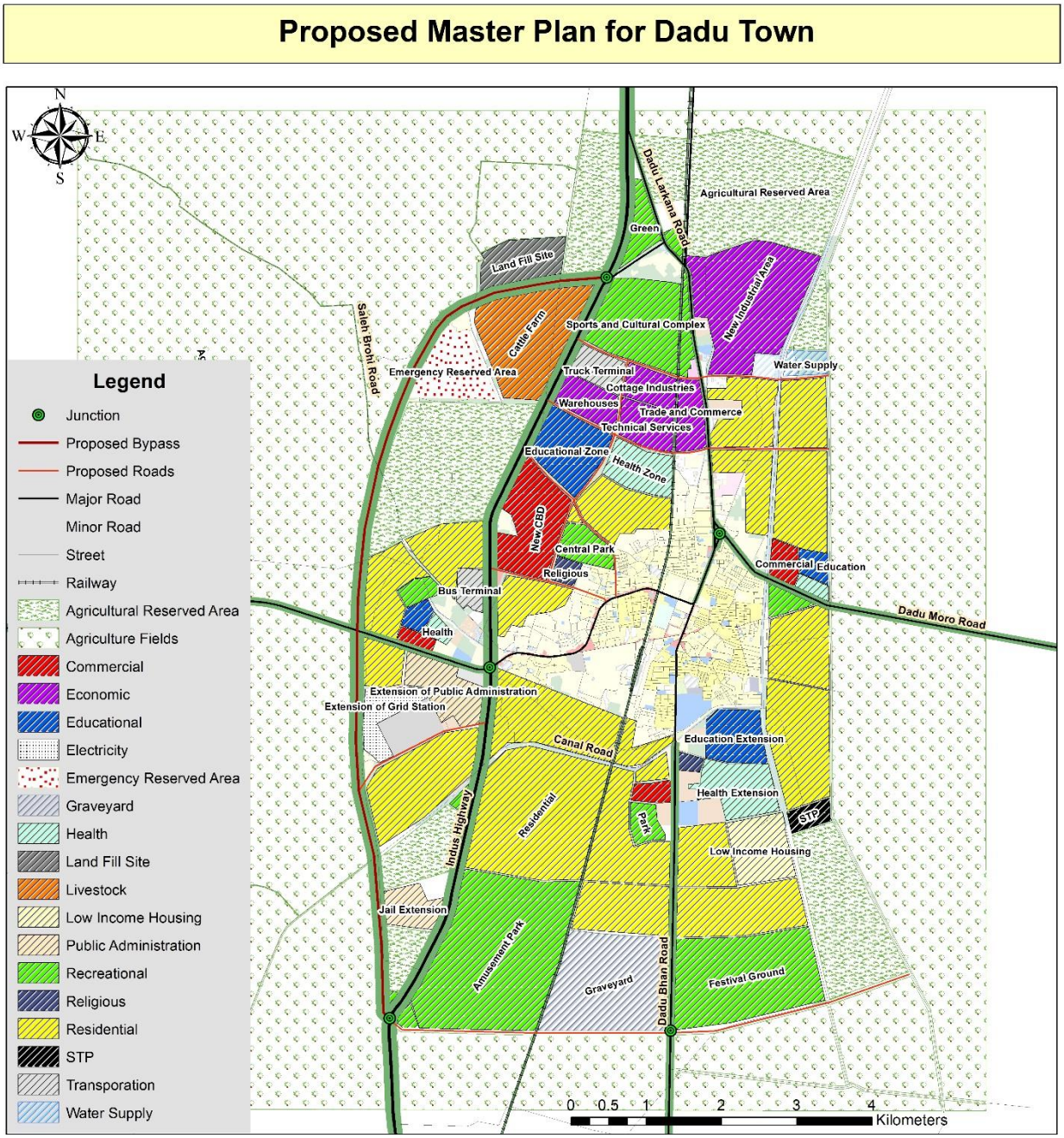


Figure 1:1 Master Plan Proposal for Dadu

G. Master Plan for Core Urban Area:

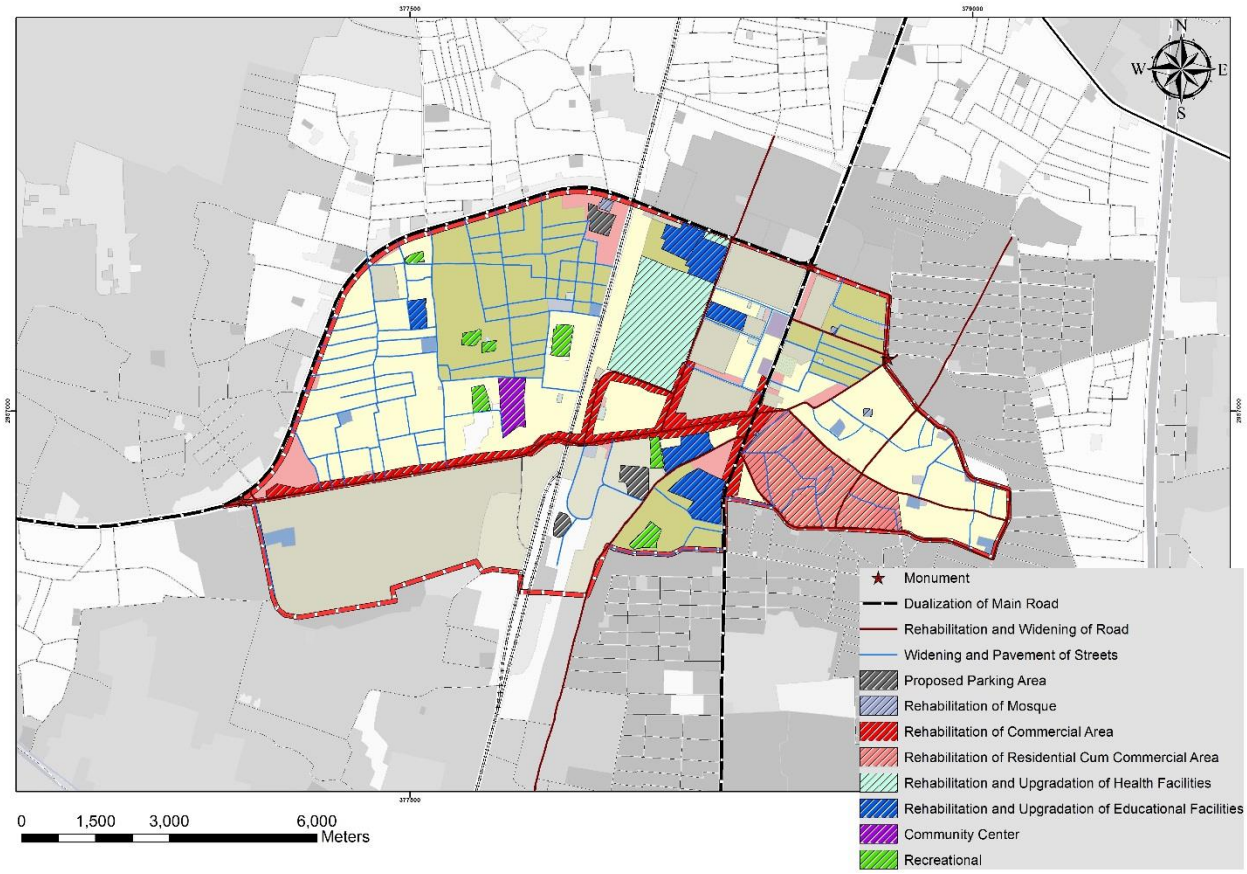


Figure 1:2Master Plan Proposal for Core Urban Area Dadu

H. SDGS ACCELERATION PLAN:

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

1. SINDH – AN OVERVIEW

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

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

1.1 Project Background

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

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

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

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

1.2 General Issues

Despite of its significant contribution in National GDP, Sindh has not received the priority in development funding as it deserves. DUP&SP is the medium through which grass root development / strategy is being formulated by professionals for the betterment of people and create de-centralize economical hubs to counter higher migration rate towards developed urban centres resulting better socioeconomic condition

of the people. While going through the available literature so far, several issues have been identified in this regards, such as:

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

1.3 Objectives

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

The Consultant is tasked to prepare strategies:

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

1.4 The Strategic Plan output

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

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

2. AN OVERVIEW OF DADU AND ITS ENVIRONMENT

2.1 Dadu District at Glance

The district derives its name from its headquarters town Dadu. According to the 1998 census, the population of district Dadu was 1,106,717 with 20.70% urban population and 79.30% rural population, with an average annual growth rate of 2.65%. District Dadu covered an area of 19,070 Sq. kms with an average household size of 5.5. The district is bounded on the north by Larkana district, on the east by Naushahro Feroze, Nawabshah and Hyderabad districts, on the south by Jamshoro district, on the south-west by Malir district and Lasbela and Khuzdar districts of Balochistan province.

The river Indus flows along the eastern boundary of the district. There is no other river in the district except numerous watercourses that drain the hills and are known as Nais. The most important of them is Gaj, the other Nais are Baran, Sann, and Sol.

All crops of Kharif and Rabi are grown in the district. Such crops are wheat, rice, cotton, sugar-cane, maize, barley, jowar, bajra, gram, sesame, and tobacco. The farming of livestock is rife in Dadu district. Many tribes are involved in this business and earn a livelihood through this means. The farming of animals has greater variety and include buffaloes, cows, goats, sheep, etc.

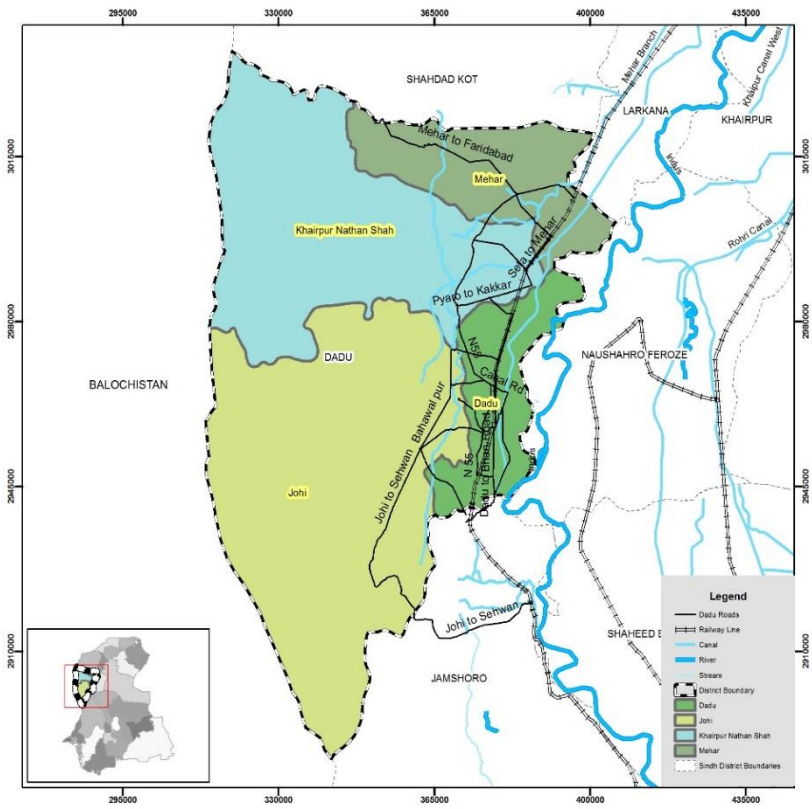


Figure 2:1: Tehsil Map of Dadu

According to the latest Population and Housing census of 2017 population figures for district Dadu is 1,550,266 souls with an average annual growth rate of 1.79% which shows a decreasing trend.

2.2 Geographical Location and Area

Dadu district is located in the west of Sindh province and is bounded on the north by district Kamber Shahdadkot, on the east by district Larkana and Shaheed Benazirabad, on the west by kirther range of mountains and Balochistan, and on the south by district Jamshoro. The district lies in 26^0 6' 35" to 27^0 26' 20" north latitude and 67^0 7' to 68^0 2' 17" east longitude. River Indus flows north to South along the eastern

boundary of the district. Manchar is a huge lake of the district and is used for fish breeding and as a natural reservoir. The Khirthar National Park, located in district Dadu, is reserved for wild life preservation.

2.3 Climate

The temperature, in summers, is recorded between 85^0F to 90^0F. Dadu, Mehar, Khairpur Nathan Shah, and Johi talukas form an extremely hot belt due to the direction of sea breezes from west to east over Bagho-Thoro Mountains near Laki Shah Saddar[1]. The climate of the district is intensively hot in summer and cold enough in winter. Johi, Dadu, Mehar, and Khairpur Nathan Shah talukas have extreme weather conditions. The other particular feature of the climate is the sub-zero temperature in Gorakh Hill Range during winter and where the mercury column remains below 20^oC even in June and July. The average annual rainfall in the district is about 120 millimeters

2.4 Topography, Geology, and Soils

In general segregation, the district is divided into three geographical zones:

A. Plain areas which are cultivable through canal irrigation system called “Pacco” in local terminology
B. The low laying areas around the river Indus/ river bed called “Kacho” in local terminology and
C. The Rain-fed hilly terrain which is termed as “Kachho”.

All three major zones have their specific characteristics and hazard profiles. Similarly, the livelihood and lifestyle in all three zones are also different. The people living in canal irrigated (Pacco) zone have their physical characteristics, vulnerability level, wealth ranking, and livelihood sources, quite different from those living in the riverine or rain-fed zone.

1 http://sindhdevelopmentinstitute.blogspot.com/2005/03/dadu-economic-profile.html

2.5 Administrative Set-up

This district is under the charge of Deputy Commissioner who performs the function of the District Magistrate as well as Collector. He is responsible for the coordination of function of all nation building departments in the district. District Dadu consists of four talukas namely: Dadu, Johi, Mehar and Khairpur Nathan Shah (K.N Shah). There are a total of 52 union councils consisting of 336 Dehs (Revenue villages). Out of these 336 Dehs, 286 are rural, 3 are urban, 21 are partly urban, 7 are forest Dehs and 19 are un-populated.

Table 2-1: Administrative Division of District Dadu

Dadu	Krungo Circled / Supervisory Tapas	Patwar Circles / Tapas	Number of Dehs					
			Total	Rural	Urban	Partly Urban	Forest	Un-Populated
Dadu Taluka	3	22	66	56	-	4	4	-
Johi Taluka	4	30	110	98	-	1	1	10
Mehar Taluka	3	33	78	66	8	9	1	2
K.N Shah Taluka	4	27	82	66	1	7	1	7
Total	**14**	**112**	**336**	**286**	**3**	**21**	**7**	**19**

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

2.6 Major Linkages

Indus Highway (N-55) passes through this district, with a total length of 127 km within the district. The existing road network, in Dadu district, is fairly good. The district headquarter, Dadu, is connected with other taluka headquarters of Johi, Meharand K.N Shah through metalled roads. Two provincial highways, comprising of a total length of 124 km, are mentioned in official statistics, provided by the government of Sindh. Also, there is a comprehensive network of access roads, comprising of 250 km, interconnecting the whole district.

2.7 Demography

District Dadu, like the majority of the other districts in Sindh, is rural by its characteristics and 79.3% of the population resides in rural areas.

Table 2-2 Demographic Statistics

Project Area	Population		AGR		Average Household Size		Housing Units	
	Census 1998	Census 2017	Census 1998	Census 2017	Census 1998	Census 2017	Census 1998	Census 2017
District Dadu	1,106,717	1,550,266	2.6%	1.79%	5.5	5.4	201,221	286,810
Source: Census 1998 and 2017								

2.8 Dadu Town

2.8.1 History

Dadu was created, in 1933, by the British Indian administration by merging Kotri and Kohistan tehsils of Karachi district and Mehar, Khairpur Nathan Shah, Dadu, Johi and Sehwan tehsils of Larkana district. The historical significance of Dadu & its adjoining area (i.e. Johi and Mehar) has been mainly for two reasons; one that they forward the border between political domains of the rulers of the states of Sindh & Balochistan. Second, Dadu has been along the route of caravans travelling along the Indus. Khudabad village of district Dadu had remained the capital of the Kalhora dynasty till as late as 1768 A.D. The popular trade system was “Hundi” in the district.

After Independence of Pakistan, the people belonging to the Hindu community migrated to India & their properties were given to Muslims who had come from India. Dadu District was developed after Independence. The Indus Highway was also constructed after Independence. From 1991 up till 14th December 2004, Dadu remained the largest district of Sindh province before it was bifurcated and a new district of Jamshoro was created on 13/12/2004. At present, district Dadu comprises four talukas i.e. Dadu, Johi, Mehar & K.N.Shah.

2.8.2 Geography

Dadu is the headquarters of the taluka and the district of that name lies in 26^{0}44’ north latitude and 67^{0}49 east longitudes. It is situated on the main road leading from Sehwan to Larkana. It is at a distance of 39 km from Sehwan northward and has road communication with Johi and other places.

2.8.3 Demography

- **Population Growth and Projects**

According to the 1998 census population of Dadu MC was 102,550 with an average growth rate of 5.80%. The latest census of 2017 reveals that the population of Dadu MC has increased to 171,191 with a growth rate of 2.73%. This shows that the growth rate is declining in Dadu town.

Table 2-3: Comparison of Past and Present Population Statistics

Target Area	Census 1998	Census 2017
Dadu MC	102,550	171,191
Dadu Taluka	327,972	460,481
Dadu District	1,106,717	1,550,266
Source: Census 1998 and 2017		

- **Future Projections**

According to the 1988 census population of Dadu town was 102,550 souls. Dadu has gone through a massive transformation, not in terms of infrastructure but also in terms of population dynamics. The projected population of Dadu works out to be 293,377 souls by 2037. There would be a rapid increase in population growth which is depicted in the table and graph below.

Table 2-4: Future Projections for Dadu

S. No.	Year	Dadu Town	Dadu Taluka	Dadu District
1	1998	102,550	327,972	1,106,717
2	2017	171,191	460,481	1,550,266
3	2022	195,870	503,443	1,694,072
4	2027	224,106	550,414	1,851,217
5	2032	256,413	601,767	2,022,940
6	2037	293,377	657,911	2,210,592
Source: Census 2017 and Consultants Projections				

2.9 Urban Morphology

Mostly growth pattern of Dadu city is expanding towards the north-east and north-west. Whereas other two direction north-south and north-east are fixed and growth is constrained due to canal. Mostly public development projects are established along the Indus Highway-Johi link road longitudinally. Dadu is a thickly populated HQ town of District Dadu. Internal road pattern of city is on grid iron pattern. The administrative complex and offices i.e. SSP office, DC Office, Session Court and Excise Office etc, are situated along Indus Highway- Johi link road

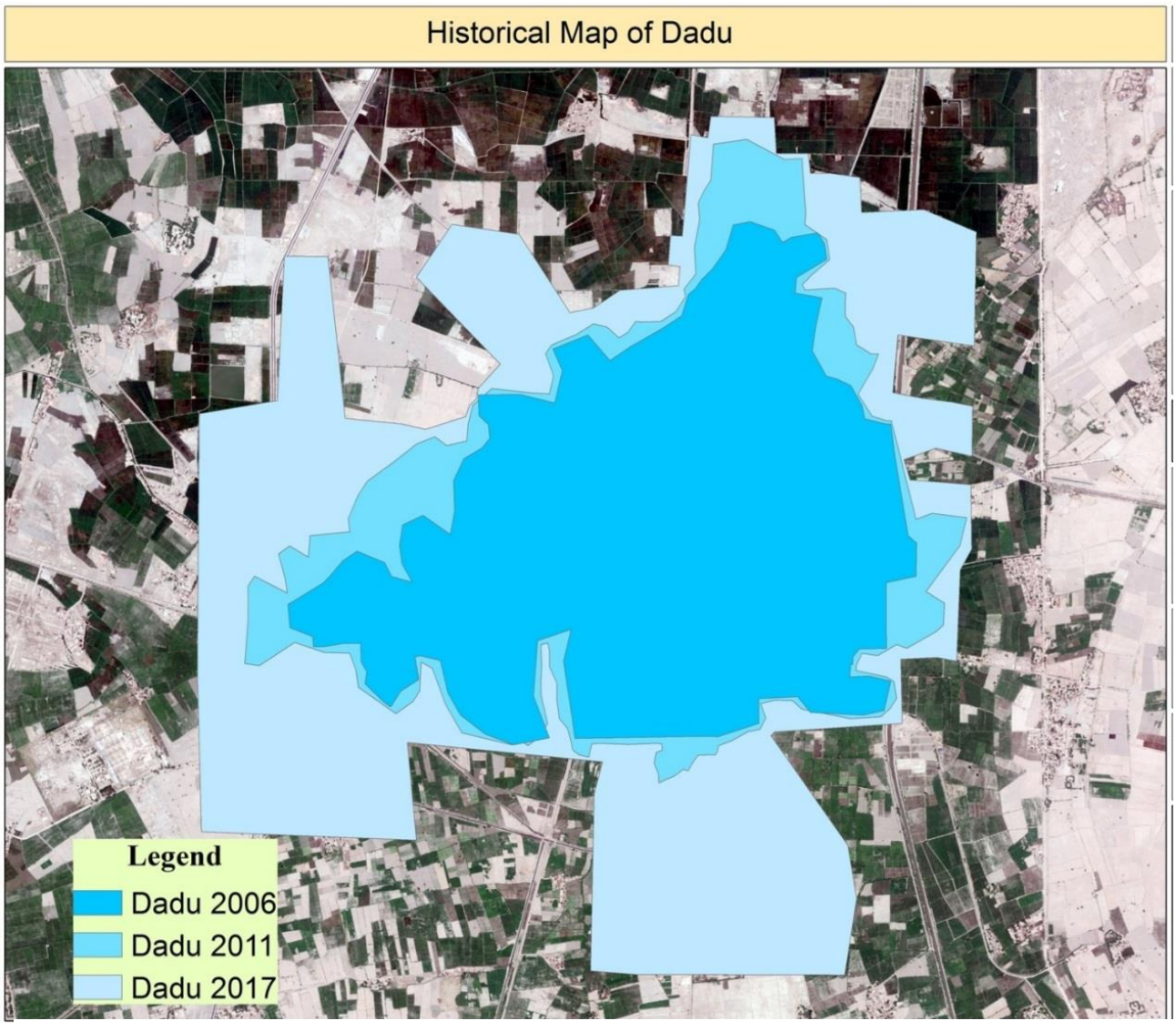


Figure 2:2: Historical Growth of Dadu

2.10 Land Use and Spatial Extension

The built-up area of Dadu town comprises of around 3353.4 acres of land as compare to consultant's urban boundary which is 9979.4 acres. The land use analysis indicates that almost 24.4% of total urban boundary area is in use of residential purpose only. 55.2% of the area is covered by agriculture fields.

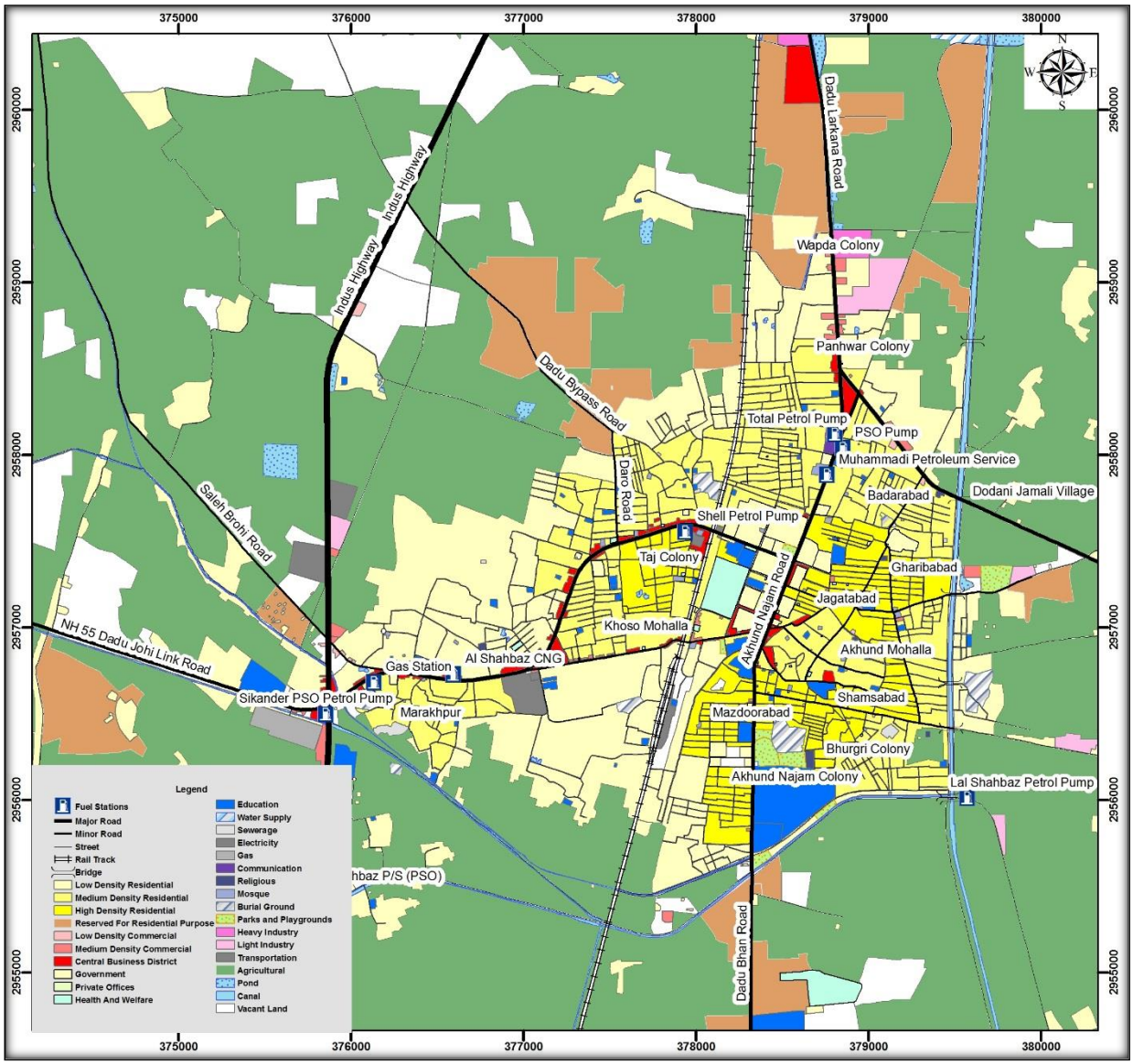


Figure 2:3: Landuse Map of Dadu

Table 2-5: Land use Classification and Percentages

DADU(URBAN BOUNDARY)				
CATEGORIES	**LANDUSE CLASSIFICATION**			**AREA (ACRES)**
URBAN	Residential	Residential	Low Density Residential	1049.8
			Medium Density Residential	512.8
			High Density Residential	249.1
			Mix Development	68.5
			Proposed Housing Schemes	550.0
	Sub Total			2430.2
	Commercial	Commercial	Low Density Commercial	3.4
			Medium Density Commercial	18.3
			High Density Commercial	62.5
	Sub Total			84.2
	Parks and Playground	Parks and Playground	Parks and Playgrounds	20.3
	Sub Total			20.3
	Amenities	Institutional	Education	113.8
			Public Administration	111.7
			Health And Welfare	31.7
			Private Institution	0.1
			Religious	9.2
		Utilities And Municipal Service Facilities	Electricity	104.8
			Gas	14.3
			Sewerage	4.8
			Communication	2.4
			Water Supply	19.0
		Burial Ground	Burial Ground	26.9
	Sub Total			438.7
	Industrial	Manufacturing	Small-Scale Manufacturing/ Light Industry	41.8
			Large-Scale Manufacturing/ Heavy Industry	23.7
	Sub Total			65.5
	Transportation	Transportation	Transportation	314.5
	Sub Total			314.5
	Sub Total			3353.4
NON-URBAN	Agriculture And Forestry		Agricultural	5507.6
	Sub Total			5507.6
	Water Bodies		Canal	64.6
			Water Bodies	51.6
	Sub Total			116.2
	Vacant Area			1002.2
	Total			1002.2
TOTAL				**9979.4**

Source: Spatial Analysis done by Consultants

2.11 Town Scape:

Zone 1:

Administrative Zone

Consists of District Office, Secretariat, Civil Hospital, Gymkhana, District Court, SSSP Office, Ustad Bukhari Public Library, Girls College

Zone 2:

Low Density Residential comprises of Old Sabzi Mandi, Circuit House, Agricultural Workshop and SRTC Ground

Zone 3:

Industrial Area

Small Industrial Estate, Wapda Colony, New Sabzi Mandi and Flour Mills.

Zone 4:

Institutional Zone

SMBB Medical College, Pir Illahi Bux Law College, Govt. Ustab Bukhari College,Eid Gah, Lal Hendi Graveyard, Hindu Temple, Royal Cricket Ground, Football Ground, Shah Jahan Park and Dadu Park.

Zone 5:

Consist of Railway Station, MC Park, IBA College, Govt. Girls Pilot High School and Govt. Permanand Hardas Pilot School

Zone 6:

Security Zone consist of Police Lines and Army Public School.

Zone 7:

New Development Area along with Grid Station, SSC Quarters and New Housing Schemes

Zone 8:

Consist of Bus Station, NCHD Office and New Bus Station.

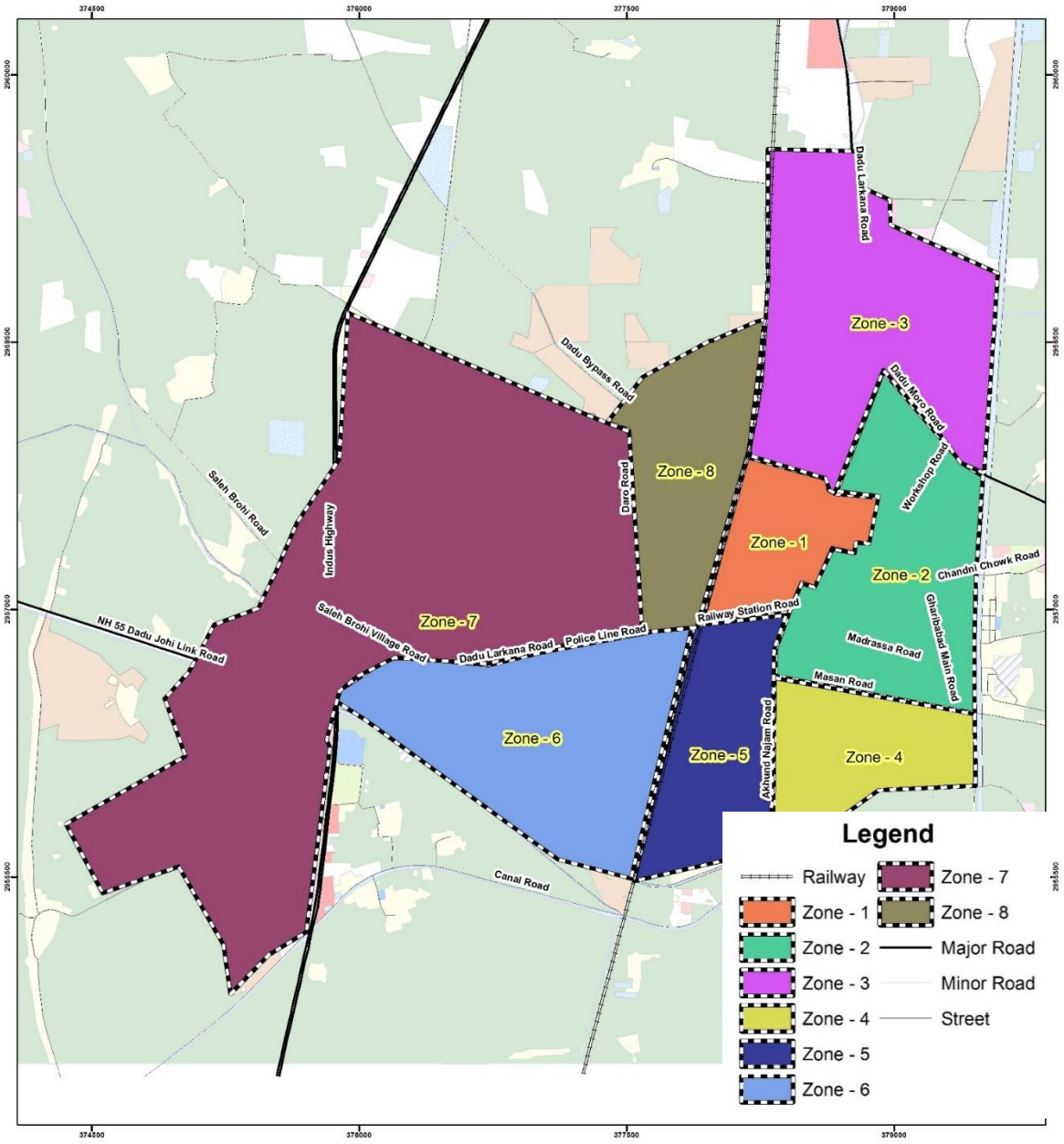


Figure 2:4: Town Scape



Residential



Agriculture Land



Commercial area in Dadu



Civil Hospital Dadu



Graveyard



NADRA Office Dadu



Model School Dadu



Religious building

Figure 2:5: Pictures of various types of Land uses in Dadu

3. VISION FOR STRATEGIC DEVELOPMENT PLAN OF DADU

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 Dadu 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.



The summations and conclusions are described hereunder:

1) Although the participants generally understood that vision should reflect citizens and stakeholders' aspirations as to where they want to see their town in twenty years from now. However, their focus has been remained on the resolution of immediate problems namely; supply of clean drinking water, sewerage and drainage, solid waste disposal, traffic congestion and parking, better health and educational facilities, cleanliness, parks and play areas. It is clear that far flung high sounding vision statements, are meaning less for them if the immediate problems are not urgently solved.
2) The participants showed concern regarding high rate of population growth and migration. Urbanization and uncontrolled land use conversion is eating away lots of urban agricultural land and breaking social fabric of residential communities. Need for land management system has been stressed.
3) The socio- economic uplift of the population has been mentioned by most participants, which include provision of basic needs of housing facilities with sustainable utility services, health, education, parks and playgrounds, employment and income generation.
4) Peace, safety, security and proper governance are envisioned by the participants as the ultimate goal for the twenty year Dadu's Strategic Development Plan. Whereas the Vision will remain static, the path to reach the vision may be subject to adjustments to account for ground realities.

3.2 Dadu's Vision Statement

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

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

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

DADU VISION 2037

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

PROPOSED MASTER PLAN OF DADU TOWN

4. PROPOSED MASTER PLAN OF DADU TOWN

4.1 Spatial Pattern

The district derives its name from its headquarters town Dadu. Dadu District is located in the west of Sindh province and is bounded on the north by District Kamber-Shahdadkot, on the east by District Larkana and Naushahro Feroze, on the west by Kirthar Range of Mountains and Baluchistan and the south by District Jamshoro.

The River Indus flows north to south, along the eastern boundary of the district. There is no other river in the district except numerous watercourses that drain the hills and are known as Nais. The most important of them is Gaj, the other Nais are Baran, Sann and Sol. The main crops of Dadu are wheat, rice, cotton, sugar-cane, maize, barley, jowar, bajra, gram, sesame, and tobacco. The farming of livestock is rife in Dadu district, as it has a vast variety of livestock include buffaloes, cows, goats, sheep, etc. Many tribes are involved in this business and earn a livelihood through this means.

Generally, the district is divided into three geographical zones; plain areas which are cultivable through canal irrigation system called “Pacco”, the low laying areas around the River Indus (river bed) called “Kacho” and the rain-fed hilly terrain which is termed as “Kachho”. All three major zones have their specific characteristics and hazard profiles; similarly, the livelihood and lifestyle in all zones are also different. The people living in canal irrigated (Pacco) zone have their physical characteristics, vulnerability level, wealth ranking and livelihood sources, quite different from those living in the riverine or rain-fed zone.

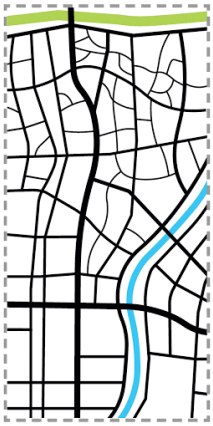
Dadu is famous for Gorakh Hill Station, which is situated on one of the highest plateaus of Sindh, spread over 2,500 acres (10 square kilometers) of land. The area is part of the Kirthar Mountain Range that makes the border between Sindh and Baluchistan provinces in Pakistan.

Indus Highway (N-55) passes through this district, with a total length of 127 km within the district. It is situated on the main road leading from Sehwan to Larkana. It is at a distance of 39 km from Sehwan northward and has road communication with Johi and other places.

The historical significance of Dadu and its adjoining area (i.e. Johi and Mehar) has been mainly for two reasons; one that they forward the border between political domains of the rulers of the states of Sindh and Baluchistan. Second, Dadu has been along the route of caravans travelling along the Indus.

Dadu is a thickly populated town of the district. The internal road pattern of the city is on the gridiron pattern. The existing growth pattern of Dadu City is expanding towards north and south, whereas in east direction the growth is fixed due to Dadu Katcha Area and Bund Road. Thus, mostly new development is happening longitudinally along the Indus Highway, Bhan Road and Larkana Road. Other than longitudinal growth, city is also expanding towards west in horizontal manner along Johi Link Road.

4.2 Basic Urban Form



The existing town is a medium size lively and thriving urban center that fulfils the socio-economic and financial needs of its population and of surrounding towns. Specially those are not along major connectivity corridors are benefited, like Johi, Mehar and Khairpur Nathan Shah Talukas.

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

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

At present there are three major vertical roads including, Indus Highway (N-55), Larkana Road and Bhan Road. And there are three major horizontal roads Johi Link Road, Moro Road and Dadu City Road. In addition, Dadu Bypass, Police Line Road and Canal Road are also forming horizontal connections; and a Railway Track is passing vertically in between Larkana Road and Indus Highway (N-55).



All of these connections are forming sort of grid iron pattern around core area of Dadu Town. Dadu Bypass exists inside the town connecting Dadu City Road with Indus Highway (N-55), which is now serving as one of the important road of the town.

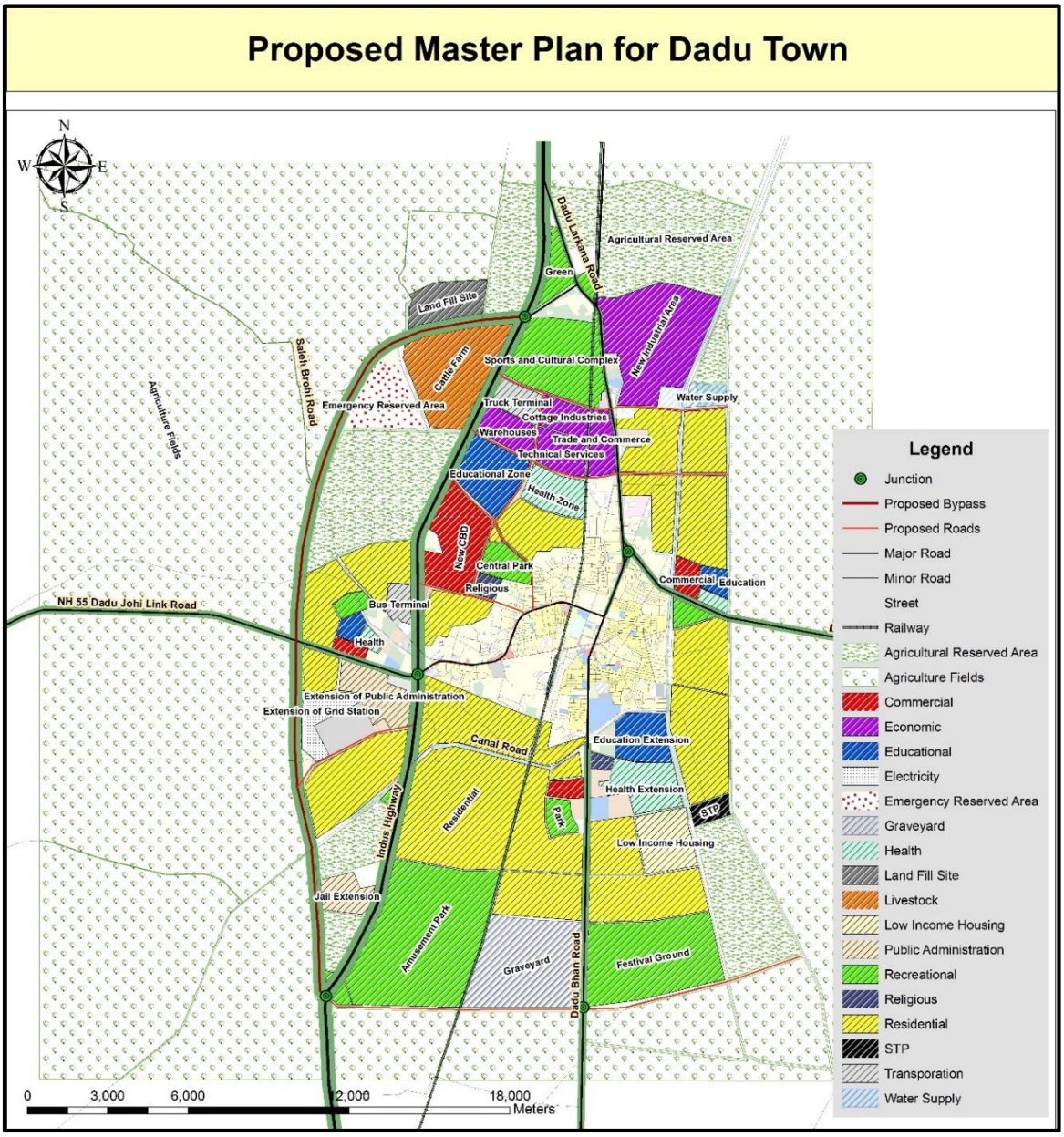
Since this town is not large enough in terms of its spatial spread, as per its projected future population, thus there is a new major outer connectivity has been created. As the growth of town is expected to be more in longitudinal fashion and towards west, thus instead of ring road, a bypass at leftward to Indus Highway (N-55) is proposed and named as Indus Highway Bypass. In this way, interconnection of the vertical and horizontal roads, sandwiched between the Indus Highway Bypass and Dadu Bund Road, will keeps the development compact.

4.3 Proposed Master Plan

The Proposed Master Plan for Dadu 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 Dadu Master Plan is 17,300 acres approx. for a population of 293,400 by 2037. In this way, Dadu Town in next twenty years is expected to have population density of 17 persons per acre and overall eight housing units per acre with an average household size of 5.5.



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

The overall structure of the plan is rectangular in longitudinal form, closed from east and west sides, while open for development in north-south direction. The east side is bounded by existing Dadu Band Road and west side is enclosed by newly proposed Indus Highway Bypass. Unlike east-west, north-south is expandable, however agricultural fields are proposed in both directions to limit the development.

A mix of vertical and horizontal links is enhancing grid iron pattern and New CBD is positioned as a focal point of Dadu City. Vertical Links includes Indus Highway (N-55), Larkana Road and Bhan Road; while Horizontal Links includes Johi Link Road, Moro Road and Dadu City Road. The other prime activities are placed around the existing town, mostly within the Indus Highway (N-55) and Larkana Road. Most of New Roads are proposed horizontally, to provide connection in between vertical roads. Thus the intersection of vertical and horizontal roads will create main junctions and forming different sectors.

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

4.3.1 Salient Features of Planning

- The New CBD (Central Business Districts) is placed as a focal point, along Indus Highway (N-55), as the new development is focused more towards north of the town.
- In addition, three sub commercial areas are also identified to reduce the burden over the main CBD; at Johi Link Road, Moro Road and Bhan Road.
- Considering existing economic activities; Trade and Commerce, Warehouses, Technical Services, Cottage Industries and a large Industrial Area are placed along main connectivity corridors of Larkana Road and Indus Highway (N-55).
- As the economic activities are proposed in north direction, thus Truck Terminal is also placed there, which is accessible directly from Indus Highway (N-55). And a Public Transport Terminal is also designated along Indus Highway (N-55) in west of the town.
- A large site for graveyard has been reserved along Bhan Road, at extreme south side of the town.
- The Cattle Park is proposed in the northwest direction, along Indus Highway (N-55), to limit the town development further. It will also benefit the population of nearby villages and other settlements.
- New large scale areas for Health and Educational Zones, are placed in between Indus Highway (N-55) and Railway Track. In addition, extension of DHQ Hospital is also proposed accessible from Bhan Road.

- Next to New CBD; a large Central Park is proposed. While Sports and Cultural Complex is placed towards north. Further two large recreational zones are located in south of the town along Bhan Road and Indus Highway (N-55).
- The New Public Administration area is proposed behind existing SSGC Office along Indus Highway (N-55) and Johi Link Road; to serve and manage this beautiful city of Dadu. Moreover an extension of District Jail is also suggested along Indus Highway (N-55).
- Along Indus Highway Bypass and towards north, the areas have been reserved for agriculture, as these areas are benefitted with the existing irrigation network. This will be helpful in restricting housing development and preserving the agricultural farms from the onslaught of the housing projects by private sectors.

4.3.2 Indus Highway Bypass

Considering the recent development crossing Indus Highway (N-55), specially along Johi Link Road in the west of the town, Indus Highway Bypass is proposed. Secondly, north-south is an important transport corridor, thus Indus Highway Bypass is suggested. This bypass is starting from south (Bachal Bouk) and joining Indus Highway (N-55) at 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 Indus Highway Bypass. As the areas on both sides of the bypass will attract many developers. The land two hundred feet on both sides of the bypass should be notified for development control where only planting of local trees should be allowed.

4.3.3 Vertical and Horizontal Links – Regional Connectivity

All proposed roads are existing major roads, providing transport connectivity with other urban and rural regional areas. Most of these roads are crossing each other in core urban area, or in other words these roads are forming grid iron pattern 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 regional connections.

As a result, there are six proposed vertical and horizontal links as major roads, with increased ROW, which will serve as future regional connections. These roads are making a grid iron pattern and crossing each other. The following are included:

- Vertical Links: These are north-south links of Dadu Town; Indus Highway (N-55), Larkana Road and Bhan Road.
- Horizontal Links: These are east-west links of Dadu Town: Johi Link Road, Moro Road and Dadu City Road.

However it is very important to control upfront development along the major roads. Likewise Indus Highway Bypass, on both sides of major roads planting of local trees is also highly 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 Dadu 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:

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

S.No	NRM STANDARDS		PROPOSED LAND USE CLASSIFICATION		
	Land Use Zoning	Land Uses (%)	Level - 1 Functional Zoning	Areas (acres approx.)	Land Uses (%)
1	Residential	40-45%	Residential	6,714	38.7%
2	Commercial	2-3%	Commercial	430	2.5%
3	Industrial	2-10%	Economic	1,287	7.4%
			Livestock		
			Industrial		
4	Institutional	3-5%	Health and Welfare	1,258	7.3%
			Educational		
			Religious		
			Public Administration		
5	Community Open Spaces	4-6%	Recreational	1,982	11.4%
6	Graveyards	2-3%	Graveyards	504	2.9%
7	Arterial Circulation & Terminals	15-20%	Transportation	1,798	10.4%
			Utilities and Services		
8	Protected Reserved	15-25%	Urban Forestation	3,363	19.4%
			Agriculture		
			Water Bodies		
			Vacant / Reserved		
	Total Area of Proposed Master Plan of Dadu Town			17,336	100%

The total area requirement for full fledge city of Dadu will be around 17,300 acres. As shown in the table of proposed land use classification, the percentages of residential and commercial areas are slightly lesser, in comparison to the NRM standards. Since the institutional and industrial areas are of higher value, as it will also contain residences for employees / staff / labor and some related commercial activities are also associated with institutional and industrial areas. In this way, institutional and industrial areas are sharing

[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

the commercial and residential load as well. Despite this factor, all the other land uses are distributed as per the standard.

S.No	PROPOSED LAND USE CLASSIFICATION FOR DADU TOWN						
	Level - 1 Functional Zoning	Level - 2 Functional Zoning	Areas (acres approx.)		Land Uses (%)	Areas (acres approx.)	Land Uses (%)
1	Residential	Existing Residential	2,430	6,714	38.7%	6,714	38.7%
		Proposed Residential	4,284				
2	Commercial	Existing Commercial	84	430	2.5%	430	2.5%
		New CBD	240				
		Sub-Commercial - Bhan Road	45				
		Sub-Commercial - Moro Road	32				
		Sub-Commercial - Johi Road	29				
3	Economic	Trade and Commerce	82	268	1.5%	1,287	7.4%
		Warehouses	91				
		Technical Services	95				
4	Livestock	Cattle Farms	366	366	2.1%		
5	Industrial	Existing Industries	66	653	3.8%		
		Cottage Industries	75				
		New Industrial Area	512				
6	Health and Welfare	Existing Health and Welfare	32	351	2.0%	1,258	7.3%
		New Health and Welfare Zone	118				
		DHQ Hospital with Extension	158				
		Health Area - Moro	21				
		Health Area - Johi	22				
7	Educational	Existing Educational	114	490	2.8%		
		New Educational Zone	184				
		Educational Area - Bhan Road	128				
		Educational Area - Moro Road	35				
		Educational Area - Johi Road	29				
8	Religious	Existing Religious	9	51	0.3%		
		Religious 1	26				
		Religious 2	16				
9	Public Administration	Existing Public Administration	112	366	2.1%		
		New Public Administration Area	144				
		District Jail with Extension	110				

10	Recreational	Existing Parks and Playground	20	1,982	11.4%	1,982	11.4%
		Central Park	74				
		Sports and Cultural Complex	290				
		Festival Grounds	514				
		Amusement Park	817				
		Green	148				
		Park and Playgound - Bhan Road	48				
		Park and Playgound - Moro Road	36				
		Park and Playgound - Jati Road	35				
11	Graveyards	Existing Graveyards	27	504	2.9%	504	2.9%
		New Graveyard Area	477				
12	Transportation	Existing Transportation	315	1,297	7.5%	1,798	10.4%
		Public Transport Terminal	44				
		Truck Transport Terminal	71				
		Road Network	867				
13	Utilities and Services	Existing Utilities and Services	145	501	2.9%		
		Water Supply	73				
		Sewerage	41				
		Land Fill	142				
		Electricity	100				
14	Urban Forestation	Urban Forestation	520	520	3.0%	3,363	19.4%
15	Agriculture	Agricultural Reserved	2,550	2,550	14.7%		
16	Water Bodies	Canals and Ponds	118	118	0.7%		
17	Vacant	Emergency Reserved	175	175	1.0%		
		Total Area for Future Development of Dadu	17,336	17,336	100%	17,336	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 6,700 acres of residential land use is proposed, which will create eight housing units per acre on average. Thus in overall town more than 53,000 housing units are expected to be in town by 2037.

There are existing vacant land parcels in overall town, specially in south of the town, these have a considerable potential of infill development for residential use. This will somehow fulfill the partial need of new migrants coming from other areas in search of better living in the immediate phase. For low income group in short term phase (priority project) land of 150 acres along Canal Road near SMBBT Dadu is proposed for low to medium density development. While for other income groups, mixed density (low and medium) residential areas are proposed. Moving ahead, for the long term phase, areas are also being reserved for residential development as per future requirement, which will also include apartment buildings.

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

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

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

- **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.

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

The following guidelines are for houses zone development:

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

Houses - Applicable SBCA Bylaws[5]

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

- **Apartments**

  In Dadu Town, the trend of vertical residential and commercial development is existing but at a low pace. Secondly, as new migrants are expected from other urban areas as well, thus there is a need to fulfill the modern residential need like apartments. On the other hand, apartments are more effective in accommodating large number of households in less acres of land due to increased density in comparison to houses. It is not necessary to build a concrete jungle, however with better design and new ideas different type of walkable as well as high rise could be made. The main focus should be to provide open and green areas as breathing spaces in between apartment buildings as per the standards.

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

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)

4.4.2 Commercial Zone

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

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

- **New CBD (Commercial Business District)**
  Considering the shape and growth of the town, the New CBD has been located in the area of central attraction accessible from existing Dadu Bypass and Indus Highway (N-55). 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

[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.

other infrastructures, favorable economic development, environment friendly places; which are convenient for commercial activities.

Dadu is famous for Gorakh Hill Station, which is situated towards west side of the town at a distance of 80 kilometers, accessible via Johi Link Road. It is one of the highest plateaus of Sindh, spread over 2,500 acres (10 square kilometers) of land. Considering the potential of tourism, the New CBD area will also accommodate convention center, expo center, hotels, shopping malls, exhibition ground, etc.

- **Sub Commercial Centers**

  In continuation to the main CBD, it is recommended to place sub commercial areas along important roads of the town, to share the burden of commercial activities. Thus, three sub commercial centers are proposed along Johi Link Road, Moro Road and Bhan Road; to accommodate commercial facilities. Further small commercials within the residential areas will be formed for retail commercial activities of everyday goods required to fulfill the daily need of the residents.

  The following guidelines are for commercial zone development:

Permitted Uses	Allied Permissible Uses
- Corporate head office buildings, towers - Huge markets, malls, outlets - Large public squares and parks - Dedicated parking lots / spaces	- Pedestrian friendly streetscape - Mixed-used buildings - Medium to High Rise Apartments - Fueling stations
Applicable SBCA Bylaws[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:

- **Trade and Commerce**
  In north side of the town along Larkana Road, trade and commerce area is positioned. It is placed in a way that it is also accessible from Indus Highway (N-55) via New Roads. This will provide in and out trading activities of the region specially to other areas of the district. It will includes grains, fruit and vegetable markets, wholesale markets, slaughter house, storage areas etc.

- **Warehouses**
  The warehouses area is proposed next to truck terminal along Indus Highway (N-55), also accessible from Larkana Road via New Road. For all of these trading activities large to small scale warehouses will be required, comprises of general, bulk, liquid, dry and cold storage as well. These should be well equipped with all the required technology of good storage and management like CCTV surveillance, in and out data entry.

- **Technical Services**
  An area for Technical Services is suggested in between trade and commerce and warehouses; along New Road accessible from both Indus Highway (N-55) and Larkana Road. This area will provide space for technical services like mechanical workshops and spare parts (auto mobile repairing), building construction materials, home depots, furniture market, housewares, food and beverages, computer hardware etc. However with the passage of time, technological advancement and changing needs; new requirement will come up to cater to the job market through new economic opportunities and activities.

The following guidelines are for economic zone development:

Permitted Uses	Allied Permissible Uses
- Warehouses and Workshops - Godowns and Cold Storage - Trade and Commerce Areas - Showrooms or Display Centers	- Mixed-used buildings - Residences for workers - Fueling stations
Applicable SBCA Bylaws[10]	**Prohibited Uses**
- Plot Sizes: o Small size: upto 0.5 acres o Medium size: 0.5 to 5 acres o Large size: 5 acres or above - FP: 60% - 70% - FAR: 1:2.5 - 1:1.5 - Floors: G+1 & G+2 (max)	- Private Residential housing schemes - Large health and educational institution

4.4.4 Livestock Zone

Since Dadu is not only an agricultural town, local inhabitants also rely on livestock as main source of income. The Dadu City has a vast variety of livestock including; buffaloes, cows, goats, sheep, etc. Many people are involved in livestock business and earn a livelihood through this source.

In this regard, to promote livestock production, Cattle Park is placed in northwest direction along Indus Highway (N-55) and also accessible from Indus Highway Bypass. The main emphasis is to be given to cattle production and their required facilities and services. In addition poultry is another requirement to fulfil through the livestock zone.

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

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

- **Dairy Production[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.

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

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

  The following guidelines are for livestock zone development:

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

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 labor and staff is allowed at rear.		

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

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

- **Cottage Industries**

  An area is proposed for Cottage Industries, next to Technical Service Area, along New Road accessible from both Indus Highway (N-55) and Larkana Road. It is suggested to promote local production and its associated market. The cottage industries will include mainly handicrafts like embroidery, handmade bags, clothes, shawls, home décor items, jewelry, souvenirs etc.

- **New Industrial Area**

  The New Industrial Area is proposed along Larkana Road, considering existing industries scattered in this area. It is highly recommended to explore this area according to the economic need of the town. This is more appropriate to develop small scale industries, then heavy industries to keep the city environment clean. It is not suggested to develop whole area at once, instead as per the need. Preferably starting from the road accessible side and keeping further area reserved for future use when firstly developed area utilized.

  The small scale industries will include flour mills, rice husking mills, ice factories, packaging of fruits and vegetables, feeder crops, cotton ginning factories, sugar mills, etc.

  The potential of large scale industries also present in this town, not only agriculture related industries. As Dadu is considered an important district with a wealth of oil and gas reserves and precious stones, which brings large revenue. And the presence of BHP Company and ENI Company shows the existence and significance of gas and petroleum industries in the district. Thus, it is suggested to explore potential of heavy industries and recommended to develop oil and gas related industries but not inside and nearby town area.

  The following guidelines are for industrial zone development:

Permitted Uses	Allied Permissible Uses
- Small Scale Industries - Processing Units - Manufacturing Activities - Warehouses or Godowns - Workshops	- Showrooms - Mixed-used buildings - Residences for workers - Fueling stations
Applicable SBCA Bylaws[13]	**Prohibited Uses**
- Plot Sizes: ○ Small size: upto 0.5 acres ○ Medium size: 0.5 to 5 acres ○ Large size: 5 acres or above - FP: 60% - 70% - FAR: 1:2.5 - 1:1.5 - Floors: G+1 & G+2 (max)	- Private Residential housing schemes - Large health and educational institution

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

4.4.6 Health and Welfare Zone

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

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

- **DHQ Hospital with Extension**
  The DHQ Hospital is recently constructed accessible from Bhan Road, its extension is proposed to make these a full fledge public health care like a District Health Complex. Since it will become tertiary level center for health facilities, thus medical and nursing colleges, 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.

- **New Health and Welfare Area**
  A New Health and Welfare Area is marked near New CBD, accessible from both Indus Highway (N-55) and Larkana Road, via New Road. It is placed to make it reachable for other towns as well and to attract private investment in health and welfare sector. It is widely possible that this area will be utilized for distinct health and welfare facilities in long term phase; like specialized hospitals, research and welfare centers etc. It will comprises of the specialized units like oncology, urology, infertility centers, organ transplantation, and specialized treatment centers, research and development centers.

- **Health Areas**
  There are two sub health centers are formed at Johi Link Road and Moro Road considering public and private health institutions. These will serve the clinical as well as regular hospitalization needs like Maternity, Emergency, Dental, OPDs, Laboratories and Diagnosis, Pharmacies, Blood Banks, Physiotherapy Centers etc.

The following guidelines are for health and welfare zone development:

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

Applicable SBCA Bylaws[14]	Prohibited Uses
- Plot Sizes: 1.0 acre or above - FP: 50% - FAR: 1:1.5 - Floors: G+2 (max)	- Private residential housing schemes - Large commercial activities

4.4.7 Educational Zone

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

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

- **University Area**
  The University Area next to DHQ Hospital and near Bhan 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.

- **New Educational Area**
  Likewise health, a New Educational Area is also marked near New CBD, along Indus Highway (N-55). 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 purpose behind is to involve regional level youth in the education and research, in order to enhance the educational attainment level. It is required for the future demand of young population and to attract private investment in the field of education as well.

- **Educational Areas**

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

In order to improve educational facilities at all levels, two sub educational centers are proposed at Johi Link Road and Moro Road. These will serve the need of the resident within the neighborhood area. It is mainly proposed to provide more schools and colleges for both boys and girls. It is suggested to accommodate all the required facilities and service like; libraries, laboratories, playgrounds, washrooms, etc. 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 will also include; poly technical college for boys and girls, women development center (working women hostels, day care centers), certified computer and IT training centers, research centers, etc. The vocational training center are also suggested to be placed in this area to cater need of under privileged youth for better skills and technical knowledge. This will provide space for skill development centers, technical education for the local and surrounding population to accommodate in the current job market.

The following guidelines are for educational zone development:

Permitted Uses	Allied Permissible Uses
- Large scale educational areas - General Education Universities - Scientific Research Institutes - Engineering colleges / universities - Business and management schools - Finance and accountancy Institutes - IT and media Institutes - City level libraries, book banks, data and information centers	- Staff Residences (teaching and non-teaching) - Separate Hostels for Boys and Girls - Auditoriums, seminar halls, workshop spaces - Community facilities (parks, playgrounds, clinics, schools, neighborhood commercial) - Support facilities (gym, health club, bus stops, taxi stand, banks, fueling stations)
Applicable SBCA Bylaws[15]	**Prohibited Uses**
- Plot Sizes: 1.0 acre or above - FP: 50% - FAR: 1:1.5 - Floors: G+2 (max)	- Private residential housing schemes - Large commercial activities

[15] Ibid

4.4.8 Religious Zone

In the proposed master plan two religious sites are allocated in the Dadu Town. One is in the center of the town next to New CBD and second is located along Bhan Road. These are not necessarily to be developed soon, as presently there are sufficient religious places. These will be grand religious monumental buildings and structures, to enhance aesthetic of the town. Further it is suggested to fulfill the future requirement of different religious groups in sub divisions of other areas.

The following guidelines are for religious zone development:

Permitted Uses	Allied Permissible Uses
- Religious buildings like mosques, imam barghahs, mandir, churches, etc. - Religious teaching areas - Religious preaching grounds - Orphanage	- Residences for religious leaders - Accommodation for religious scholars, students - Small parks, playgrounds, clinics, commercial - Support facilities (bus stops, taxi stand, banks, fueling stations)
Applicable SBCA Bylaws[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

4.4.9 Public Administration Zone

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.

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

- **New Public Administration Area**
  The New Public Administration Area is proposed in the western side of the town, behind existing SSGC Office along Indus Highway (N-55) and Johi Link Road.

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

[16] Ibid

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

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

- **District Jail Extension**

  The District Jail is existing along Indus Highway (N-55) in southwest of the town. Its further extension is proposed adjacent and behind the existing facility. This will serve the purpose of District Jail with all required needs and will also fulfill the residential requirement of the staff of various levels.

The following guidelines are for public administration zone development:

Permitted Uses	Allied Permissible Uses
- District Secretariat, - Development Authority - Town Committee Complex - Line Departments - Local Government Offices - Town Planning Department - Judiciary Complex - Circuit House	- Employees Residences (for all grades) - Auditoriums, seminar halls, workshop spaces - Community facilities (parks, playgrounds, clinics, schools, neighborhood commercial) - Support facilities (gym, health club, bus stops, taxi stand, banks, fueling stations)
Applicable SBCA Bylaws[18]	**Prohibited Uses**
- Plot Sizes: 1.0 acre or above - FP: 50% - FAR: 1:1.5 - Floors: G+2 (max)	- Private residential housing schemes - Large commercial activities

4.4.10 Recreational Zone

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

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

- **Central Park**

  Adjacent to New CBD, a large Central Park is proposed in the town along Dadu Bypass and accessible from Indus Highway (N-55). 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

- **Sports and Cultural Complex**
  The Sports and Cultural Complex is proposed towards north of the town and accessible from Indus Highway (N-55) and Larkana Road. It will include cricket, football, hockey and other ground, cultural center and gymnasium. These type of sports facilities will be as per standards to promote domestic sports.

- **Festival Grounds**
  Along Bhan Road at southern side of the town, a huge area is located for the purpose of Festival Grounds. Considering the 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.

- **Amusement Park**
  A large site for amusement park is proposed along Indus Highway (N-55), at extreme southern side of the town. In this area large scale amusement facilities like thrilling rides in a safe and pleasant manner will be provided. Some of its area could be reserved for other recreational activities of theme parks like art park, ice park, floral garden, glow garden etc. could also be introduced as per the demand of the region. Moreover, Dadu is a regional center there is also need to locate botanical and zoological gardens. These gardens will serve not only a metropolis of future but urban and rural areas of Dadu 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

4.4.11 Graveyards Zone

At present there are number of graveyards in the town, which have sufficient space available for immediate need. However, for long term there is a large graveyard proposed, in extreme south direction along Bhan Road. These graveyards can be further divided according to the requirement of practicing religions in the town.

The following guidelines are for graveyard zone development:

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

4.4.12 Transportation Zone

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

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

- **Air Connectivity**
  Regarding air connectivity, Dadu is connected to Larkana and Nawabshah Airports at a distance of 130 and 105 kilometers respectively via Indus Highway (N-55) and Moro Road. An airstrip is located in between Johi Town and Dadu Town, at a distance of 10 kilometers towards west accessible from Johi Link Road. This Airstrip is not functional for regular passenger flights. However, it is suggested that residents of Dadu Town should utilize Larkana and Nawabshah Airports, until Airstrip near Johi Town will be upgraded as full fledge airport. Thus a new airport for Dadu Town is not feasible due to nearby airport facilities and with projected population.

- **Railway Reserved Area**
  The Railway Station lies southward in the core urban area of the Dadu Town. It is linked with the main national network of Pakistan Railways. This line is the part of the first railway line (Karachi-Kotri) between Karachi and Lahore. Currently, this railway track is considered as the busiest track for long route trains to facilitate the public.

However, it is suggested to reserve the area for railway use only, to avoid any sort of encroachments. Consequently, the available vacant land parcels have been marked as Railway Reserved Area, in order to avoid further violation of railway ROW. Further it is recommended to improve the railway service for better cost effective connectivity for the town's economy.

- **Proposed Road Network**

  The proposed road network is originate from the existing major roads i.e. Indus Highway (N-55), Larkana Road, Bhan Road, Johi Link Road, Moro Road and Dadu City Road. And the major regional connectivity is developed through proposed Indus Highway Bypass. However, the widening and beatification of Indus Highway (N-55), Larkana and Bhan Roads are forming the vertical links in north-south direction, while Johi Link Road, Moro Road and Dadu City Road are creating horizontal links from east to west. And Indus Highway Bypass is proposed in north-south direction to provide a bypass from Dadu City to connect lower and upper Sindh.

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

S.No.	Major Roads	ROW (ft)	Forestation (ft)
i.	Indus Highway Bypass	200	200
ii.	Indus Highway (N-55)	200	200
iii.	Larkana Road	150	100
iv.	Johi Link Road	150	100
v.	Moro Road	150	100
vi.	Bhan Road	150	100
vii.	Dadu City Road	100	50
viii.	Dadu Bypass	100	50
ix.	Police Line Road	100	50
x.	Canal Road	100	50
ROW – property to property distance Forestation on both side of ROW			

Primary Roads: The existing Indus Highway (N-55) and proposed Indus Highway Bypass running on the western periphery of the town are considered as Primary Road. 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 vertical and horizontal major 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. These roads includes; Johi Link Road, Larkana Road, Moro Road and Bhan Road.

Tertiary Roads: The tertiary roads will have a right of way of 100 feet (min) with at least two lanes, median, footpaths, parking and cycle/pedestrian tracks. These roads are comprises of; Dadu City Road, Dadu Bypass, Police Line Road and Canal Road. It also includes proposed New Roads providing horizontal connections between primary and secondary roads.

- **Public Transport Terminal**

  The Public Transport Terminal is placed along Indus Highway (N-55) in west side of the town, also accessible from Saleh Brohi Road. It is proposed in order to provide better and nearby multi intermodal transport connectivity. Since major regional communication of general public is expected via these major roads; as most of residential, educational and health related traffic will be generated and these will cover most of the town. These will be comprises of the parking for public buses, hiace, wagons, taxis; with allied facilities like ticking booths, sitting / waiting areas, washrooms, shops and required residence for the drivers and staff.

- **Truck Terminals**

  Considering location of proposed economic activities, truck terminal is placed towards north along Indus Highway (N-55) also accessible from New Road. As from this point all industrial and economic activities are connected, this is found more appropriate location for heavy traffic and goods transport. The proposed terminal will help in transporting goods from / into the town, which will benefit and boost the economic activities of the town.

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

  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

4.4.13 Utilities and Services Zone

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

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

- **Water Supply**
  The main water supply source is Indus River, from where water takes off through Dadu Canal and Panj More water course. In continuation towards northeast, an additional area along Canal is proposed for water supply works. This additional area has been reserved to extend the water reservoirs as per the town's water demand and related water supply infrastructure. This increase will also cater to water supply filtration plant and other advance purification mechanism.

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

- **Landfill Site**
  A landfill site is proposed at outskirts of town area, in northwest side considering wind direction. This landfill site is directly accessible from Indus Highway Bypass. As the whole town will grow according to the master plan it will serve the population for next 20 years or even beyond.

- **Grid Station**
  Grid station in Dadu is existing towards west of the town, accessible form Indus Highway (N-55). For immediate need it is possible to extend the facility in the same premises. The extended facility will benefit the residents as per the need of the present consumption of the town.

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

However the Grid Station Extension is proposed for upcoming future load and requirement, also accessible from Indus Highway Bypass.

The following guidelines are for utilities and services zone development:

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

4.4.14 Urban Forestation Zone

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

In order to protect Indus Highway Bypass and Indus Highway (N-55) 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 bypass and highway urban forestation of 50 to 100 feet on both side of the Major Roads are also proposed depending upon their ROW, to avoid direct / upfront development along roads. All major roads crossings will have initially green roundabouts with enough space for grade separated junctions in the future.

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

The following guidelines are for urban forestation zone development:

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

4.4.15 Agricultural Zone

In order to limit the town development agricultural reserved areas are proposed mostly along Indus Highway Bypass. In this manner not only town spatial growth will be confined but also essence of agriculture activities will remain close to the town. It will also create a healthy environment and less burden will be on spread of infrastructure network. The existing villages or settlements in the periphery of the town will also be benefited and not removed from their place of livelihood. The recommended crops for production are; wheat, rice, cotton, sugar-cane, maize, barley, jowar, bajra, gram, sesame, and tobacco.

The following guidelines are for agriculture zone development:

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

4.4.16 Water Bodies

The main water source is Indus River, from where water takes off through Dadu Canal and Panj More water course; which feeds to the Dadu Town. Thus the beautification of water course, Dadu Canal and Indus River are highly recommended. It includes:

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

The following guidelines are for Water Bodies zone development:

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

*4.4.17 **Vacant Zone***

The objective of providing vacant area is to cater the emergency need at time of any disaster. With this respect areas outside the main town will kept reserved for emergency need, which could be utilized for portable homes, mobile health care facilities, camping for vulnerable of calamities, temporary storage of bulk material etc. The proposed vacant area is at outskirts of Dadu Town but being on the peripheral area, would not disturb the town activities in general and it is directly accessible from Indus Highway (N-55).

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

The following guidelines are for vacant zone development:

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

5. HOUSING

5.1 Existing Situation

As per 2017 census population results, Dadu municipal area had household size of 5.5 persons and a total housing stock of 30,953. Most of them were categorized as pacca houses which include Pacca (Brick construction) and RCC houses.

General housing condition of the surveyed houses was satisfactory. Socio-economic survey of the town reveals that approx. 33% of the houses were constructed in between 6 to 10 years. 66% of the houses were below 120sq. with an average of 6 to 7 members in each household.

With this average number of family members, 37% 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 69% of the houses have drained (flush system) in their houses while 31% of the houses have un-drained toilets which requires manual cleaning.
Only 48% of the houses have piped supply (House Connection) while 45% of the houses use ground water by manual hand pumps. Conditions of drains are also alarming, 87% of the drains are open and only 1% of the households have covered drains and 12% of them has semi covered drains.

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
Dadu MC	102,550	5.80%	15,777	6.5	171,191	2.73%	30,953	5.5
Dadu Taluka	327,972	3.34%	59,631	5.5	460,481	1.80%	85,088	5.4
Dadu District	1,106,717	2.65%	211,354	5.5	1,550,266	1.79%	286,810	5.4

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 Dadu urban area the problem manifests as unstoppable growth of squatter settlements through encroachment of state and private land. Up gradation of Katchi Abadi's and policy /strategic guidelines need to be formulated for stoppage of this practice.

5.2 Issues

The following are the major issues in the housing sector:

- Inadequate supply of developed land 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.

5.3 SWOT Analysis

HOUSING			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Most of the population live in family owned houses 2. Almost half of the houses are pacca houses 3. Most of the formal population is served by electric, gas and water supply.	1. High prices of houses in private sector 2. The informal housing sector lacks provision of utility services like gas supply, clean water and drainage facilities.	1. Demand for new planned housing schemes 2. Demand for low income housing 3. Opportunity for local micro financing for housing. 4. Trend of modern construction	1. Home lessness 2. Commercialization 3. Increase in urban sprawl. 4. Inflation of land 5. Formation of urban slums.

5.4 Need Assessment:

As per the 2017 census population results, Dadu municipal area had a household size of 5.5 persons and total housing stock of 30,953 households, Most of them were categorized as Pacca houses, which include Pacca (Brick construction) and RCC houses.

Table 5-2: Housing Backlog

S. No.	Housing	Population	Household Size	No. of HH
1.	**Present 2017**	171,191	5.5	30,953
2.	**Future 2037**	293,377	5.5	53,341
3.	**Additional (2017-2037)**	122,186	5.5	22,388

***Source**: Consultants Estimate 2017 and Census Report of Dadu 2017*

Based on the projected population for the year 2037, the increase in population is 122,186 with an estimated additional housing requirement of 22,388

5.5 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 Finance[21]

- 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
- 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.

5.6 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:

I. Long Term Projects

- Development of indigenous and cost effective approaches particularly for low income group and mass production.
- Fulfill the need of small house units (120 sq. yard) for catering the demand of increasing one unit lifestyle
- An affordable housing program for low income group in different phases up to 2037, through one window operation (including technical guidance, easy loan provisions, legal procedures)
- Formulation of Green Building Byelaws for future housing to address water conservation, low energy consumption, waste recycling etc.

II. Short Term Plan

- Incremental housing schemes on the lines of Orangi, Qasba, Khuda Ki Basti etc. should be initiated based on lessons of experience.
- 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.
- Regularize notified Katchi Abadis complemented by policies to restrain the emergence of new Katchi Abadis.
- Concepts of small towns should be worked out to minimize the housing requirement in secondary cities.
- Increase in proportion of small size plots could be made for low income groups in all new housing schemes.
- Low-income Housing Funds would be established to provide sufficient and affordable credit for housing to meet the needs of shelter less poor. Example is Grameen Bank which is a microfinance organization and community development bank founded in Bangladesh. It makes small loans to the impoverished without requiring collateral

5.7 Priority Projects

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

- **Project Justification**

Significant households in Dadu have low income. These households are unable to acquire their own houses to resolve their housing problem resulting in increase in the number of slums areas and encroachment. The living condition in such areas are poor they face so many problems and mostly don't have utility services.

According to the primary survey conducted in Dadu town, the status of ownership of houses is about 90% family owned or rent free, whereas 10% of on rent. The category of rental indicates housing gap.

The private sector is usually very active in the development of land and construction of house but the issue is with the affordability for low income groups. The public sector will need to facilitate the private sector.

The site of SMBBT is already proposed and developed along main Dadu-Bhan road by Government of Sindh. The site has been fully developed with 700 plots ready for allotments to poorest of society.

Approx. 2,393 Number of housing units up to 120 sq. yds will be proposed. For this we have assumed tentative cost of 10.0 million per acre cost covers land development & land acquisition for 150.0 Acres.

Description	Results
Present Population census 2017	**171,191**
out of total, 10% Population of Dadu Town Living in rental houses with no house ownership	17,119
Households required @ 5.5	3,113
Availability of SMBBT Fully developed plots	700
Additional Plots Required to fulfill present gap	2,393

The purpose of this project is:

- Provide affordable shelters to the poor people
- Through this process alternate resettlement of the congested part of the towns may be possible

- This process will improve the living standard of the town

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

- **Project Benefits**

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

- **Implementing Authority** – P&D Department Government of Sindh, Dadu MC and HESCO etc.

- **Estimated Cost: 1500 Million Approx**. (Short Term).

Project Name	Short Term	Proposed Area in Acres	Preliminary Cost in Million/- PKR)	Justification
Land Development for low income housing scheme	Short Term	150 acres	1,500.00	2,593 housing units size upto 120 SY. For this we have assumed 10.0 million per acre cost covers land development & land acquisition for 150.0 Acres.

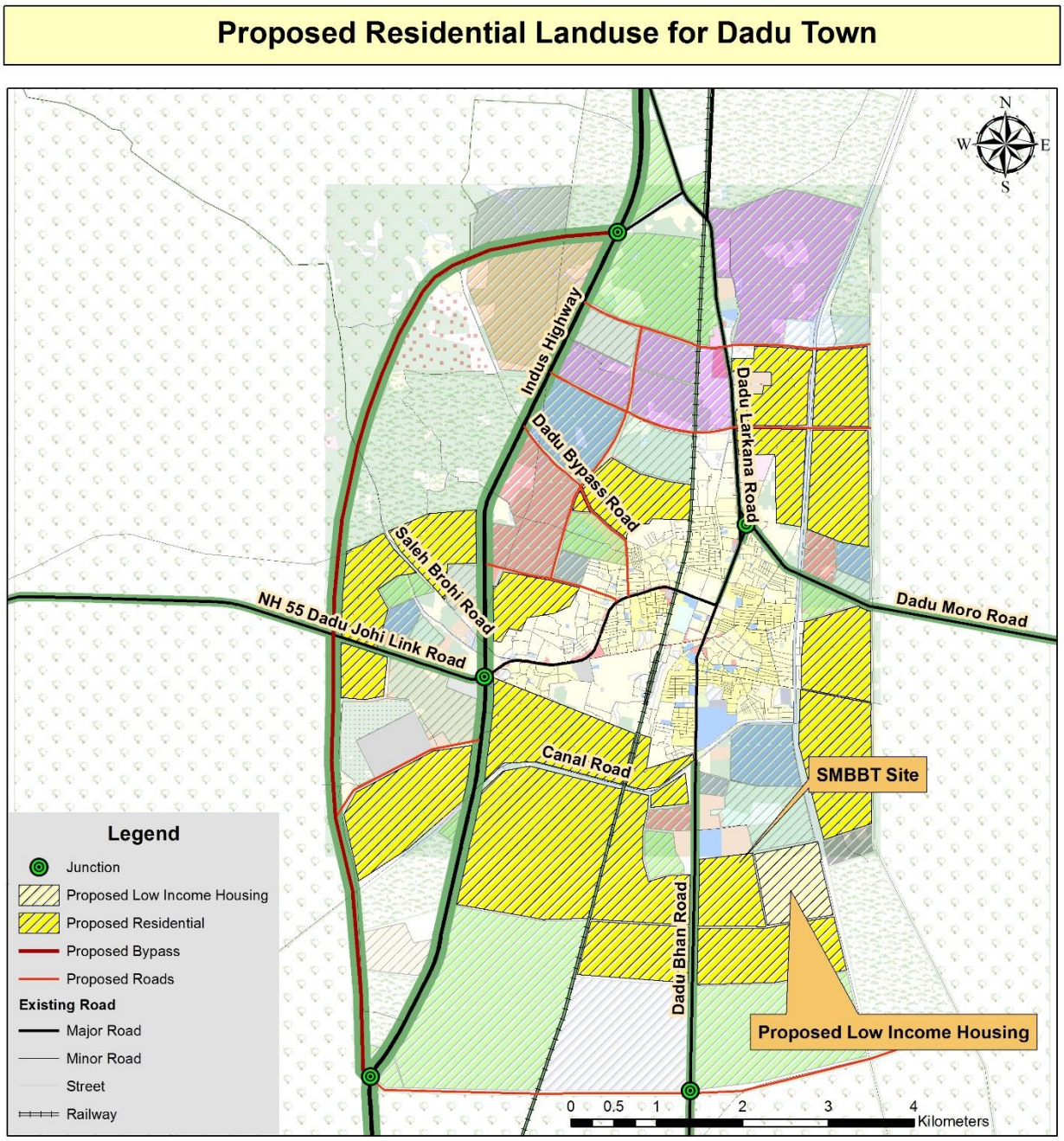


Figure 5:1: Proposal for Site Development for Low income Housing Scheme for Dadu Town

6. SOCIAL INFRASTRUCTURE

6.1 Education

6.1.1 Existing Situation

In district Dadu, there are 1,679 primary schools out of which 231 are for boys student and 248 are for girls students. The enrolments are 159,869 (boys 93,787 and girls 66,082) with Teaching Staff available is 4,996 out of which 3,812 are male and 1,184 are Female.



Figure 6:1: Govt. Girls High School Dadu

There are 44 Middle Schools in district Dadu out of which 6 are for boys and 7 for girls, with an enrolment of 8,949 (boys 5,605 and girls 3,344) having Teaching Staff of about 356 out of which 271 are male and 85 are female.

There are 13 elementary Schools in district Dadu, with a total enrolment of 2,718 (boys 1,483 and 1,235 girls) having a Teaching staff of 98 teachers. The teacher student ratio is 1:28.

The number of Secondary Schools in Dadu is 70 in number out of which 19 are for boys and 18 are for girls students, with a total enrolment of 38,301 (boys 23,604 and girls 14,679), taught by 1,380 teachers (male 1,014 and female 366)**.**

There are 15 Higher Secondary Schools in district Dadu out of which 4 are for boys and 2 for girls, with an enrolment of 13,077 (boys 9,421 and girls 3,656) having Teaching Staff of about 401 out of which 305 are male and 95 are female.

6.1.2 Condition of Educational Institutions

There is the overall poor condition of schools and college due to lack of repair and maintenance or buildings lack of playgrounds, libraries, electricity, labs, toilets, etc. To bring universal education ratio there is a need to double the efforts by engaging teachers, increasing the capacity of schools, operationalization of existing closed school and opening of new schools.

6.1.3 Education Sector at Taluka Level[23]

a. Primary, Middle & Elementary Schools

All structures of primary schools in Dadu are old and need to be repaired. Most of the primary schools do not have basic facilities in satisfactory condition, like drinking water, electricity and toilets.

I. Primary Schools

a. Primary Schools (Boys)

The present number of enrolment in boys' primary schools is 7,026. There are 70 boys' primary schools, having a total of 173 classrooms. The average number of students per classroom is 41. Currently, 282 teachers are available in Boys primary schools. The teacher student ratio is 1:25.

b. Primary Schools (Girls)

The present number of girls' primary schools is 90 with a total enrolment of 7,212. The total number of classroom in 90 schools is 186. The current number of students in each classroom on average is 39 students. 335 teachers are performing their jobs in girls' primary schools. Thus the teacher student ratio is 1:22.

c. Primary Schools (Co-Education)

The present enrolment of coeducation Primary School level in Dadu is 34,787. The total number of classrooms is 792. The average number of students in classrooms is 44. Currently, 1,264 teachers are performing their jobs in primary schools. The teacher student ratio for High School is 1:28.

II. Middle Schools

a. Middle School (Boys)

The present number of boys' enrolment in Middle schools is 829, having a total of 22 classrooms. The average number of students per classroom is 38. Currently, 32 teachers are available in Boys Middle school. The teacher student ratio is 1:26.

b. Middle School (Girls)

There are 3 girls Middle School in Dadu with a total enrolment of 639, having 8 classrooms. The average number of students per classroom is 1:80. The total teaching staff of 13 teachers. The student teacher ratio is 1:49.

c. Middle School (Co-Education)

The present number of enrolment in coeducation Middle schools is 1,550. There are 5 co-education middle schools in Dadu having 37 classrooms. The average number of students per classroom is 42. There are 69 teachers with a student teacher ratio of 1:22.

[23] *RSU (Reform Support Unit RSU Education & Literacy Department. Government Of Sindh 2017)*

III. Elementary Schools

a. Elementary School (Boys)

There are 2 boys' elementary schools present in Dadu. The present enrollment in elementary schools is 367. The total number of classrooms in these schools is 14. The average number of students in classrooms is 26. Currently, 17 teachers are performing their jobs in these elementary schools. The teacher student ratio for Elementary School is 1:22.

b. Elementary School (Boys)

There are 3 girls' elementary schools present in Dadu. The present enrollment in elementary schools is 497. The total number of classrooms in these schools is 11. The average number of students in classrooms is 45. Currently, 24 teachers are performing their jobs in elementary schools. The teacher student ratio for Elementary School is 1:21.

c. Elementary School (Co-Education)

There are 2 Co-education elementary schools present in Dadu. The present enrollment in elementary schools is 639. The total number of classrooms in these schools is 12. The average number of students in classrooms is 53. Currently, 22 teachers are performing their jobs in this elementary school (Co-education Elementary school). The teacher student ratio is 1:29.

Table 6-1: Present Education Institutions and Enrolment Record

S. No	Type	Numbers	Class rooms	Enrolments	Teachers	Students per classroom	Teacher Student Ratio
1	**Boys Primary Schools**	70	173	7,026	282	41	25
2	**Girls Primary Schools**	90	186	7,212	335	39	22
3	**Primary Schools (Co-education)**	359	792	34,787	1,264	44	28
4	**Middle Schools (Boys)**	4	22	829	32	38	26
5	**Middle Schools (Girls)**	3	8	639	13	80	49
6	**Middle School(Co-Education)**	5	37	1,550	69	42	22
7	**Elementary Schools (Boys)**	2	14	367	17	26	22
8	**Elementary Schools (Girls)**	3	11	497	24	45	21
9	**Elementary Schools (Co-Education)**	2	12	639	22	53	29
Total / Average		**538**	**1,255**	**53,546**	**2,058**	**43**	**26**

Source: Reform Support Unit RSU Education & Literacy Department. Government of Sindh 2017

b. High Schools[24]

I. Secondary Schools

a. Secondary Schools (Boys)

The present enrolment of boys at the high school level in Dadu is 6,843. There are 7 boys high school and all are functional. The total number of classrooms is 137. The average number of students in the classroom

[24] *RSU (Reform Support Unit RSU Education & Literacy Department. Government Of Sindh 2017)*

is 50. Currently, 250 teachers are performing their jobs in Boys High schools. The teacher student ratio for Boys High School is 1:27.

b. Secondary Schools (Girls)

The present enrolment of girls at the high school level in Dadu is 4,634. There are 9 girls high school and all are functional. The total number of classrooms is 90. The average number of students per classroom is 51. Currently, 166 teachers are performing their jobs in Girls High schools. The teacher student ratio for Girls High School is 1:28.

c. Secondary Schools (Co-Education)

The present enrolment of girls and boys at the high school level in Dadu is 4,631. There is 12 Co-Education high school and all are functional. The total number of classrooms is 107. The average number of students per classroom is 43. Currently, 178 teachers are performing their jobs in Girls High schools. The teacher student ratio for these High Schools is 1:26.

II. Higher Secondary Schools

a. Higher Secondary School (Boys)

There are 2 Boys Higher Secondary School present in Dadu. The present enrolment is 1,210. The total number of classrooms in it is 21. The average number of students in the classroom is 58. Currently, 41 teachers are performing their jobs in the Higher Secondary Schools. The teacher student ratio for Higher School is 1:30.

b. Higher Secondary School (Co-Education)

There are 4 Co-education Higher Secondary School present in Dadu. The present enrolment is 2,424. The total number of classrooms in it is 109. The average number of students in the classroom is 22. Currently, 127 male teachers are performing their jobs in Higher Secondary Schools. The teacher student ratio for High School is 1:19.

Table 6-2: Secondary and High Secondary Schools

S. No	Type	Numbers	Class rooms	Enroll:	Teachers	Students per classroom	Teacher Student Ratio
1	Secondary Schools (Boys)	7	137	6,843	250	50	27
2	Secondary Schools (Girls)	9	90	4,634	166	51	28
3	Secondary School (Co-Education)	12	107	4,631	178	43	26
4	Higher Secondary School (Boys)	2	21	1,210	41	58	30
5	Higher Secondary School (Co-Education)	4	109	2,424	127	22	19
	Total / Average	**34**	**464**	**19,742**	**762**	**43**	**26**

Source: Reform Support Unit RSU Education & Literacy Department. Government of Sindh 2017

c. Non-Professional College

The present number of Non-Professional Colleges in district Dadu are 5 (male: 4, female: 1). one male Intermediate College with a total enrolment of 970 and teaching staff of 18 teachers, and 4

Degree Colleges (male: 3, female 1) with the total enrolment of 7,757 (male: 5838, female: 1919) and having teaching staff of 117 (male: 83, female: 34).[25]

Table 6-3: Present Non-Professional College in District Dadu

Institutions	No. of Institutions			Enrolment			Teaching Staff		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Non-Professional College	**5**	**4**	**1**	**8727**	**6525**	**2202**	**135**	**101**	**34**
Intermediate	**1**	**1**	**-**	**970**	**687**	**283**	**18**	**18**	**-**
Degree	**4**	**3**	**1**	**7757**	**5838**	**1919**	**117**	**83**	**34**
Post Graduate	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Source: College Education Statistics-2014-15									

d. Technical Institutions

The present number of technical institutions in district Dadu are 13 (male: 6, female: 7). Two male polytechnic institutions with a total enrolment of 1,599 and teaching staff of 47 teachers. Two male commercial institutions with 64 male enrolment and 16 male teachers and 9 Vocational institutions (male: 2, female 7) with the total enrolment of 291 (male: 175, female: 116) and having teaching staff of 43 (male: 17, female: 26).[26]

Table 6-4: Present Technical Institutions in District Dadu

Institutions	No. of Institutions			Enrolment			Teaching Staff		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Technical Institutions	**13**	**6**	**7**	**1954**	**1838**	**116**	**106**	**80**	**26**
Technical Colleges	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Polytechnic Institutions	**2**	**2**	**-**	**1599**	**1599**	**-**	**47**	**47**	**-**
Mono-technic Institutions	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Commercial Institutions	**2**	**2**	**-**	**64**	**64**	**-**	**16**	**16**	**-**
Vocational Institutions And Vocational Schools	**9**	**2**	**7**	**291**	**175**	**116**	**43**	**17**	**26**
Source: College Education Statistics-2014-15									

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

6.1.4 SWOT analysis

Education & Literacy			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Urban literacy rate is higher than rural.	1. High demand rate for private schooling educational system 2. lack of modern teaching techniques 3. Poor condition of school buildings, shortage of classrooms, playgrounds, furniture & water supply 4. Outdated educational techniques	1. More people will move to urban areas for education 2. More PPP is required for educational sector 3. The standard of private and government schooling must be maintained by incorporating qualified teachers	1.Expensive quality education

6.1.5 Major Issues

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

6.1.6 Need Assessment:

District Dadu (Includes primary to Higher education institutions)

- As per NRM (National Reference Manual) and NEP (National Education Policy) standards, recommended students per classroom occupancy is 30 students per classroom. Total enrolment and the available number of classrooms show that there is a present shortage of classrooms.
- A present need can be fulfilled by providing new classrooms in existing school buildings or providing new school buildings with the provision of playgrounds and other facilities.
- Therefore, for the short term plan, the Dadu district needs of 2,658 extra classrooms.

Table 6-5: Backlog in Education Sector of Dadu District

S. No.	Present Need Assessment of District Dadu	Results
1.	Total Enrolments	222,914
2.	Total Number of available Classrooms	4,773
3.	Student Per Classroom @ NRM Standard (Primary to Secondary)	30
4.	Present Occupancy Load of Students per Classroom	47
5.	Classrooms Required for present need	7431
6.	Shortage of Classrooms	2,658
7.	No. of Teachers	7,231
8.	Teacher Student Ratio	31
Source: *Sindh Education Profile 2016-17 and Consultant's Estimates 2017*		

Taluka Dadu (Includes primary to Elementary education institutions)

- Short term plan, for taluka provision, there is a need for 530 extra classrooms. The repairing of existing buildings with all the basic facilities and training of teaching staff is required.

Table 6-6: Present Assessment in Education Sector of Dadu Taluka

S. No.	Present Need Assessment of Taluka Dadu	Results
In Schools of Dadu (Primary, Middle and Elementary)		
1.	Total Enrolment	53,546
2.	Total Number of available Classrooms	1,255
3.	Students per Classroom @ NRM Standard	30
4.	Student Capacity per Classroom	43
5.	Classrooms Required for present need	1,785
6.	Shortage of Class Rooms	530
7.	No. of Teachers	2,058
8.	Teacher Student Ratio	26
Source: *RSU (Reform Support Unit RSU Education & Literacy Department. Government Of Sindh 2017) and Consultant's Estimates 2017*		

Taluka Dadu (Higher education institutions)

- The available number of classrooms for students is 464. As per the present figures provided by the district education department Dadu, the occupancy rate in the present classrooms is a very high 43 students per classroom. As per National Reference Manual (NRM), 40 students per classroom is the standard for college-level education. Based on the standard occupancy of 40 students per classroom, currently, there is a need for 30 additional classrooms.

Table 6-7: Present Need Assessment in Education Sector of Dadu Taluka (Higher Secondary)

S. No.	Present Need Assessment Dadu Taluka	Results
In Schools of Dadu (Secondary and Higher Secondary)		
1.	Total Enrolment	19,742
2.	Total Number of available Classrooms	464
3.	Students per Classroom @ NRM Standard	40
4.	Student Capacity per Classroom	43
5.	Classrooms Required for present need	494
6.	Additional numbers of Classrooms	30
7.	No. of Teachers	162
8.	Teacher Student Ratio	26
Source: *RSU (Reform Support Unit RSU Education & Literacy Department. Government of Sindh 2017) and Consultant's Estimates 2017*		

Future Assessment (2037)

a. District Dadu

i. Primary to Higher Secondary

The long term plan target is to achieve 100% enrolment with a 1:1 male-female ratio by 2037; therefore 21,428 additional classrooms will be required to accommodate the upcoming generation for the next twenty years. This need could be fulfilled either by addition in existing buildings or more new schools and colleges will needed to be construct in the future to serve an additional estimated population of 2,210,592 (10 and above).

Table 6-8: Future Need Assessment (2037) at District Level

S. No.	Description	Results
Primary to Higher secondary		
1	Expected total enrolment by 2037 @ 100% enrolment	**786,036**
2	Total classrooms requirement till 2037	26,201
3	Present Supply (2017)	4,773
4	Additional classrooms requirement till 2037	21,428
Source: Consultants Estimate Based on 1998 and 2017 Census		

b. Taluka Dadu

The long term plan target is to achieve 100% enrolment with a 1:1 male-female ratio in the next twenty years. Therefore, the need will be of 3,925 additional classrooms for school (Primary to Elementary), 1,008 additional classrooms for Secondary to High Secondary will be required to accommodate the upcoming generation for the next twenty years. This need could be fulfilled either by addition to existing buildings or more new schools and colleges will need to construct in the future to serve an additional estimated population.

Table 6-9: Future Need Assessment (2037) at Dadu Taluka

S. No.	Description	Results
Primary to Elementary Schools		
1	Expected total enrolment by 2037 @ 100% enrolment	155,403
2	Total classrooms requirement till 2037	5,180
3	Present Supply (2017)	1,255
4	Additional classrooms requirement till 2037	3,925
Secondary to Higher Secondary Schools		
1	Expected total enrolment by 2037 @ 100% enrolment	58,883
2	Total classrooms requirement till 2037	1,472
3	Present Supply (2017)	464
4	Additional classrooms requirement till 2037	1,008
Source: Consultants Estimate Based on 1998 and 2017 Census		

6.1.7 Policy Guidelines

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

6.1.8 Strategic Development Plan

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.

Based on the above objectives some strategies are discussed below:

I. Long Term Plan

- Sustainable construction 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.

II. Short 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.

6.1.9 Priority Projects

i. Repair & Rehabilitation of schools, Colleges and vocational and technical colleges with allied infrastructure (Excluding IAP projects)

- **Project Scope & Justification**

  Education should be the one of major goal of any urban strategy. The sitution of education sector in Dadu is not at the preferred level. The condition of exisiting schools in DHQ town needs rehabilation and improvement of the infrastructure and Allied basic facilities like water, electricity, toilet, playgrounds etc.

At present, there are more than 70 educational building of various levels prsent in town, therefore on priority basis we have suggested below school buildings for repair and rehabilitation.The List of the schools and colleges in this project are given bellow:

S. No.	School	Area in Acres
1	GBHS Pilot High School Dadu	3.23
2	GBLSS Irrigation Colony	0.73
3	Government Permanand Hardas Pilot High School Dadu	2.21
4	Special Education Center	1.5
5	GBHS Housing Society Dadu	0.69
6	GBPS B & R Colony	0.48
7	GBPS Fateh Khan Zawar	0.5
8	GBPS Ghulam Fatima Junejo	0.54
9	GGPS Housing Society	0.6
10	GBPS Ibrahim Lagharri	0.4
11	GBPS Massan Road	0.37
12	GBPS Muhammad Paryal	0.4
13	GGPS Bilawal Zour	0.47
14	GBPS Syed Noor Muhammad Shah	0.39
Total		**12.51**

- **Project Benefit**

  This relate to the basic right of the people and comes under the compulsory social services, By the increasing in the litracy ratio the living standard of the population will improve with in the district. Attempts will be made eleminate the gender gap and attracts more girls in the school.

- **Implementing Authority – District Education Works & Services Department GoS.**

- **Estimate Cost: Rs. 245.22million approx.**

ii. Capacity Building Training Programs to Enhance Capacities.

- **Project Scope & Justification**

  Sindh Teacher Education Development Authority (STEDA), Provincial Institute of Teacher Education (PITE) is providing the professional development of teachers for increasing their teaching skills. In Dadu, the peoples are significantly deficit in technical skills.

- **Project Benefits**
  By implementation of this project, people will enhance their academic skills and it also strengthens their teaching skills for better results.

- **Implementing Authority - Sindh Teacher Education Development Authority (STEDA), Provincial** Institute of Teacher Education (PITE) Government of Sindh

- **Estimated Cost: Rs.15 Million PKR Approx.**

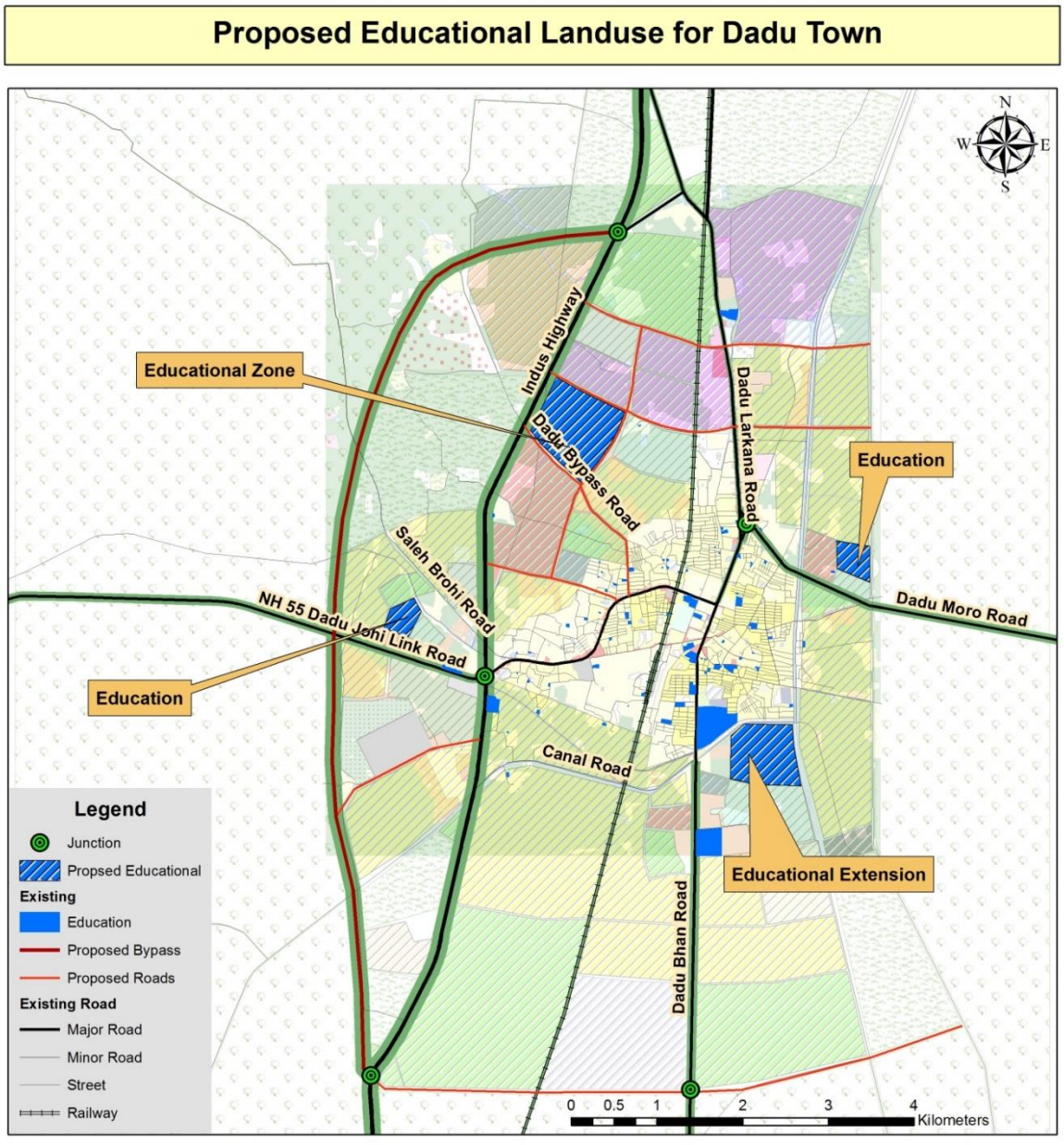


Figure 6:2: Proposal for Extension of Educational Facilities for Dadu Town

Project Name	Area Acres	Estimated Cost In Millions	Short Term	Justification
Education				
Repair & Rehabilitation of schools, Colleges and vocational and technical colleges with allied infrastructure and basic utilities. (Excluding the IAP Projects)* considering 30% built-up area	12.51	245.22	Short Term	3.57 acres = 163,480.68 sft, at the rate of 1500/- PKR per sft construction cost with all infrastructure cost.
Capacity Building Training Programs to Enhance Capacities.	-	15.00	Short Term	Teachers Capacity building programs can also strengthen their teaching skills for better results.

6.1.10 Immediate Action Plan for Core Urban Area

- **Rehabilitation and Up gradation of Schools**

All schools marked in core urban area should be rehabilitate with the structural stability, building repair work, access to utilities, provision of facilities, replacement of old furniture, presence of teaching and non-teaching staff etc. The important educational buildings present in core urban area like; GBPS Police Head Quarter, GBHS Pilot High School, Talibul Molla High School, GBPS Housing Society, GBPS Khuda Bux Gopang and GBPS Wazir Abad.

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

S. No.	Education Facility Name	Area (acre)	Rehabilitation Required - Area wise or job wise cost (PKR)							
			Street / Road / Parking	Utility Facilities					School Building Repair/ Renovation	Security
				Electricity	Water Supply	Sewerage	Gas	PTCL		
1	GBPS Police Head Quarter	0.787	0.79	0.91	1.18	1.18	0.79	0.20	0.39	0.20
2	GBHS Pilot High School Dadu	3.234	3.23	3.72	4.85	4.85	3.23	0.81	1.62	0.81
3	Talibul Molla High School	1.891	1.89	2.18	2.84	2.84	1.89	0.47	0.95	0.47
4	GBPS Housing Society	0.856	0.86	0.98	1.28	1.28	0.86	0.21	0.43	0.21
5	GBPS Khuda Bux Gopang	0.369	0.37	0.42	0.55	0.55	0.37	0.09	0.18	0.09
6	GBPS Wazir Abad	0.224	0.22	0.26	0.34	0.34	0.22	0.06	0.11	0.06
Total		7.36	7.36	8.46	11.04	11.04	7.36	1.84	3.68	1.84
Total PKR Rs. Million			**52.63**							

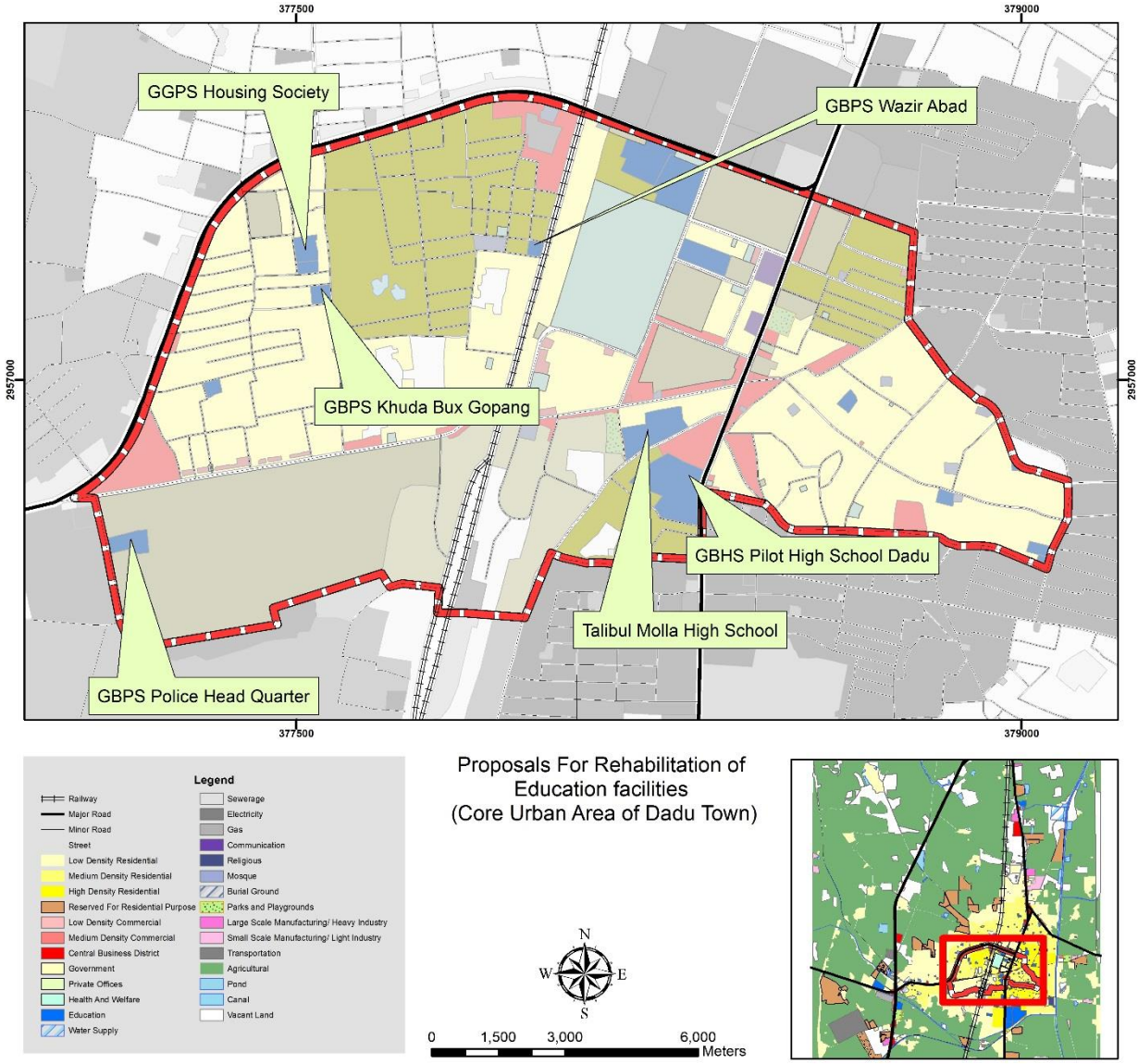


Figure 6:3: Proposal for Educational Facilities Core Urban Area Dadu

6.2 Health

6.2.1 Existing Situation

Currently, Dadu has is one civil hospital having 188 beds, 4 Taluka HQ Hospitals at District having 80 beds and 48 private Hospitals having 28 beds to serve the district. The other health facilities spread over the entire district are 5 RHC having 82 beds, 8 TB Clinics, 46 BHUs having bed strength 92, 75 dispensaries having 6 number of beds and 10 M.C.H.C (Mother-Child Health Center) having 8 numbers of Beds.

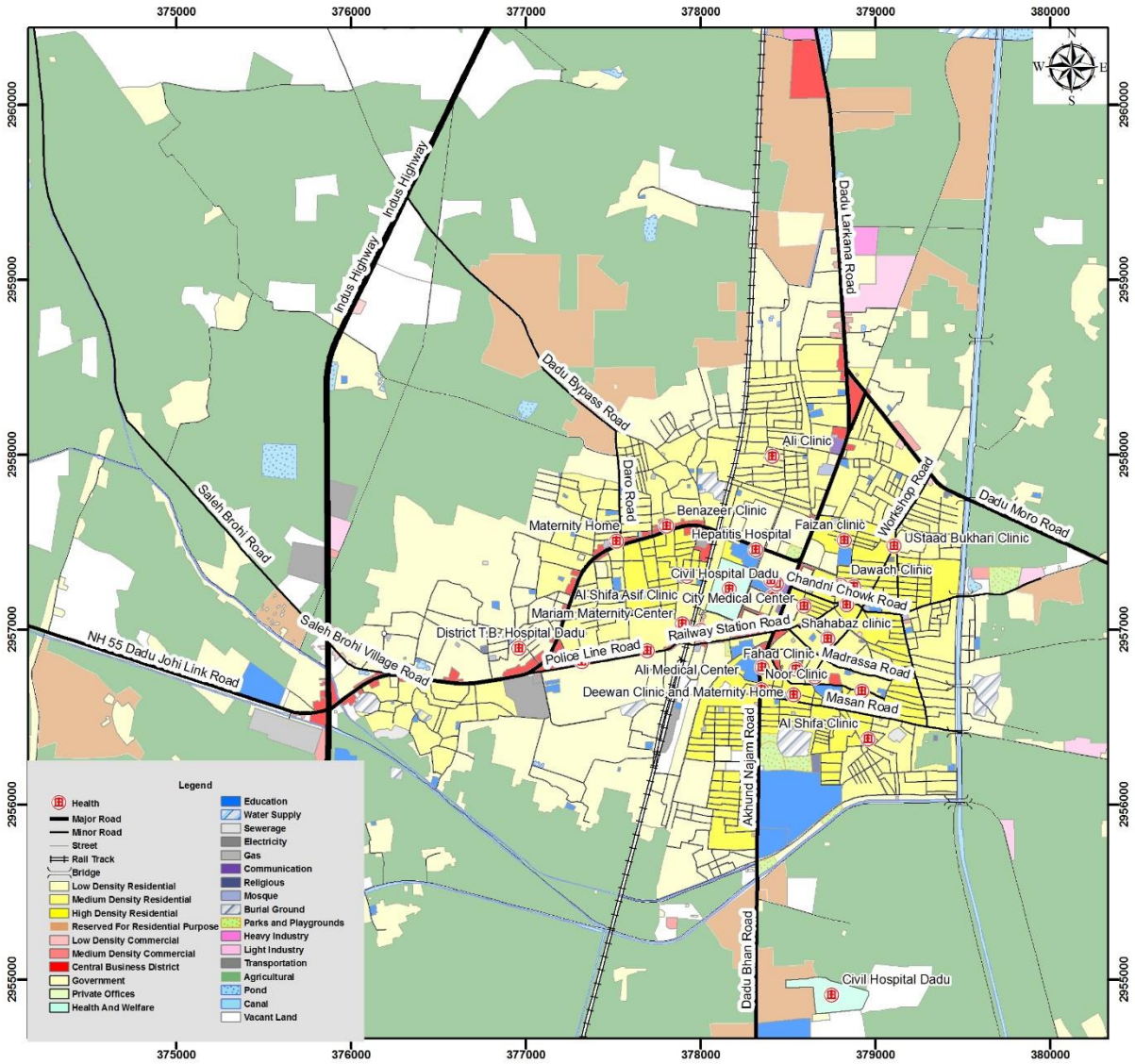


Figure 6:4: Health Map of Dadu MC

Health Sector at District Level

In district Dadu, there is one civil hospital having 188 beds capacity, 4 THQ having 80 beds, 46 BHUs having 92 beds and 5 RHCs having 82 beds, 75 Dispensaries having 6 beds and 10 M.C.H.C having 24 beds. There are 48 private hospitals with 28 beds serving at the Dadu district.

Table 6-10: Government and Private Health Facilities with bed capacity

Type	No.	Beds
Civil Hospital	1	188
Taluka Hospital	4	80
BHUs	46	92
RHCs	5	82
Private Hospital	48	28
Dispensaries	75	6
M.C.H.C	10	24
Total	**189**	**500**
Source: Health Profile of Sindh 2017		

The total number of dispensaries at district Dadu is 75 out of which 23 are Government, 2 are Semi government and 50 are L. Bodies. There are 10 M.C.H.C (Mother and Child Health Center) 4 are government and 6 are private having 24 number of beds. There are 8 T.B clinics in district Dadu.

Table 6-11: Dispensaries, MCHC and T. B Clinics with bed capacity

Sector	DISPENSARIES		M.C.H.C.		T.B. CLINICS	
	NO.	BEDS	NO.	BEDS	NO.	BEDS
Govt.	23	-	4	14	7	-
Semi Govt.	2	6	-	-	1	-
L. Bodies	50	-	-	-	-	-
Private	-	-	6	10	-	-
Total	75	6	10	24	8	-
***Source**: Health Profile of Sindh, 2017*						

The present total number of doctors at district Dadu is 436. There are 3 Physicians, 2 Surgeons, 4 Gynaecologists, 3 Paediatricians, and 8 Dentists in the government hospital. There are 227 GMO doctors in government hospitals.

Table 6-12: Doctors staffs in district Dadu

Sector	Physicians	Surgeons	Gynecologist	Pediatricians	Doctors/GMO	Dentists
Govt.	3	2	4	3	227	8
Semi Govt.	-	-	-	-	-	-
L. Bodies	-	-	-	-	-	-
Private	-	-	-	-	-	-
Total	3	2	4	3	227	8
***Source:** Health Profile of Sindh, 2017*						

The Para-Medical staff of district Dadu in public sector includes 8 Nurses, 21 LHV, 61 Midwives, 75 Med. Tech, and 148 Disp. /Dressers.

Table 6-13: Nursing and Para-Medical Staff in Dadu district

Sector	Nurses	LHV	Midwives	Med. Tech	Disp. / Dresser
Govt.	8	21	61	75	79
Semi Govt.	-	-	-	-	-
L. Bodies	-	-	-	-	48
Private	-	-	-	-	21
Total	**8**	**21**	**61**	**75**	**148**
***Source**: Health Profile of Sindh, 2017*					

The Technician medical staff of district Dadu in public sector includes 8 Lab. Tech, 9 Lab. Asstt, 8 X-Ray Tech, 8 O.T. Tech, 16 Dental Tech/ Asstt, 10 E.C.G Teach/Asstt, 4 O.T Asstt, 1 X-Ray Asstt, and 2 U-Sound Tech.

Table 6-14: Technician Medical staff in Dadu district

Sector	Lab. Tech	Lab. Asstt.	X-Ray Tech.	O.T. Tech.	Dental Tech/ Asstt.	E.C.GTech/Asstt.	O.T. Asstt	X-Ray Asstt.	U-Sound Tech./
Govt.	8	9	8	8	16	5	4	1	2
Semi Govt.	-	-	-	-	-	-	-	-	-
L. Bodies	-	-	-	-	-	-	-	-	-
Private/ Missionary	-	-	-		-	5	-	-	3
Total	12	9	8	8	16	10	4	1	5
***Source**: Health Profile of Sindh, 2017*									

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

Health			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Availability of DHQ Hospital in Town	1. Limited health facilities in urban area 2. There are only 500 beds for total population, which cover approx. 20% population of district 3. Shortage of doctors and para medical staff	1. More investment is required through PPP in health sector 2. More job opportunities for doctors. 3. More job opportunities for the paramedical staff	1. Less emergency response to health incidents 2. Death rate may increase 3. Difficult to control eradication of epidemic diseases

6.2.4 Need Assessment

Present Need Assessment (Population, Bed Ratio) 2017

The present bed ratio is one bed for every 3,101 population of district Dadu. This ratio is inclusive for private hospitals and medical centers. As per NRM medium-term target of 2 beds per 1000 population for Pakistan. Currently, there is a need for 2,601 additional beds for the district Dadu Population. The shortage of staff, medicines, and funds for building maintenance are endemic main problems in the health sector. Present Supply, Need, and Gap and Population per Bed Ratio are given in the below table.

Table 6-15: Present Need at District Level

Present Population	Beds Analysis			Doctors Analysis		
	Available Beds	Present Need	Required Beds	Available Doctors	Present Need	Required Doctors
1,550,266	500	3,101	2,601	247	1,550	1,303
Source: *Calculation based on National Reference Manual (NRM)*						

Future Need Assessment (Population, Bed Ratio) 2037

The consultant considered it appropriate to consider the catchment population of the district to work out the present need assessment and future (2037) requirements. The NRM (National Reference Manual) recommends 2 beds per thousand as the medium-term target. On this basis, approximately 3,921 beds will be required to be provided gradually until 2037. According to WHO (World Health Organization) standards, doctor to population ratio is 1:1000 so taking that as a reference point the future requirement of doctors comes out to be 1,964 doctors for the future population of District Dadu. Future Supply, Need and Gap and Population per Bed Ratio is given below in the table.

Table 6-16: Future Need Assessment at District Level

Present Population	Beds Analysis			Doctors Analysis		
	Available Beds	Future Need	Required Beds	Available Doctors	Future Need	Required Doctors
2,210,592	500	4,421	3,921	247	2,211	1,964
Source: *Calculation based on National Reference Manual (NRM)*						

6.2.5 Policy Guidelines27

- 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

- Tertiary Level Specialized Hospitals
- Enhancement of Mobile Health Unit for far-flung areas of District
- Availability of ambulance network may be created especially for rural areas
- Accommodation facilities for Doctors and Paramedic Staff
- Construction of additional BHUs, RHCs and MCHCs
- Rehabilitation and improvement in the existing hospitals

II. Short Term Plan

- Improve access to healthcare facilities as due to long journeys to hospitals many patient die on the way.
- We can further improve the access through an "Edhi' type ambulance network financed by local charity, in connection with local government bodies and healthcare facilities
- Improve the quality of healthcare services,
- Improving functionality of equipment and availability of quality medicines.
- Effective implementation of Health Insurance Programme to reduce catastrophic health expenditures.

[27] Sindh Vision 2030

6.2.7 Priority Projects

i. Repair, Rehabilitation and provision of missing Facilities in Hepatitis Hospital Dadu

- **Project Justification**

  Currently **Hepatitis Hospital is** facing lot of problems due to unavailability of Laboratorial facilities. Shortage of filled doctors, surgical instruments, and lack of machinery are the major issues.

S. No.	Name	Area
1	**Hepatitis Hospital**	0.35
Total		**0.35**

- **Project Benefits**

  This project will provide high quality health facilities and free medicines to the people of District Dadu.
- **Implementing Authority - Government of Sindh - Health Department**
- **Estimated Cost: 389.56 Million PKR Approx. (Short Term)**

S. No.	Project Name	Area (acres)	Estimated Cost In Millions	Short Term	Justification
Health					
1	Rehabilitation and provision of missing Facilities in Hepatitis Hospital Dadu	0.35	29.62	**Short Term**	0.35 acres = 14810.4 sft, at the rate of 1800/- PKR per sft construction cost with all infrastructure cost.

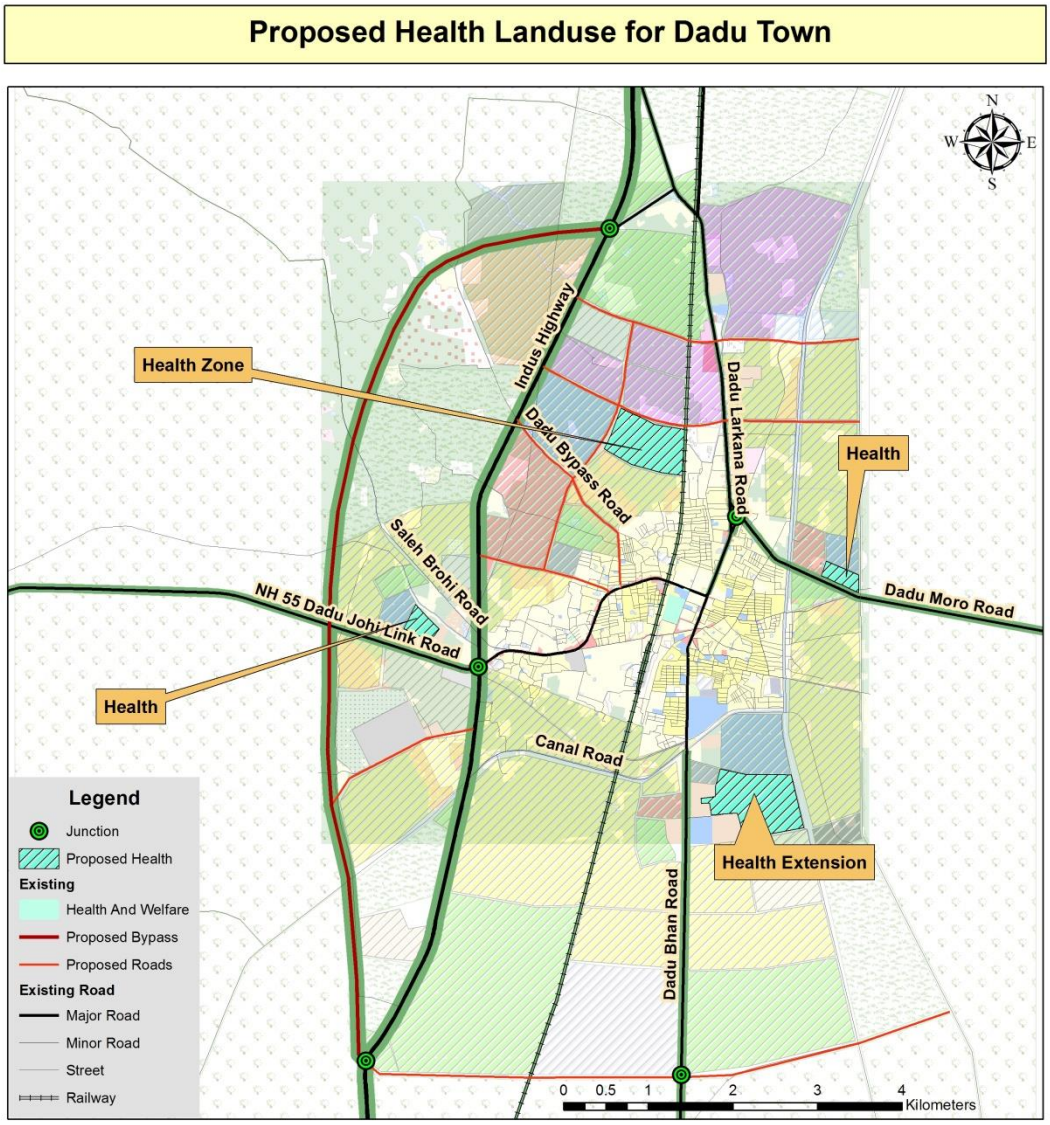


Figure 6:5: Proposal for Extension of Health Facilities for Dadu Town

6.2.8 Immediate Action Plan for Core Urban Area

Health sector of Dadu district is proving better health facilities to District population. Besides this, many private clinics and hospital are also participating there role in the health sector.

- **Repair, Rehabilitation and Provision of Missing Facilities for District DHQ / Civil Hospital Dadu & T.B. Hospital**

  DHQ / Civil Hospital is located Near Old bus stop and civil hospital road connects civil hospital with main Larkana Dadu road. Civil Hospital Dadu is fully functional with lack of basic facilities like;

unavailability of incinerator, waiting area for patients, Basic Laboratorial facilities, shortage of doctors' & para medic staff.

- Provision of Emergency transport facility (Ambulances) for hospital
- Provision of missing facilities for mother & child care wards with allied facilities
- Provision of Missing Facilities at District T.B. Hospital Dadu

"District T.B. Hospital is located along main Larkana Dadu road. District Dadu is counted among those districts who have faciliated with modern TB diagnostic hospitals in Sindh. Therefore, On immediate basis it is recommend to povide missing faciliates to the district TB centre. "

S. No.	Area / Locality / Address	Area (acre)	Rehabilitation Required - Area wise or job wise cost (PKR)			
			Street / Road /Parking	Provision of all 4 utilities	Public Facilities	Security
1	Repair, Rehabilitation and Provision of Missing Facilities for District DHQ / Civil Hospital Dadu & T.B. Hospital	15.14	15.14	9.79	18.92	3.78
Total		**15.72**	**15.72**	**10.17**	**19.65**	**3.93**
Total PKR Rs. Million			**47.63**			

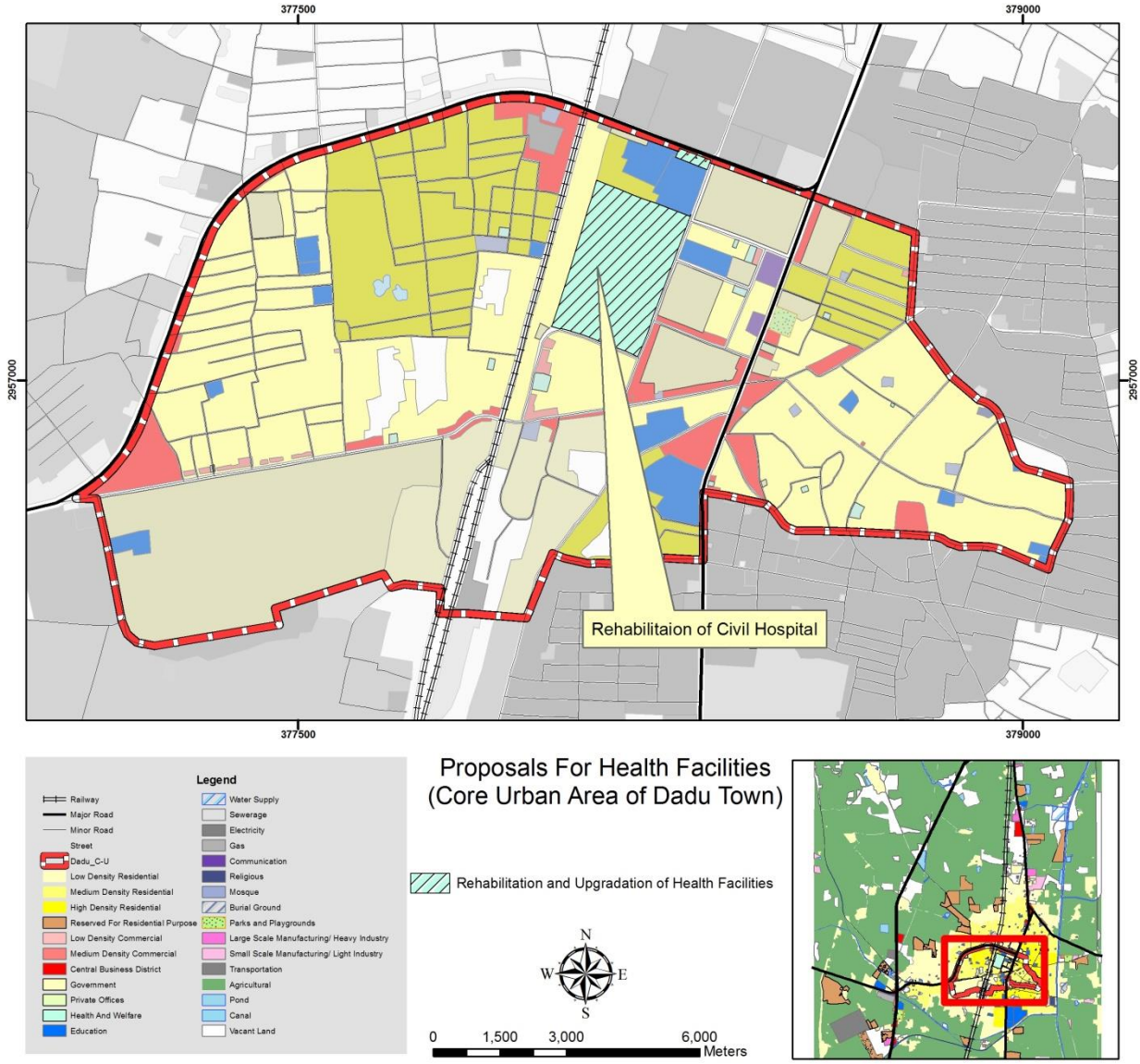


Figure 6:6: Proposal for Health Facilities Core Urban Area Dadu

6.3 Recreational

6.3.1 Existing Situation

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

Amusement is both goal and subjective in nature. The target amusement has a place with and continues from the individual and is the declaration of his/her own particular impossible to miss, mental, enthusiastic and physical motivation. It is the work appearance of one's contemplations, emotions, and prisoner alongside learned capacities with respect to activity. Then again, the subjective amusement comprises of perception, thought, and reflection upon the entertainment of others. The bounteous life is the one which is expressive in the entertainment of the whole person's ability for activity, where some on a position of high expertise and as per great taste with respect to the standard of refined society. Diversion is mental recognition that can't be summed up. As such the meaning of diversion varies from man to man, as indicated by its mental and potential emotions.

Recreational Spaces in Dadu

According to the Cultural Department of Dadu, there is a PCB cricket ground and a hockey ground. In Dadu Town there are family specific parks as well like; a Shahjahan park which is a family park, and a Ladies Park. In addition there are three general park and playground areas in Dadu; Municipal Committee Park, Public Park and Park and Playground. There is also a Gymkhana Dadu and a theatre is also under construction in Dadu. Out of these recreational facilities Municipal Committee Park, a Ladies Park and Gymkhana Dadu are located in the core urban area.

Historical and religious Places in District Dadu

Dadu has been along the route of caravans travelling along the Indus. Khudabad village of district Dadu had remained the capital of Kalhora dynasty till as late as 1768 A.D. Dadu district is famous for its unique culture and values. This region gave rise to a number of religious scholars, intellectuals and poets i.e. Ustad Bukhari and Sarkash Sindhi and others spread the essence of their knowledge all over the subcontinent. main attraction point for visitors in Dadu is Gorakh Hill Station.

Tourism

District Dadu have a great potential to attract local and regional tourists for tourism. Availabilty of basic facilities for tourists could increase tourism activities. More tourism activities could strengthen local economy.

i. Gorakh Hill Station

Gorakh is an under-Development Hill Statation of Sinndh. It is situated at an elevation of 5688 Ft. in the Kirthar Mountains Range's Sindh Segment, 93-km north west of Dadu city. Gorakh Hill Station is situated on one of the highest Plateaus of Sindh, spread over 2500 acres, and due its surroundngs, a unique adventure point for nature lovers. Gorakh Plateau also serves as gateway

for the villagers of Khuzdar District, Balochistan, who come over to the village, Wahi Pandi, in Sindh's segment of Kirthar, about a third way downhill from Gorakh Hill Station for purchasing food and other Utilities.

The Gorakh Hills summit can only be reached with 4x4 vehicles, which are available from Dadu and Johi towns. The hilltop is 93 km from Dadu. The last small town before the Gorakh Hill is Wahi Pandi, settled in the lap of the Kirthar range. The road thereafter is towered slowly at the milestone of 53 km when one enters the Yaroo Pass (Yaroo Sain Jo Luck).

ii. Manchar Lake

Manchar is the largest shallow fresh water Lake in Pakistan. It is situated at a distance of 18 kms from Sehwan Sharif on west side of the River Indus. The area of the lake rise and fall with the change if seasons from little as 350 km to as much as 520 km. The lake accumulates water from numerous brooks in the Kirthar Mountains and empties them into the Indus River. Manchar is synthetic Lake, created in 1930, when the Sukkur barrage was constructed on River Indus. The lake is sustained by two canals, the Aral and the Danister from the river Indus.

6.3.2 SWOT Analysis

Strength	Weakness	Opportunity	Threats
Sports & Recreation			
1. Availability of parks 2. Constructing new parks and theatre	1. Shortage of various sports facilities beside cricket ground 2. Poor maintenance of existing infrastructure	1. Good health of local communities. 2. Air pollution reduction. 3. Healthy environment. 4. Protection of natural habitat.	1. Give birth to passive recreation. 2. Obesity. 3. Loss of cultural values.
Culture			
1. Strong potential for producing culturally ornamented products used in daily life.	1. Poor Management for organizing cultural events 2. Lack of infrastructure to accommodate visitors into such events. 3. Lack of opportunities to commercialize / merchandize cultural goods.	1. If organized appropriately could generate handsome amount of revenues with other spin-off effects.	1. Security Threats 2. Demise of cultural values and norms.

Strength	Weakness	Opportunity	Threats
Tourism			
1. Presence of different Tourist spots 2. Gorakh Hill Station (Kerthar Mountains Range) 3. The Jamia Masjid Khudabad is situated in Khudabad	1. Less commercialization from tourism point of view. 2. Less heritage preservation. 3. Poor Infrastructure. 4. Negligence by provincial government	1. Tourist attraction. 2. Revenue generation 3. Opportunities for Income generation for local population	1. Fewer opportunities for active commercial retail. 2. Security issues. 3. Lack of political will to upgrade the existing conditions of touristic spots.

6.3.3 Need Assessment

- Shortage of water facility to maintain green spaces, green belts and trees plantation.
- There isn't any area reserved for sports facilities.
- People don't have any space available for doing exercise in morning or evening
- 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

6.3.4 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
- Dadu needs infrastructure and programmes for sports activities, sport confections, gymnasium and family parks, and children play area and gardens.

6.3.5 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:

For the beautification of canals (Dadu Canal, Phaka Distry and Jagir minor) passing through the city, 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 canals bank (all three) while spots could 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 Action Plan

- Establishment of Sports Complex
- Proposal of new graveyard at southern side along the bypass.
- Protection of historical places and cultural heritage
- Youth development programme for sports and recreation
- Promote tourism through provision of support facilities
- Promotion of rich heritage to increase historical importance of town
- Establishment of new open spaces as well as establishment of indoor and outdoor game facilities.
- Revenue generation through tourism planning.
- Lake can become an important source of incomes of local community if Government take's interest for the development of this lake and convert this lake into entertainment spot for local and foreigner visitors.
- Gorakh Hills can be developed by placement of restaurants and different activities in this way it can become a tourist destination in summer like Maree, Ziarat and other areas of Pakistan

II. Short Term Plan

- 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

- Promote Tourist attraction.
- Revenue generation through tourism planning.
- Preservation of touristic places
- Establishment of synthetic grounds, playing turf (for hockey, football) and indoor gym facility.

6.3.6 Priority Projects

Availability of recreational facilities can be a vehicle for positive social change for youth and improve health and well-being. Repair and rehabilitation of Existing parks i.e. Municipal Park and Ladies Park is already proposed in Immediate Action Plan. Below projects are proposed for repair, rehabilitation and provision of missing facilities.

Recreational Facilities			
S. No.	**Facility Name**	**Type**	**Area**
1	PCB Cricket Ground	Playground	4.73
2	Park and Playground	Park	1.36
3	Shahjahan Park	Park	1.17
4	Public Park	Park	1.67
Total			**8.93**

i. Repair and Rehabilitation of Park and playground, Shahjahan Park and Public Park
ii. Repair and Rehabilitation of PCB Cricket Ground Dadu

- **Project Justification**

  The availability of parks in any city is essential for the safe and healthy environment. There are three recreational places in the vicinity of Dadu MC, but due to the lack of management these may hardly be classified as proper recreational facilities as per standard requirement. There are many spaces in the city space which can ideally be converted and developed as recreational purpose. On prirority basis, Repair and Rehabilitation of sports, recreational and Religious facililities is proppoed i.e. Park and playground, Shahjahan Park, Public Park and PCB Ground (excluded IAP Projects)* needs rehabilitation in the DHQ town.

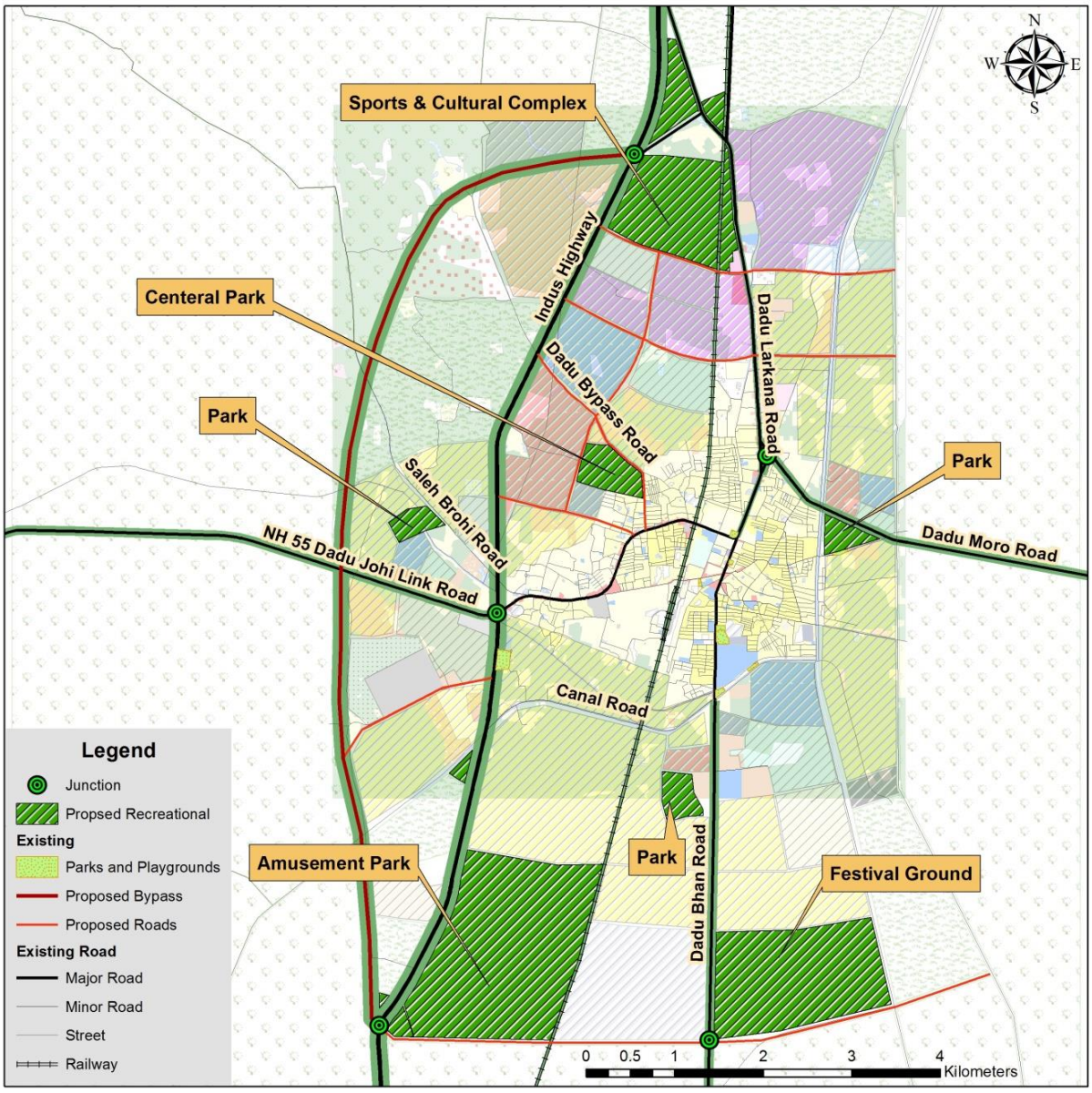
- **Project Benefits: It will boost the local economic potential with significant Benefits from local to** national level. It will create unique city landscape and generate number of employment opportunities.

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

- **Estimate Cost**: 234.24 million approx.

Project Name	Long/ Short Term	Proposed Area (acre) & Lengths (m)	Preliminary Cost in Million	Justification
Repair and Rehabilitation of PCB Cricket Ground	Long Term	4.73	234.24	Spectator area 30,000 sft. Repair & Rehab; @ the rate of 2,000/ sft. Total 60.00 Million for the Construction of Spectator area. Playground Area 4.0 Acres (174,240 sft, @ the rate of playground @ rate of 1000/ sft. Total 174.24 Million A+B = 234.24 Millions
Repair and Rehabilitation of Park and playground, Shahjahan Park and Public Park	Short Term	4.20	100.00	Lump sum amount for provision of missing facilities

Proposed Recreational Landuse for Dadu Town



6.3.7 Immediate Action Plan for Core Urban Area

- **Provision of Open Spaces, Parks & Playgrounds**

  Availability of recreational facilities can be a vehicle for positive social change for youth and also promoting recreational facilities benefits beyond the traditional aspirations of improved health and wellbeing.

- **Parks**

  Currently, core urban area of Dadu is suffering due to acute shortage of compulsory open spaces. There are only two parks are present in core town area of Dadu. Municipal Park is located along Railway Station Road, whereas Ladies Park is located near Chandni Chowk. To achieve the short term plan on immediate basis the process of land acquisition should be started to fulfill present gap.

- **Sports Facilities**

  Unfortunately, core urban area of Dadu is suffering due to unavailabilty of sports grounds.

S. No.	Recreational Site Rehabilitation Site Name	Area (acre)	Rehabilitation Required Area wise or job wise cost (PKR)			
			Street / Road / Parking	Utility infrastructure	Public Facilities	Security
1	Municipal Committee Park	0.62	0.74	0.92	1.39	0.55
2	GYM Khana Dadu	1.46	1.75	2.18	3.28	1.31
3	Ladies Park Dadu	0.58	0.70	0.87	1.31	0.52
Total PKR Rs. Million			**3.19**	**3.98**	**5.98**	**2.39**
Total PKR Rs. Million		**15.54**				

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

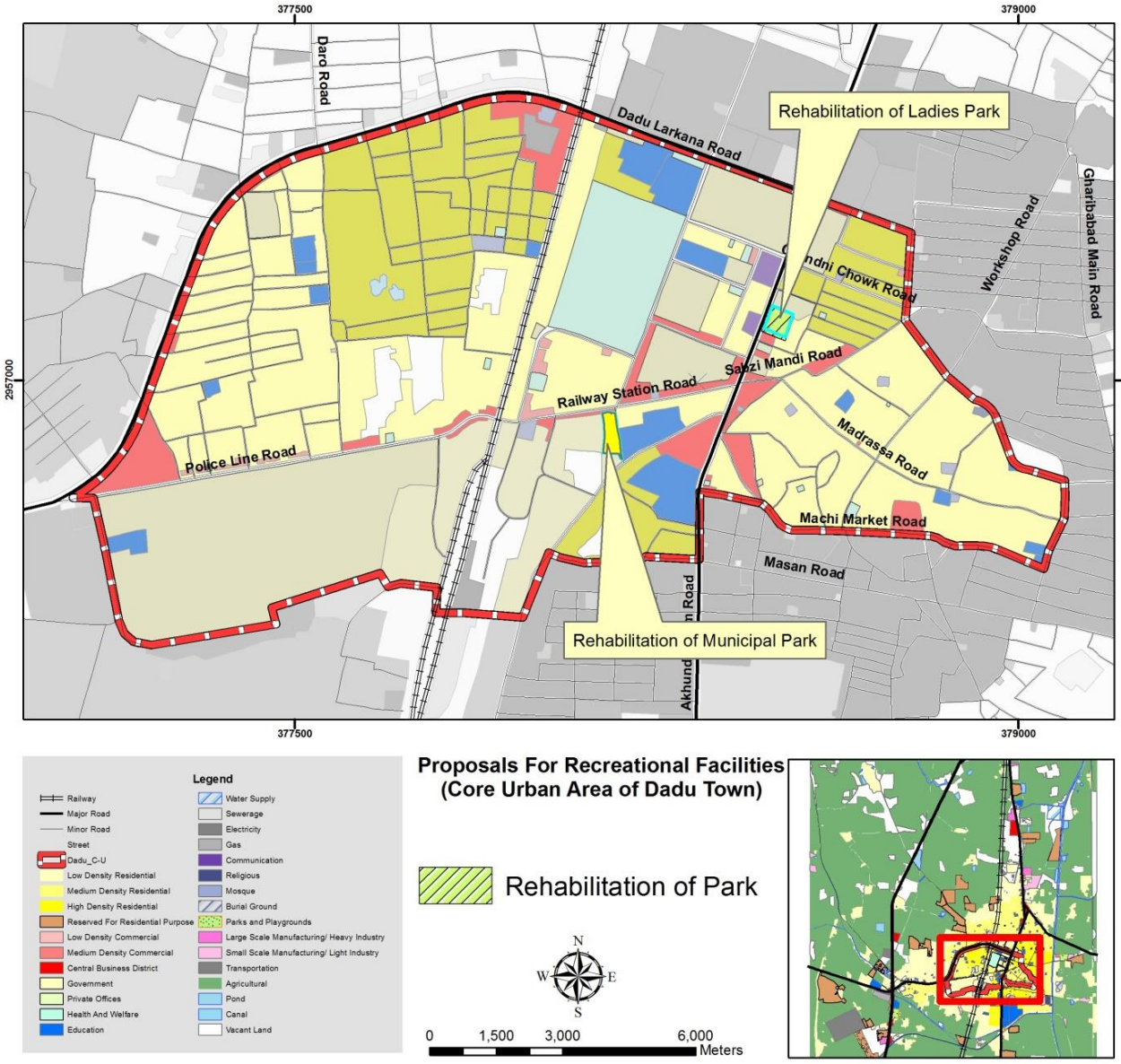


Figure 6:7: Proposal for Recreational Facilities Core Urban Area Dadu

7. ECONOMIC DEVELOPMENT PLAN

Economy of an area or town plays an important role for its sustainability and further growth. Economy can make a town alive from dead town. While towns provides business opportunities to their residents, majority of district Dadu's population lives in the rural areas and are involved in agriculture. The inhabitants of Kheerthar mountain range depend on farming, the sailors (Mallahs) of Manchhar lake (Portion falling in taluka Johi) earn their livelihood by fishing. Approximately 20% of the district population is serving in Federal & Provincial Government.

I. Policy Guidelines for overall Economic Development

- Creating a better quality of life for the citizens of the district by encouraging private sector to invest in the district.[28]
- Increase farmer's income.[29]
- Improving infrastructure and key services necessary for economic uplift.
- Providing un-interrupted power supply.

II. Inclusion of Poverty Reduction Strategy in Economic Development Plan

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

III. Strategic Plan for overall Economic Development

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

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

7.1 Agriculture

7.1.1 Existing Situation

The Agriculture land of Dadu District consists of three zones: (i) Barrage Zone (ii) Sailabi (River Spill in Kacho area) & (iii) Rainfall in Kachho area. The District is fed by Sukkur Barrage. There are two main canals in District (i) Rice Canal (ii) Dadu Canal. The Irrigation likewise other parts of the provinces is the Chief source of income of District Dadu. All crops of Kharif and Rabi are grown in District and such crops are Wheat, Rice, Cotton, Sugarcane, Maize, Barley, Pulses, Juwar, Bajra, and Grams & Seasum. There are two main crop seasons, in Dadu district; Kharif and Rabi. The Kharif season starts from April-May and ends in October-November while the Rabi starts from November-December and ends in April-May. However, due to regional variations in temperature, several factors i.e varieties, availability of water, soil texture, etc determine the crop pattern, sowing and harvesting time.

7.1.2 Crop Production

During 2016-17 the production of Rice was 189,268 M.Tons, Production of Wheat was 257,719 M.Tons, Sugarcane 282,304 Bales and cotton 54,189 Bales. Yields of all crops is low comparing to provincial/ national level. To address the property issue/ raising of income level wasteland available be granted to landless people for utilization. Raising livestock looking to water shortage and proper crop and irrigation water management. The crops, production field, and land utilization is given tables as under:

Table 7-1: Statistics of Crop Production

S. No	Crops	Crops Production Year2014-15		Crops Production Year2015-16		Crops Production Year2016-17	
		Area (Hectare)	Production (M. tons)	Area (Hectare)	Production (M. tons)	Area (Hectare)	Production (M. tons)
1	**Rice**	43,550	143,141	49,290	179,868	49,180	189,268
2	**Wheat**	72,500	231,881	73,400	233,285	75,900	257,719
3	**Sugar Cane (Bales)**	5,612	299,544	6,010	320,788	5,289	282,304
4	**Cotton (Bales)**	11,294	69,972	8,840	42,811	12,181	64,189
5	**Maize**	137	143	129	103	146	152

Source: *Development statistics of Sindh 2018*

7.1.3 Land Utilization

Total Reported area of District is about 667,000 hectares, out of this cultivated area is up to 320,000 hectares. Out of cultivable land deriving, cultivated up to 178,000 hectares leaving 142,000 hectares is Net area sown in 2016-17, where it was 136,000 in 2015-16. Wasteland was available to 35,000 hectares which remains the same in 2016-17. There was a Minor changing in land utilization occurs in district Dadu within one year as mentioned above the land utilization was decreased due to inadequate supply of irrigation water and high rates of fertilizers and pesticides.

Table 7-2 Comparison Land Utilization

Sr. No.	Type of Cultivated area	(Hectares) 2015-16	(Hectares) 2016-17
		Geographical area	Geographical area
1	Cultivated area	314,000	320,000
2	Current Fallow	178,000	178,000
3	Net area sown	136,000	142,000
4	Cultivated Waste	35,000	35,000
5	Not available for cultivated	127,000	120,000
Source: *Development Statistics of Sindh, 2018*			

7.1.4 SWOT Analysis:

Agriculture			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Agriculture based economy. 2. Strong network of distribution of agro based products. 3. Availability of canal irrigation network	1. Low demand of home grown food products. 2. Ineffectiveness of price control department 3. Water logging and salinity	1. Job opportunity for rural population. 2. Healthy population	1. Shortage of educated and skilled professionals. 2. Less efficient local markets.

7.1.5 Need Assessment

- Non-supply / short supply of irrigated water which could be one of cause due to low economic conditions of people of Dadu.
- 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.
- Irrigation and Drainage problem
- Shortage of food godowns and warehouses.

- Insufficiency of covered storage.

7.1.6 Strategic Development Plan

I. Long Term Plan

- Enhancing crop productivity through adoption of new technologies
- Increase the supply and quality of agricultural crops
- Provision of warehouses for storage of agricultural products
- Provision of embankment along Kacho area to protect seasonal crops from flood.
- Try to produce and opt for crops dependent on more water.
- Feasibility study to study agricultural methods to protect inland crops from excess water and floods.

II. Short Term Plan

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

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

- Provision of Agriculture credit facilities
- Regular supply of irrigation water
- Availability of fertilizer, pesticides and quality seed that results in Improvement in crop yield/acre that in turn increase the crop production for internal consumption & exports
- Installation of tube wells
- Rehabilitation of canals and Re-Sectioning/Relining of major &minor canals and drainage system which results in Improvement of water supply to agricultural land that in turn increase in crop production for internal consumption & exports
- Measures to reduce water logging and salinity

Dadu District is producing cash crops like Wheat, Rice, Cotton and Sugar Cane. In addition to the said crops; barley is also grown. The analysis translates that about 55**%** of arable land used for cultivation of wheat crop only, might be the reason that soil and climate of the region suits to this crop, therefore

growers and government may focus to reclaim more waste land to convert the same into arable land and priority may be given to Wheat and Rice.

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

Special attention to agricultural development in Katchho area.

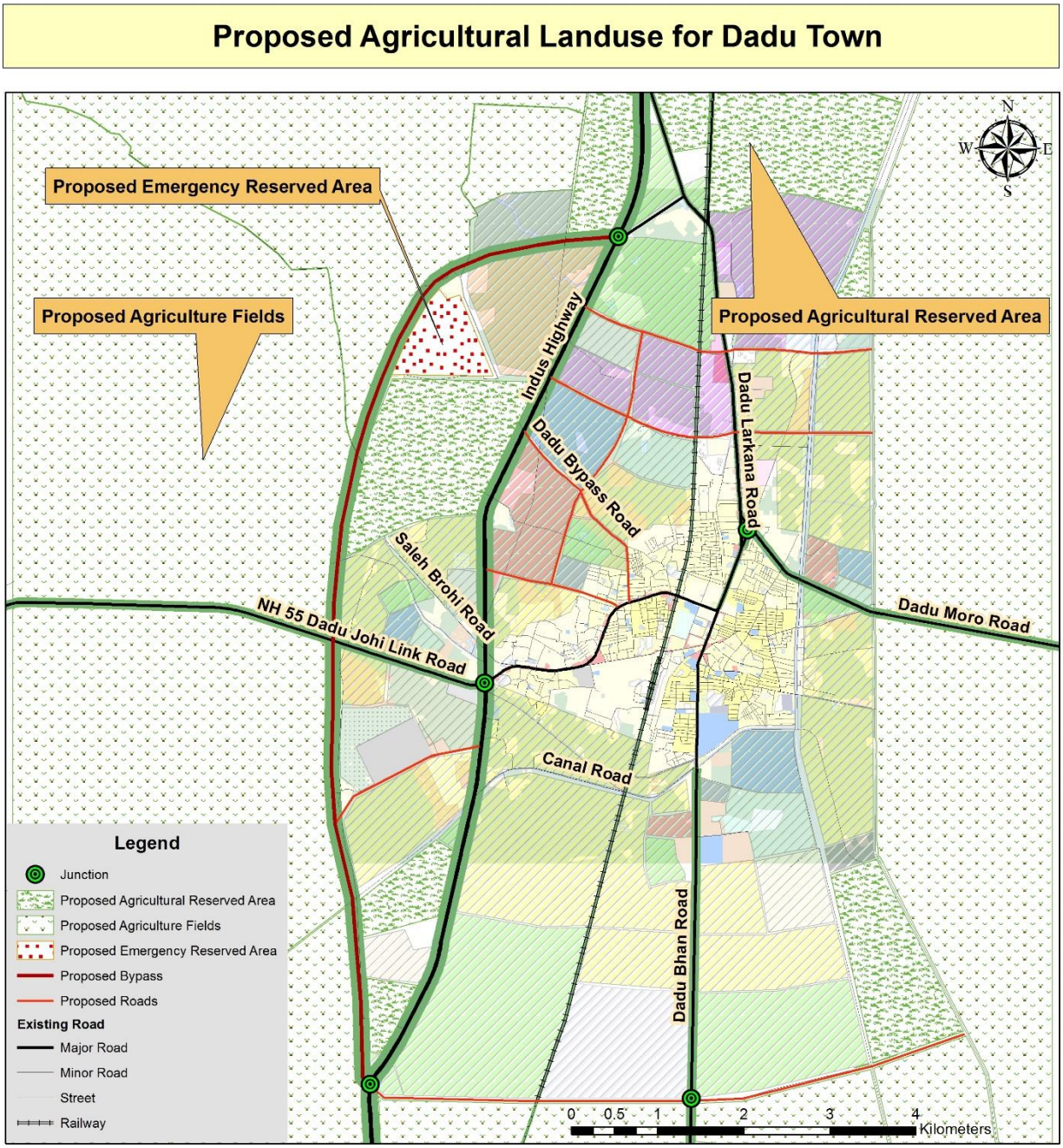


Figure 7:1: Proposed Agricultural field for Dadu Town

7.2 Livestock

7.2.1 Existing Situation

Livestock is one of the major sub-sector of Agriculture and the backbone of Pakistan's economy. Its main by-products, including hides and skins, have substantial potential as semi-finished products. Substantial growth in Livestock products such as milk, meat, beef, mutton, poultry, and eggs have been noticed, for many years, in district Dadu. Dadu district is rich in livestock and cattle, buffalo, goat, and sheep are found in every part of district Dadu.

I. Number of Livestock

District Dadu is a richly populated area with having animal population 2,826,000 of large and small animals. This district is well known with a different type of breeds of cattle, goats, and sheep. The animal population of the district is the highest number of goats having 801,000 heads followed by cattle 469,000 heads and buffaloes 386,000.

Table 7-3 Number of Livestock

Sr. No	Livestock	District	Taluka
1	**Cattle**	469,000	15700
2	**Buffalos**	386,000	20630
3	**Sheep**	284,000	1240
4	**Goats**	800,000	2526
5	**Camels**	42,000	50
6	**Asses**	39,000	328
7	**Poultry**	801,000	22

Source: Development statistics of Sindh, 2018 and Livestock Department Dadu

II. Veterinary Service

The services for veterinary in district Dadu are deficient because District Dadu is a richly populated area with having animal population 2,826,000 of large and small animals. This district is well known with a different type of breeds of cattle, goats, and sheep. For this population of Animals, the services are not sufficient and not serving all populations of animals. There are 56 veterinary Hospitals and veterinary centres and its condition is poor and service quality is satisfactory. Other veterinary services located in peripheral areas are; Veterinary Dispensary C.V.L sub center Dadu, DD. Livestock Dev. Kachho at Johi, Veterinary Centre Patt Gul Muhamed, Veterinary Centre Thalho, Veterinary Centre Haji Khan, Veterinary Dispensary Tando Rahim Khan, Veterinary Dispensary Chinni, Veterinary Dispensary Sawro, Veterinary Dispensary Pandhi, Veterinary Dispensary Savo Khan Jamali, Veterinary Centre Drigh Bala, Veterinary Centre Patt Gul Muhamed, Veterinary Dispensary/ Nao Goth, Veterinary Dispensary/Centre Sindhi Butra, Veterinary Centre Shah Godro, Veterinary Centre Jans Chandio, Veterinary Centre Sojhro Gorar, Veterinary, Dispensary/Centre Turiri Mohbat, Veterinary Dispensary/Centre Radhan, Veterinary Centre Qazi Arif, Veterinary Dispensary Mahar, Veterinary Dispensary Beto, Veterinary Dispensary/Centre Sindhi Butra, Veterinary Centre Bali Shah, Veterinary Dispensary/Centre Aghamami, Veterinary Centre Mangwani Veterinary Centre Chorr Qambar, Veterinary Dispensary/Centre Sindhi Butra, Veterinary Centre Bali Shah, Veterinary Dispensary Kolachi,

Table 7-4 Veterinary Service

Sr. No	Items	Numbers
1	Veterinary Hospital	8
2	Veterinary Centres	48
3	Animal Treated	
a	Vaccinated	201,235
b	Treated	29,142
c	Castrated	591

Source: Development Statistics of Sindh 2018

Veterinary Centre Thalho, Veterinary Dispensary/Centre Buti Serai Veterinary Centre Parya, Veterinary Dispensary Sita Road, Veterinary Centre Kakar, Veterinary Dispensary Khanpur, Veterinary Centre Baid, Veterinary Centre Gozo, Veterinary Dispensary/Centre M. Siddique Gann, Veterinary Centre Burira and Veterinary Centre Shah Godro

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 SWOT Analysis:

Livestock & Fisheries			
Strength	**Weakness**	**Opportunity**	**Threats**
1. The district is richly populated in terms of livestock. 2. Different type of breeds of cattle, sheep and goats are found in the district. 3. Favourable environment is available for livestock & poultry farming	1. There is acute shortage of vaccines 2. Lack of facilities to industrialize livestock based products. 3. Deficient veterinary services 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. Production of Livestock based products	1. Theft and security issues 2. Losses due to Disasters (floods and epidemics).

7.2.4 Need Assessment

The services for veterinary in district Dadu are deficient because District Dadu is richly populated area having animal's population 2826,000 of large and small animals. This district is well known with different type of breeds of cattle, Goats and sheep's. For this population of Animals, the services are not sufficient and not serving the all population of animals.

There are 56 veterinary Hospitals and veterinary centres and its condition is poor and service quality is satisfactory.

7.2.5 Strategic Development Plan

- Improving the production performance of livestock in District through manipulation of different minerals and feed supplements.
- Enhancement of Livestock Production and Productivity through strategic deworming and vaccination.
- Establishment of model livestock farms linked with improved supply chain and value addition.
- Establishing new cattle & dairy farms that lead to increase in number of cattle's and quantity of milk.
- 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.

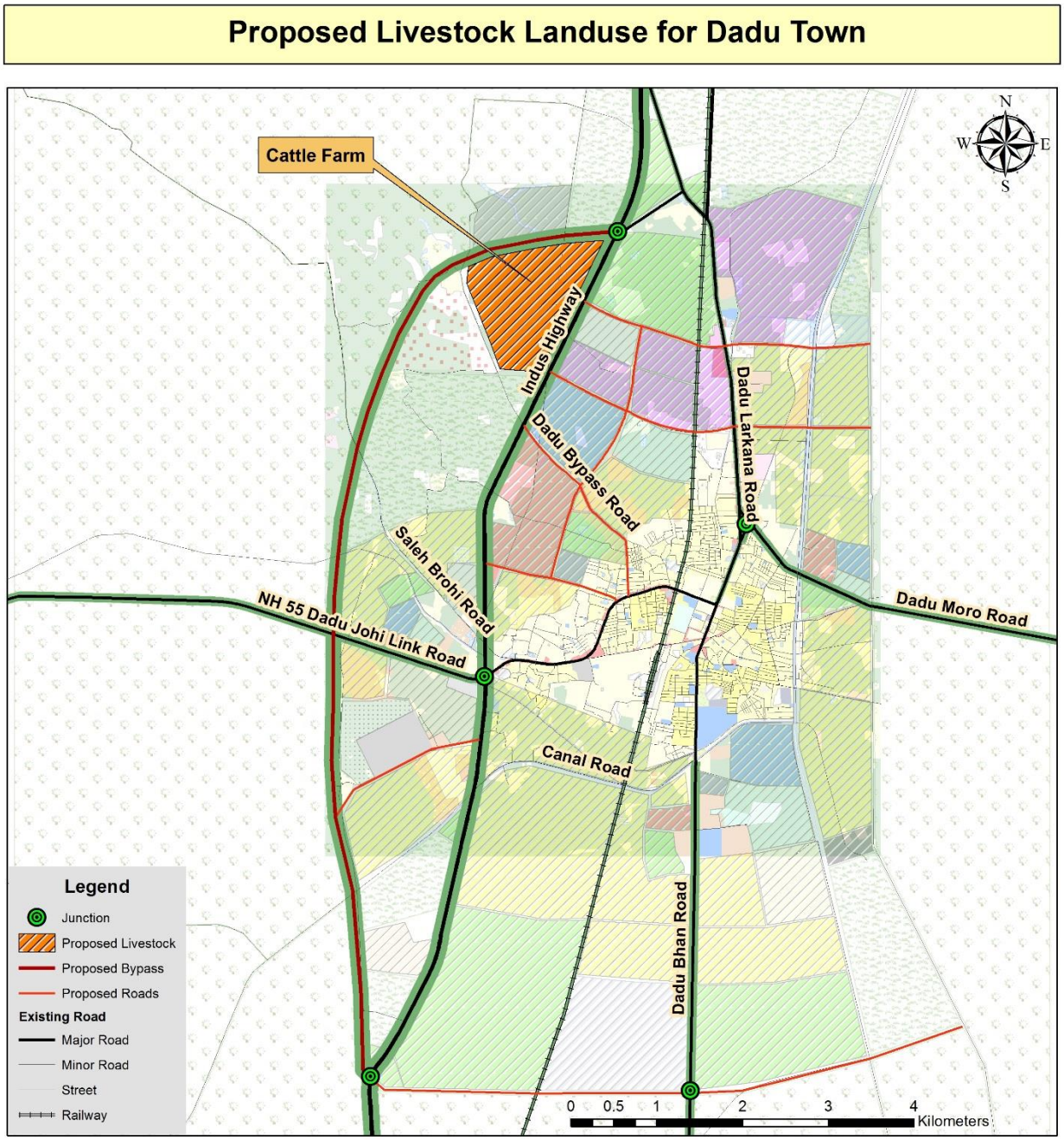


Figure 7:2: Proposed Cattle Farm for Dadu Town

7.3 Fisheries

7.3.1 Existing Situation

There are 9,500 fishermen are experiencing their luck, out of which 6,300 are working full time and 3,200 are part-time. The number of registered boats in district Dadu is 362. The production of fish in district Dadu is approximately 4,015 M. Tons annual.[30]

Table 7-5: Annual Fish Production		
1	Number of Boats	362
2	Number of Fishermen	9,500
3	Annual Fish Production	4,015
5	Number of private fish farms	202
5	No. of Ponds	291
Source: Development Statistics of Sindh 2018		

7.3.2 Need Assessment:

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

7.3.3 Strategic Development Plan

- Provide 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
- Measure to promotion of 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

[30] Development Statistics of Sindh 2018

7.4 Industries

7.4.1 Existing Situation

With the coordination and support of the Small and Medium Enterprise Development Authority (SMEDA), a registered Chamber of Commerce is functioning in the Dadu district. Apart from Dadu's Chamber of Commerce and Industries, some other associations of traders are also functioning in each main town of different talukas of district Dadu.

The district is rich in natural resources. Precious stones & reservoirs of gas & petroleum have been explored in taluka Johi. The B.H.P Company established itself in the district to explore gas & petroleum. Another Foreign company viz: ENI has also set up its base station along the border of Taluka Johi for the same purpose. Small and Medium Enterprise Development Authority (SMEDA) has reported 44 small industries (rice husking mills) in two talukas: Mehar and K.N Shah. These mills provide employment to 1,340 people in this area. Other than that, Dadu Sugar Mill is a large scale industry in this district[31].

I. Types of Industries

Most of the industries in Dadu are pertaining to the agriculture and oil field. Famous among these are the sugar, oil fields, Cotton ginning factories, and Rice Husking mills since Rice, and sugarcane is cultivated on large scale in this district. Dadu is considered as an important district with a wealth of Oil reserves, which brings large revenue for the country[32]. The major industries in the vicinity of the Dadu include Piarogoth Sugar Mill, Jamali Cotton Factory, Channa Cotton Factory, Shahjahan Cotton Industry, Mehran Rice mill, and Sikandar Ali Rice mill. Other important small and medium industries are given in below table;

S.#	Name of establishment and address	Employment
1.	Abdul Hameed Jatoi Rice Mills Betto Road Mehar	34
2.	Ali Anwar (Sikandar) Rice Mills By Pass Road Mehar	32
3.	Ali Gohar Rice Mills Taluka Mehar	29
4.	Abdul Sattar Rice Mills Faridabad Road Mehar	50
5.	Ali Mardan Shah Rice Mills City Road Mehar	35
6.	Allah Dinno (Yasrab) Rice Mills City Road Mehar	33
7.	Ali Gohar (Mehran) rice Mills Gahi Mahesar Road Mehar	28
8.	Gulzar Ali Jatoi Rice Mills Larkana Road Mehar	39
9.	Hyder Bux Jatoi Rice Mills Near Sindh Line office Mehar	24
10.	Haji Khan Chandio Rice Mills Faridabad Road Mehar	34
11.	Haji Muhammad Soomar (Roshan Shaikh) Rice Mills by Pass Road Mehar	35
12.	Haji Rafique Ahme Rice Mills Gahi Mahesar Road Mehar	29
13.	Mukhtiar Depar Rice Mills Fareedabad Road Mehar	35
14.	Molvi Abdul Waheed (Rahmatullah) rice Mills	34
15.	Muhammad Arif Rice Mills Main Road Qazi Arif Mehar	29

[31] A Brief Profile of Dadu, Small & Medium Enterprise Development Authority, Government of Pakistan
[32] DDRMP Dadu, UNDP 2008

S.#	Name of establishment and address	Employment
16.	Mashallah Rice Mills Sindhi Buttra Road Mehar	23
17.	Mushtiaqu Ahmed Qazi Rice Mills Main Road Qazi Arif	24
18.	Muhammad Rice Mills Near P.S.O. Petrol Pump Mehar	27
19.	Niaz Ali Buriro Rice Mills by Pass Mehar	25
20.	Nanak Ram Rice Mills By Pass Mehar	34
21.	Noorani Rice Mills VIP Road Mehar	35
22.	Pir Muhammad Jatoi Rice Mills VIP Road Mehar	28
23.	Shaikh Rice Mills Near Van Stop Mehar	33
24.	Sikardar Ali (Safdar) Rice Mills By Pass Mehar	32
25.	Akhtiar Ali Rice Mills By Pass K.N. Shah	28
26.	Abbassi Rice Mills Indus Highway road K.N. Shah	30
27.	Baloch Rice Mills By Pass K.N. Shah	30
28.	Ghulam Shabir Rice Mills K.N. Shah Road K.N.Shah	32
29.	Ghulam Rasool Shaikh Rice Mills Sita Road K.N. Shah	28
30.	Ghulam Nabi Rice Mills K.N. Shah Road Khanpur	26
31.	Haji Bashir Ahmed Rice Mills Sita Road K.N. Shah	28
32.	Haji Karim Bux Rice Mills City Road K.N. Shah	26
33.	Haji Ramzan Ali Rice Mills Near By Pass K.N. Shah	30
34.	Haji Habibullah/Umair Rice Mills City Road K.N. Shah	25
35.	Haji Amir Bux Junejo Rice Mills K.N. Shah Road Khan Pur	32
36.	Muhammad Parial Rice Mills College Road K.N. Shah	27
37.	Muhammad Safial Rice Mills Bazar Road K.N. Shah	30
38.	Mukhtiar (Rasheed) rice Mills City Road K.N. Shah	35
39.	Manzoor Ali rice Mills City Road K.N. Shah	28
40.	Muhammad Yousif Niach Rice Mills K.N. Shah Road Khanpur	36
41.	Nazir Ahmed Rice Mills Jamali Near Degree College K.N. Shah	30
42.	Shaikh Rice Mills City Road K.N. Shah	34
43.	Sikander Ali Rice Mills By Pass K.N. Shah	25
44.	Shah Muhammad rice Mills Main Road K.N. Shah	29

II. Occupation

The majority of the population of District Dadu is rural & they are involved in Agr: cultivation, while towns are providing business opportunities to residents. The inhabitants of Kheerthar do farming while Mallah's of Manchhar lake (Portion falling in taluka Johi) earns their livelihood by fishing. Approximately 20% of the District population is serving in the Federal & Provincial Government. Various type of employments extracted from socio economic survey results are: 26% Teachers, 2% Doctors, 24% Government Employees, 39% Private Employees, 2% Self-Employment and 5% Labour/Technicians. The occupational involvement in industry is also overwhelming. A considerable segment of society adopts government/private service as their occupation.

According to 1998 census results the rural and urban population of the district constitutes 79% and 21% of the total population respectively. Handmade Embroidery products of Dadu are famous in all over of Sindh, because the population settled in peripheries of Dadu district i.e. Kachoo and Kirthar mountainous areas of Dadu are working in their villages and utilizing their skills to produce

quality handmade products. The major famous products they are producing includes; Sindhi Caps, Relies, Sindhi dresses, different decoration pieces and traditional tuck work and peach work.

7.4.2 SWOT Analysis

Industrial			
Strength	**Weakness**	**Opportunity**	**Threats**
1. The district is rich in natural resources. 2. Precious stones and reserve of gas and petroleum have been explored 3. Availability sugar mill	1. Less job opportunities for other sectors. 2. Locals are not getting job opportunities	1. Job employment. 2. Reliable environment is present for establishment of export industries.	1. Isolated economy. 2. Uneducated social group. 3. Air pollution 4. Water contamination to river Indus resources.

7.4.3 Need Assessment

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

7.4.4 Strategic Development Plan

I. Long Term Plan

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

II. Short Term Plan

- 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
- Establishment of new industrial estates/Zone
- Revitalization of industrial estate
- Construction / increase storage capacities of cold storage / warehouses for agro products.
- Construction / Extension of Industrial Estates to meet the additional demand.

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

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

7.5 Trade and Commerce

7.5.1 Existing Situation

With the coordination and support of Small and Medium Enterprise Development Authority (SMEDA), a registered Chamber of Commerce is functioning in Dadu district. Apart from Dadu's Chamber of Commerce and Industries, some other associations of traders are also functioning in each main town of different talukas of district Dadu. Availability of financial institutes. The district as a whole is well-known due to its characteristic of agriculture engine which serves all over Sindh by using market of Hyderabad, the regional trading Hub. 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.
- Lack of infrastructure
- Dependent on regional market products due to lack of local production
- Unplanned growth of business sector along inner city streets
- Gave birth to encroachments.

7.5.3 Strategic Development Plan

- Establishment of Fruit and vegetable market
- Specialized Wholesales market
- Construction of Building for service industry
- Provision of Cold spaces and warehouses
- Provide more opportunities for public private partnership.
- Provide Support to local economy.
- Home grown handicrafts can be promoted through proper exposure to export market.
- Facilitate large number of business interest groups.
- Provision of Slaughter House
- Provision of parking for existing commercial areas

7.5.4 SWOT Analysis

Trade & Commerce			
1. Large number of local skilled artisans available. 2. Strong local retail.	1. Demise of local agriculture market. 2. Un-planned local business activities.	1. More opportunities for public private partnership. 2. Home grown handicrafts can be promoted through proper exposure to export market.	1. Security issues (which lead a large number of agriculturists and business persons to migrate from the city). 2. Inflation. 3. Low subsidies provided by local and provincial government

7.5.5 Priority Project

i. Revitalization of Fruit and Vegetable Market and Establishment of Fruit and Vegetable Market at Dadu

➢ **Project Scope & Justification**

As towns expand, the expansions of wholesale markets to the fringes become imperative. Ordinary retail shops for vegetables and fruits are located on the main roads & causes traffic congestion & garbage issues. Provision of revitalization of existing fruits & vegetables market shall resolve issues i.e. congestions & road side waste generation etc. it is necessary to provide good level of access and infrastructure in the reception area.

Existing fruit and vegetable market has an area of 6 acres approximately. This area is includes in SDP's trade & commerce zone. This planned market shall provide an easy access and the existing Commercial area shall not face traffic congestion and other related problems.

Revitalization of Fruit and Vegetable Market at Dadu with allied facilities shall attract entrepreneur to expand their investment and will also improve the urban environment.

- **Project Benefits**

  It will give ease to the local population to earn their living through it and will increase the revenue generation and employment. It will also reduce the traffic congestion which is the major issue of town due to existing markets in the main core city area.

Implementing Authority – Dadu Municipal Committee and Private Investors

Estimated Cost: 65.34 Million Approx.

Project Name	Sector	Short Term	Area in Acres	Preliminary Cost in million	Justification
Revitalization of Existing Fruit and Vegetable Market	*Economic Development* (Trade & Commerce)	Short Term	6 acre Approx.	65.34	Project Area 6 acre - 261,360 sft considered 50% as Built up Area at the rate of 500/- PKR per sft Repair and Rehabilitation cost.

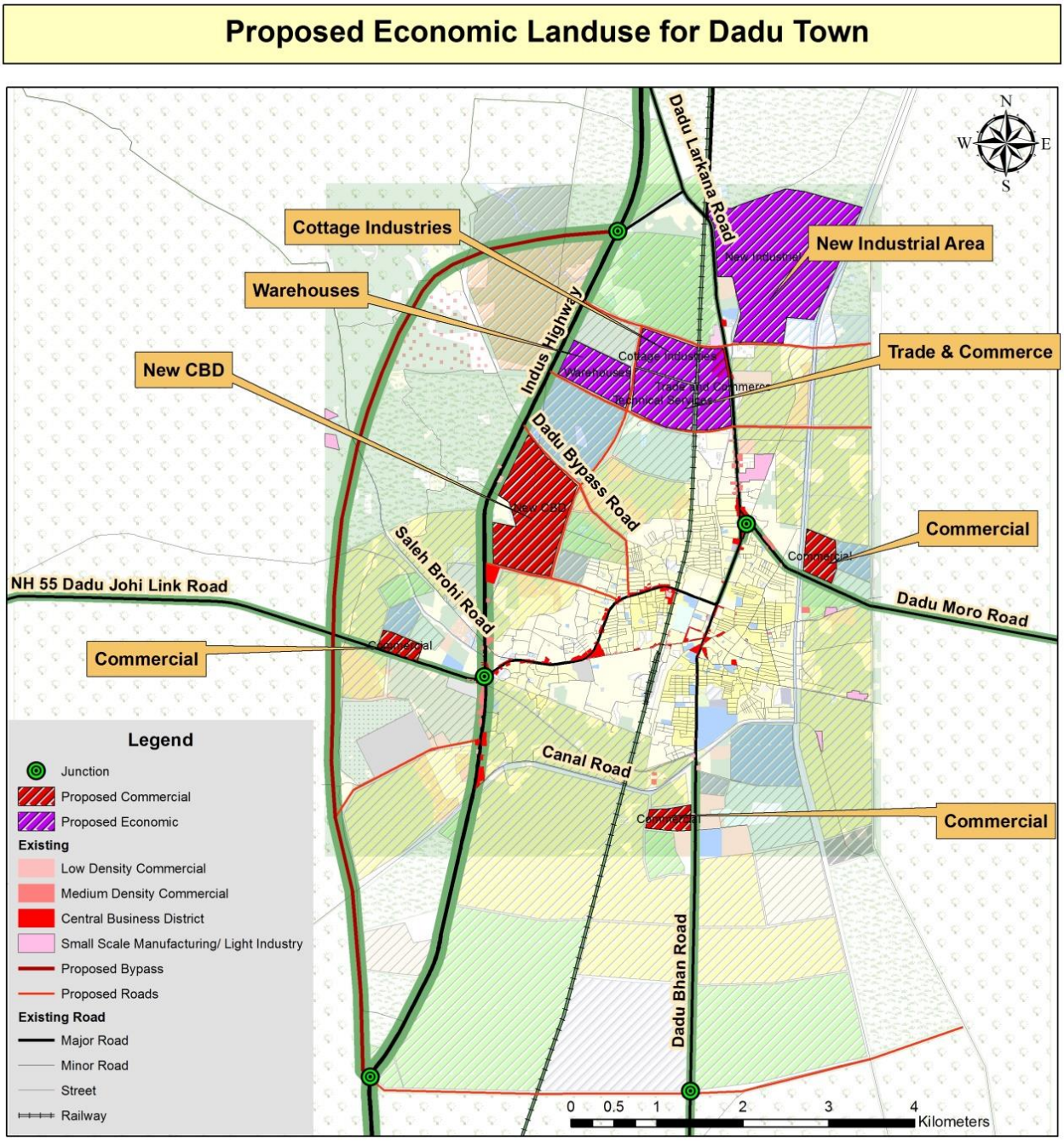


Figure 7:3: Proposed Economic Landuse for Dadu Town

7.5.6 Immediate Action Plan

Dadu has major commercial hub like; Shahi Bazar, Muki Bazar, Gareebabad, Fish Market, Cinema chowk, Chandni Chowk, SP Morr, Police Line Road, Old Bus Stop Road and Jaggatabad Road. CBD includes Traders, Wholesale Markets, And Traditional Embroidery Shops, Auto Shops, Gold Smith Markets, Restaurants, Schools, Clinics and General Stores etc. Main Bazaar is located in old commercial area of DHQ town & in poor condition.

- Up gradation of Shahi bazar area.
- Provision of pedestrian facility in the Bazaar area.
- Banned heavy vehicles during peak hours.
- Removal of encroachments (road side bus & wagon stands etc.)

Rehabilitation of Commercial Areas - Rehabilitation Required Area wise or job wise cost (PKR)						
S. No.	**Area / Locality / Address**	**Area (acre)**	**Cost in PKR million.**			
			Street / Road / Parking	**Utility infrastructure**	**Public Facilities**	**Security**
1	**Repair and Rehabilitation of Commercial Areas**	34	8.50	1.02	12.75	8.50
Total PKR Rs. Million			**30.77**			

Note:
1. Commercial areas should be enlisted in Govt. Agency for all services of Trade, Retail, Marketing, Sale etc.
2. All commercial areas security services are associated with combine effort of commercial trade union and local Govt.,
3. Commercial areas accessibility for daily users and marketers is well defined with ease.
4. area include Shahi Bazar, Muki Bazar, Gareebabad, Fish Market, Cinema chowk, Chandni Chowk, SP Morr, Police Line Road, Old Bus Stop Road and Jaggatabad Road etc.

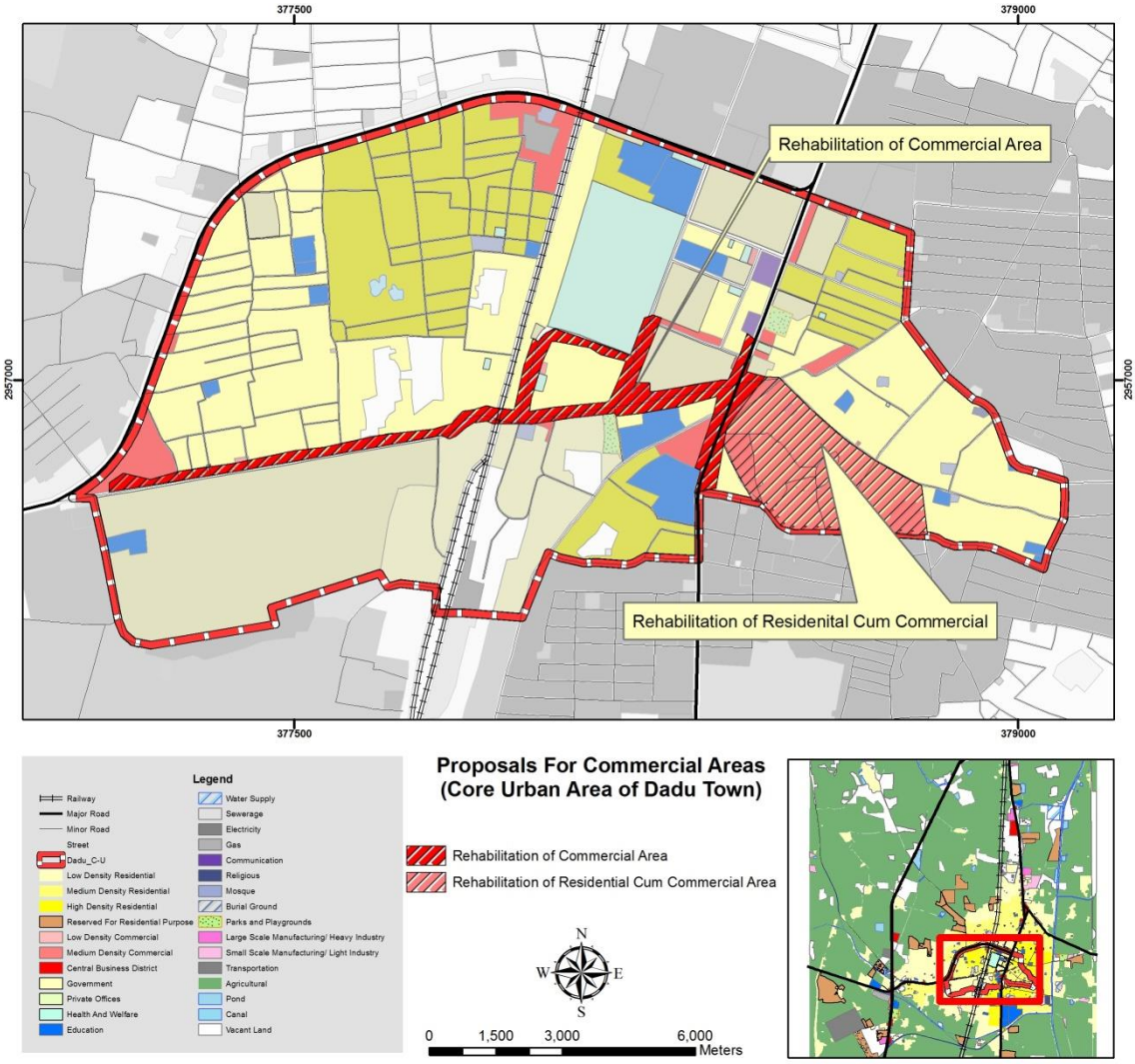


Figure 7:4: Proposal for Rehabilitation of Commercial Area of Core Urban Area Dadu

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

Poverty Reduction Strategy (PRS)

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

i. A Vision for Poverty Reduction in Sindh

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

ii. Poverty Reduction Strategy (PRS) Approaches

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

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

iii. Poverty Reduction Strategies

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

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

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

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

STRATEGY II Addressing Urban Poverty

- The direction of the strategy to address urban poverty is on emphasizing ' urban within rural' – focusing on the small towns within rural areas of Sindh
- The strategy focuses on targeting employment opportunities and enterprise development
- A key approach within this is utilizing urban economic clusters as a means to facilitate cooperatives in enterprise development.

<u>Urban Income Enhancement Program and Economic Cluster</u>

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..

iii) Mainstreaming the Poverty & Policy & Program

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

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

iv. Access to Micro-Finance

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

8. BASIC UTILITIES

8.1 Water Supply

8.1.1 Existing Situation

People in Dadu are reported to use hand pumps as a means of drawing water. The survey revealed that about 45% had water supply facilitated to their homes and establishments via hand pumps inside the house. The town also showed wells as a source of water serving many people. More than 40% of people used these wells to draw their potable water needs. About 12% of town dwellers were reported to access ponds and other unspecified means to fulfil this essential requirement of their lives.

The water resources of the project town comprise both the surface source as well as the groundwater source. The bulk of municipal water supplied to the Project town is drawn from the irrigation canals, passing close to the towns, and comparatively much larger part of the supplies is dependent upon groundwater extraction through tubewells mostly inside their houses.

The groundwater quality adjacent to Dadu Canal is not good. The total dissolved solids (TDS) of water samples obtained from tubewells range between 2000 mg/l and 3000mg/l.



Figure 8:1: Panj More Watercourse from Dadu Canal



Figure 8:2: Dadu Canal is supplying surface water

I. Intake works

Abstraction from Dadu Canal at North Eastern town outskirts

Sedimentation Tank/ storage Tanks = 5 Nos; Storage Capacity = 40.7 mg.

After Sedimentation, the water pumped into 2Nos OHR and then into the distribution network. The OHR are located at college Road and near the MC office of 100,000 gallons capacity each.

II. Existing Water Supply infrastructure

The present water supply sources for Dadu town are (i) groundwater (tubewells), and (ii) surface water (Dadu canal). Drinking water is mainly supplied to the town from tubewells installed adjacent to the Dadu canal through high service reservoirs (HSR) and distribution networks; no treatment is required. The water from Dadu canal is turbid and is supplied after sedimentation and chlorination, but in aging infrastructure creating the more issues regarding water quality.

According to the MC, only about 50% of the population is connected to the MC water supply network. The remaining population obtains its water from hand-pumps or stand-posts at certain places during non-supply from Dadu Canal.

Details on water supply infrastructure are summarized below.

Table 8-1: Population, Current Water Supply & Demand Projected up to Year 2037				
No.	Item	Qty	Location	**Details**
1	Abstraction works - tubewells	14 no.	4 no. Murad Naka 4 no. Markhpur 1 no. College Road	Out of 14, only 9 are operational; the remaining 5 have not yet been handed over to the MC. The existing pumping machinery (8" dia. 10 BHP electric submersible pumps) is old, and the discharge has reduced to 60%.
2	Abstraction works – surface water	1 no.	North-eastern town outskirts, by Dadu canal	4 no. sedimentation/storage tanks in the form of a square, with one pumping station in the middle. After sedimentation, the water is pumped into HSRs and then into the distribution network.
3	OH reservoirs	2 no.	1. College Rd. 2. Near MC office	455 m^3 (100,000 gallons) capacity each
4	Distribution network			18"dia. – 1,827 m (5,995 rft) 12" dia. – 1,025 m (3,363 rft) 10" dia. – 1,205 m (3,954 rft) 8" dia. - 2,012 m (6,601 rft) 6" dia. – 3,393 m (11,132 rft) 4" dia. – 3,934 m (12,907 rft) 3" dia. – 14,738 m (48,355 rft) – PE &PVC pipes
5	Connections			1800 domestic + 48 industrial.
6	Quantity of water supplied			Total 3,020 m3/d (0.66 mgd): 2,790 m3/d (0.61 mgd) from tubewells + 3.23 mgd) from surface source.

III. Distribution Network:

PHED adopts a 30 gpcd standard for evaluation of present and future water demand. Water supply at present is reported as 4.5 mgd. Water is stored in an underground reservoir and distributed though O/H Tanks of 100,000 gallons each. The distribution network includes AC/PVC pipes of sizes from 3" to 18" diameter. There is no zoning system of distribution and no water meters are installed. Distribution network improvement (DNI) is essentially required for equitable distribution.



Figure 8:3: Location of OHR near Ustad Bukhari Degree College

IV. Water Treatment Facilities

Currently construction of ultra-filtration plant is in progress. Right now raw surface water from Dadu Canal has been supplied by direct boosting in the pipeline due to which leakages in the pipeline occur.

V. Current Water Supply

The current water supply to Dadu is 4.5 mgd against demand 5.1 mgd. The water supply is supported by groundwater source through 9 tube wells operational in the vicinity of the Dadu Canal and surface water from the Dadu. There is clear gap between demand and supply due to unavailability of water supply infrastructure.

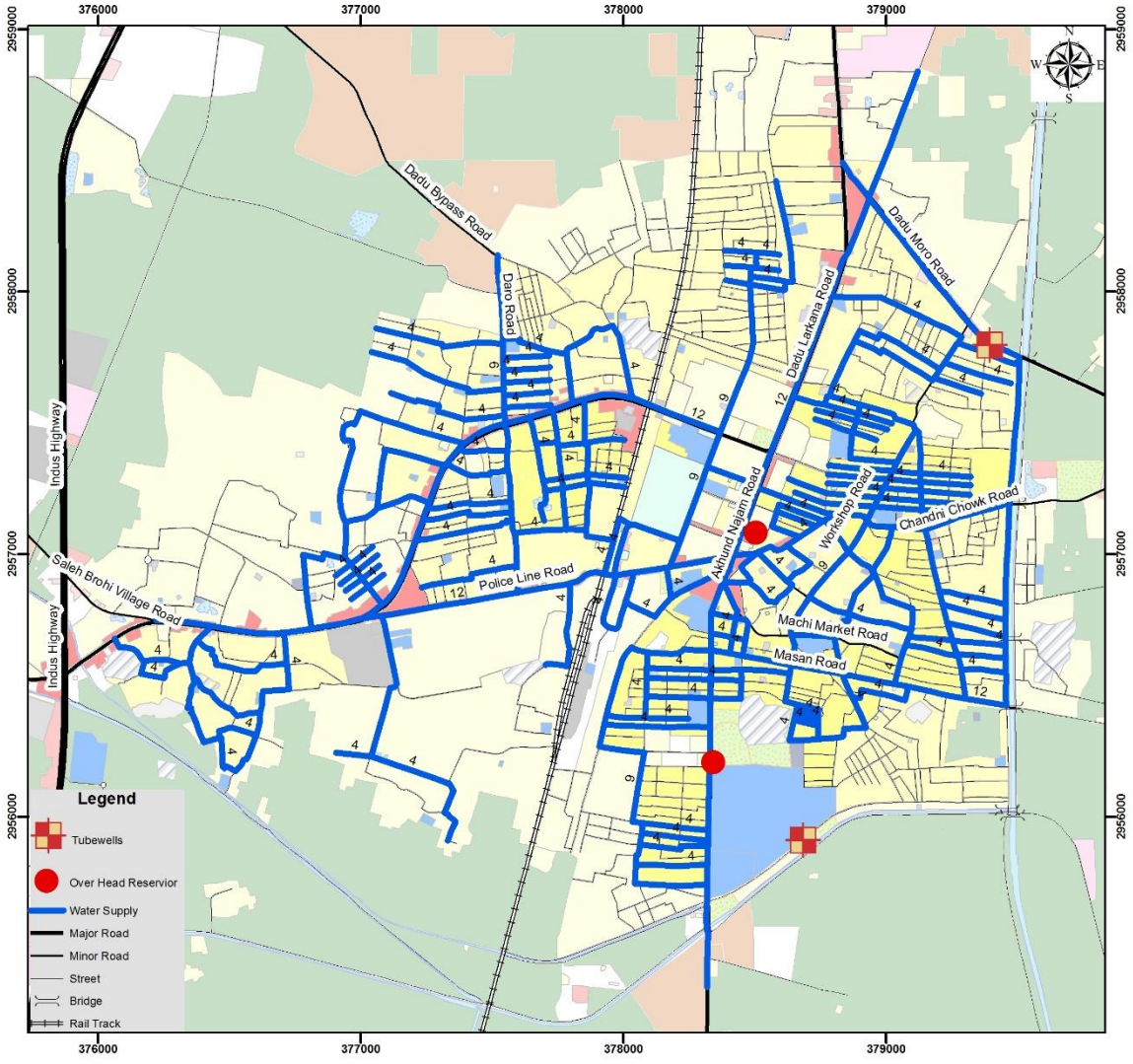


Figure 8:4: Water Supply Coverage Map

8.1.2 Issues

The following are issues of water supply in Dadu 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
- Under ground water is the main source of water
- Absence of systematic water supply system and treatment plant.
- Poor administrative setup for water supply management and distribution.
- Water storage capacity is low.

8.1.3 SWOT analysis

Water Supply & Distribution			
Strengths	**Weakness**	**Opportunity**	**Threats**
1. Intake sources available 2. The water resources of the town comprise both the surface source as well as the groundwater source. 3. Most of the town is having piped supply network	1. Absence of systematic water supply system and treatment plant. 2. Poor administrative setup for water supply management and distribution. 3. Water storage capacity is low.	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"

8.1.4 Need Assessment

It is expected that the town of Dadu will have a population of about 293,589 persons by 2037 and the daily demand of the town will be about (8.81 mgd) for a whole-day supply.

Estimated water demand for the period upto 2037 is shown below:

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

S. No.	Year	Population	Water Demand @ 30 gped.(MGD)
1	**2017**	171,191	5.14
2	**2022**	195,905	5.88
3	**2027**	224,187	6.73
4	**2032**	256,552	7.70
5	**2037**	293,589	8.81
Source: Consultants estimate Based on PHED criteria			

8.1.5 Policy Guidelines[33]

Sindh Drinking Water Policy 2017

Principles:

- Population should be using an improved drinking water source which is accessible i.e. located on premises, available when needed and safe that is free of faecal and priority chemical contamination.
- Access to safely managed drinking water is a fundamental right of every citizen and that it is the responsibility of the Government to ensure its provision to all citizens.
- Water allocation for drinking purposes shall be given priority over other uses.
- In order to ensure equitable access, special attention shall be given to removing the existing disparities in coverage of safe drinking and for addressing the needs of the poor and the vulnerable.
- A supportive policy framework shall be developed that encourages alternate options through private provision, public-private partnerships, the role of NGOs and community organizations.
- Low cost technologies in water and sanitation, that are easy and cost-effective to maintain shall be developed and used.

Objectives:

- Develop criteria for installation of new drinking water supply schemes and ensure that all new schemes are safely managed, rationalized and constructed through need based criteria so that all areas and communities are served.
- Develop standardized service delivery models for both urban and rural drinking water supply schemes to improve efficiency, cost-effectiveness, improve monitoring and sustainability.
- Develop mechanisms for reuse, recycle and recharge of wastewater for other municipal and productive uses.
- Ensure that all drinking water supply systems are designed and constructed in line with the national drinking water quality standards and all municipal discharges comply with National Environment Quality Standards (NEQS).
- 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

- 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.

[33] Water and Sanitation Policy for Sindh 2017

- Install water treatment plants at existing drinking water supply schemes where required and incorporate water treatment facilities in all new drinking water supply schemes.

II. Short 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.
- Priority for water supply and sanitation will be accorded to un-served, under-served areas, and disadvantaged areas.
- Frame a broad policy framework at the provincial level which encourages and supports city district to design and implement policy which is in-keeping with the existing capacities and strengths of institutions.
- Wherever possible, preference should be given to rehabilitate existing schemes (functioning or not) over the construction of new schemes, unless there are special reasons to justify otherwise.

8.1.7 Priority projects

i. Improvement of Water Intake Works

➢ **Project Justification**

The purpose of the proposed project is a safe water solution for the water intake from present source for Dadu Town. The Present System intakes water from Dadu Canal at North Eastern town outskirts. After Sedimentation, the water pumped into 2Nos HSRs and then into the distribution network. The HSRs are located at college Road and near the MC office of 100,000 gallons capacity each. The current water supply to Dadu is 4.5 mgd against demand 5.1 mgd. The water supply is supported by groundwater source through 9 tube wells operational in the vicinity of the Dadu Canal and surface water from the Dadu. . 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 (approx. 11 million gallon capacity)

➢ **Project Benefits**

People of Dadu Town are facing shortage of water supply. The project is to improve the collection of raw water supply collection. This project includes increasing the number of pumping stations and up gradation the sizes of pipe lines with additional water storage resrvioirs with 10 days capacity. After implementation of this project, the source of water

intake will be safe. This project shall improve the collection of raw water and increasing the number of pumping stations and up gradation the sizes of pipelines.

- **Implementing Authority:** Dadu MC, Government of Sindh and PHE Department.
- **Estimated Cost: 100.00 Million PKR Approx.**

ii. Installation of New water supply network for 25% of Dadu Town Area (Approx. 755.68Acres)

- **Project Justification**

According to the PHED department Dadu MC, about 75% of the population is connected to the MC water supply network. And remaining 25% population obtains its water from hand-pumps or stand-posts at certain places during non-supply from Dadu Canal. Therefore at priority basis installation of new water supply scheme for 25% of urban area of Dadu is proposed. This project will help to supply water in those areas where the network is not available. The objective of the project is to get uninterrupted water supply to the inhabitants of Dadu town. Provision of New Water Supply Network will cover main components i.e. i.e. Excavation, Pipe cost, Gate valve/ Washout valve/ Air release valve & construction of reservoirs for area wise pressure maintenance works and provision of necessary machinery/ equipments for the smoothly distribution of water works.

Project Size	
Population of Dadu MC	171,191
Landuse of DHQ town excluding agriculture, vacant land & water bodies Area in Acres	3353.4
Core Town Area in Acres	330.68
Remaining Urban Area in Acres	3022.72
Installation of New Water Supply Network for 25% area of Urban Area	755.68
Installation of New water supply scheme for 25% (755.68 Acres) of Dadu town @ Rate of 3.0 Million Per Acre	2267.04

- **Project Benefits:** As already discussed above that 25% population of Dadu Town has not a proper supply of clean Water. So after implementing this project, the Potable water will easily supply to the rest of town.
- **Implementing Authority:** Government of Sindh- PHE Department Dadu MC
- **Estimated Cost: 2267.04 Million PKR Approx. (Short Term)**

iii. Repair & Rehabilitation of Existing Water Supply Network of Dadu MC (Approx. 2267.04 Acres)

- **Project Identification & Justification**

Project Size	
Population of Dadu MC	171,191
Landuse of DHQ town excluding agriculture, vacant land & water bodies Area in Acres	3353.4 Acres
Core Town Area in Acres	330.68 Acres
Remaining Urban Area in Acres	3022.72 Acres
Repair & Rehabilitation of Existing Water Supply Network of Dadu MC (Approx. 2267.04 Acres)	2267.04 Acres
@ Rate of 1.0 Million Per Acre	2267.04

Almost All the network of Water Supply in Dadu MC is in poor condition and most of it requires repair & rehabilitation. According to the data provided by PHE Department, 75% of total population has piped water connection and remaining population purchase their potable water through tankers due to the shortage or delays in water supply. This project will help to improve the capacity of supply water schemes already exist in town. This project includes increasing the number of pumping stations and up gradation the sizes of pipelines. Repair and rehabilitation of existing water supply network cover below main components i.e. Excavation, Pipe cost, Gate valve/ Washout valve/ Air release valve, Joints repairs, Balancing slopes at all network , Checking of pipe life with rupture checker & Valves for area wise pressure maintenance.

- **Project Benefits**

  After implementing of this project, the Potable water will be supplied to rest of area of Dadu MC.

- **Implementing Authority -** Government of Sindh- PHE Department Dadu MC.

- **Estimated Cost: 2,267.04 Million** PKR Approx. (Short Term)

PROPOSED PRIORITY PROJECTS						
S. No.	**Project Name**	**Estimated Cost In Millions**	**ADP**	**Non ADP**	**Status**	
					Short Term	**Long Term**
Water Supply						
1	Improvement In Water Intake Work	100.00	-	Non ADP	Short Term	-
2	Installation of New water supply network for 25% area (755.68 Acres) except core urban area.	2,267.04	-	Non ADP	(Phase Wise)	-
3	Repair & Rehabilitation of existing Water Supply Network 75% (2267.04 acres) except core urban area.	2267.04	-	Non ADP	(Phase Wise)	-
		4,634.08				

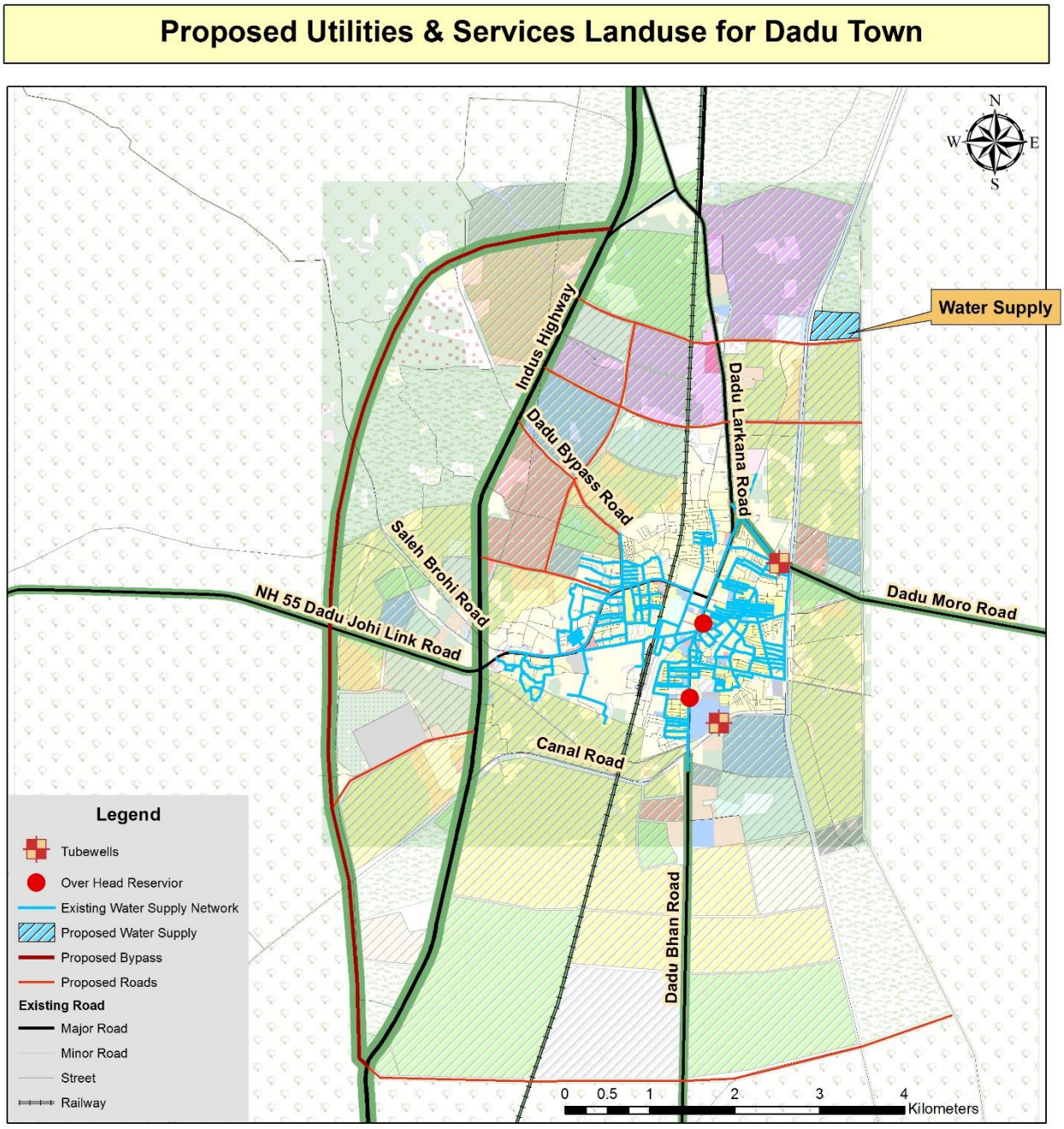


Figure 8:5: Future Landuses for Water Works for Dadu Town

8.1.8 Immediate Action Plan for Core Urban Area

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

Rehabilitation of Existing Water Supply Network of Core Urban Area Dadu (360.68 Acre)				
S. No.	**Name**	**Area (acre)**	**Per acre cost (PKR) million**	**Cost (PKR)**
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).	360.68	1.0 million Per acre	360.68
			Total Cost (PKR). Million	**360.68**
Note: Water supply system renovation includes supply pipe networks, pumping machinery and equipment's for more efficient and effective supply of water.				

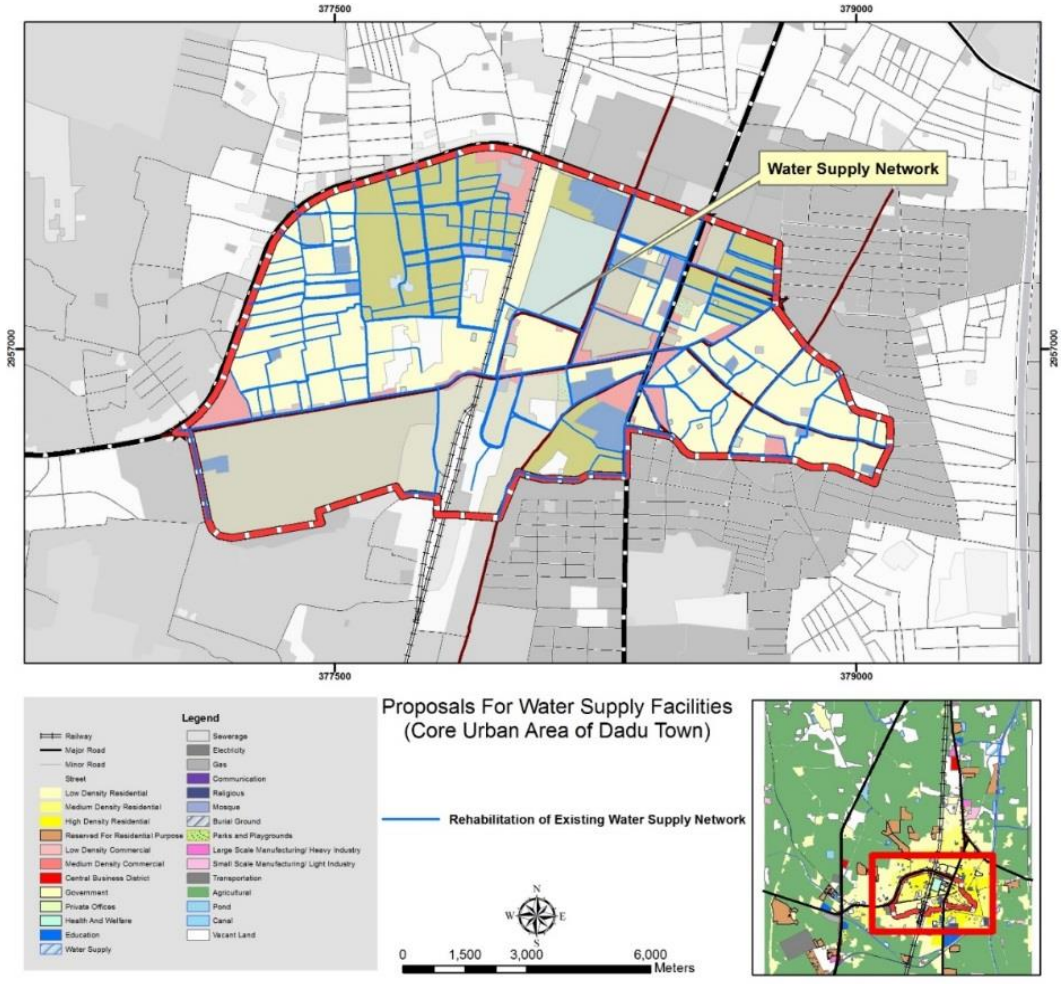


Figure 8:6: Rehabilitation of Water Supply Network for Core Urban Area

8.2 Sewerage and Drainage

8.2.1 Existing Situation

Coverage by a sewerage/drainage network ranges from 51% of the Separate type of 49% of combined surface and wastewater disposal systems in Dadu. The majority of socioeconomic survey respondents were dissatisfied with the current sewerage systems. Sewerage is mainly disposed of in roadside drains, and untreated sewerage collects in ponds/swamps considered as oxidation ponds are not valid.



Figure 8:7: Non-functional Oxidation ponds

Sewerage and Drainage Components: The sewerage and drainage system in Dadu town consists of RCC pipe sewers ranging from 9" dia. to 36" dia., and open surface drains of types A, B, and C. The system is intact and working, but needs cleaning, rehabilitation and maintenance so that all sewerage, and wastewater flows to the collection/disposal wells.

There are nine disposal pumping stations at various locations in the town, consisting of screening chambers, collecting wells and pumping equipment.

Details on the infrastructure are summarized below.

- Conveyance is by gravity flow in the surface drain and pipe sewers to 9 pumping stations for final disposal to Irrigation canals.
- System is undersized and shallow sewers laid
- No treatment.
- Poor condition of sewerage and drainage is the main municipal services problem, and cause of waterborne diseases.
- Rehabilitation and extension of the system are needed.

Underground sewerage system, but needs to be properly designed and installed

I. Treatment Facilities

There are three treatment works (oxidation ponds) but they have not been functional for a long time. The farmers cut the discharge pipe to use sewerage for irrigation, and the local authorities paid no attention to repair it, and since then the ponds have been in an abandoned state.

II. Disposal

Final disposal of effluent is mostly to oxidation ponds and irrigation canals, which in many cases are the main water supply source for towns downstream, this pollution of water supply sources leads to widespread waterborne diseases. Analyses of wastewater samples carried out earlier show that SEPA Allowable Standards for total suspended solids (TSS) and biological oxygen demand (BOD) were exceeded (i.e. not complied with) in nearly all the wastewater samples tested.

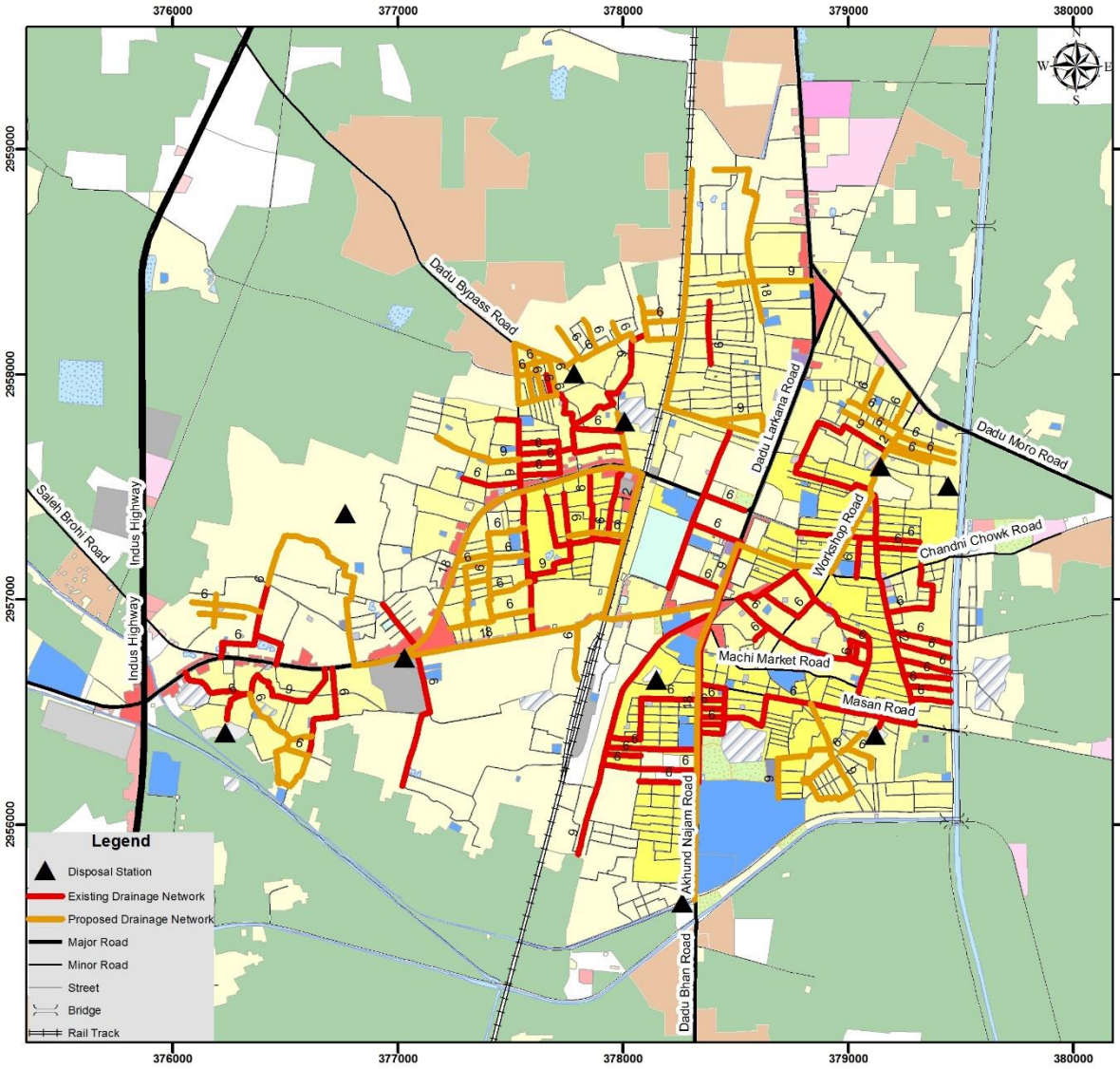


Figure 8:8: Existing Sewerage and Drainage Network of Dadu

8.2.2 Issues:

- 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. Depression areas causing permanent pounding.

- 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.
- 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.
- Open drains on street.
- Improper channelization of drains
- Over flow of storm water drains
- Lack of interest among stakeholders involvement in disaster relief activities.
- Poor administrative control for operating existing drainage system of the town.
- Limited O&M budget allocation for sewerage facilities
- ASTM-RCC pipes have been laid at shallow depths. There was no self-cleansing velocity of 2.5 ft/sec achievable due to shallow depths.
- Absence of comprehensive sewerage and drainage plans for cities and towns

8.2.3 SWOT Analysis :

Strengths	Weakness	Opportunity	Threats
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. Sewage water is disposed of untreated into canals and on the disposal site 3. Open sewers & outdated and disconnected network. 4. Unavailability sewage treatment plant	1. An appropriate sewerage system plan should be implemented. 2. Canals should be saved from toxic disposals. 3. Development of well-designed trunk sewerage network with less number of disposal station. 4. Revenue can be generated through charging services for cleaning. 5. 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 drains 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. Complete removal or treatment of land where temporary ponds have been formed in main town area.	1. Medium level flood disaster threat to local communities living near to main course of River Indus. 2. Open and overflowing drains have impact upon human health and give birth to epidemic diseases.

8.2.4 Need Assessment

Town		2017	2022	2027	2032	2037
Dadu	Water Demand	5.14 mgd	5.88 mgd	6.73 mgd	7.70 mgd	8.81 mgd
	Sewerage Flows @70 % Water supply	**3.60 mgd**	**4.11 mgd**	**4.71 mgd**	**5.39 mgd**	**6.17 mgd**

(Actual = 5.14X 70 % = 3.60 mgd)

8.2.5 Sindh Sanitation Policy 2017

Targets:

Its key targets are:

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

Principles:

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

- Affordable (in terms of designs as well as availability of water) and cost effective technical solutions with necessary modifications and adaptations in technical standards to be consistent with cultural sensitivities of specific communities will be identified and marketed.
- The component sharing model as envisaged in the National Sanitation Policy will be Institutionalized gradually in which the community is responsible to construct lane and neighborhood level sewers (internal development) on self-help basis and the government focuses on trunks, disposal and treatment unit (external development).
- The role of women shall be an integral component of behavioral change communication strategies and project planning, implementing and monitoring through capacity development and social mobilization of relevant stakeholders.

8.2.6 Strategic Development Plan

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

I. Long Term Plan

- Gravity flow systems will be used for sewerage schemes so as to avoid pumping and O&M costs.
- Acquire Land & Provide Stabilization ponds for full treatment to produce acceptable quality of effluent for re use.
- **Facilitate Sewers System Rehabilitation:** Silt deposits have caused blockage in sewer pipes and manhole overflows due to lack of maintenance and storm water runoff into the sewers also results in blockages. The existing system serves 60% population. Undersize sewers are unable to carry the sewage from densely populated areas.
- **Improvement in Operation & Maintenance:**
  The Sewers / Drains cleaning mechanism that exists in Dadu is removing blockades & removing overflow of gutters under Supervision of one Supervisor. There are about 216 kundi-men / Sanitary Staff available with MC. The Sewers are not cleaned & de-silted on regular basis.
- **Improvement of Institutional Weakness:** There is no tax culture in the community. In the absence of consumers' record, the recovery of user's charges is seldom.
  The community does not possess the technical expertise required to maintain the facilities. Financial constraints limit the extension / upgrading of existing service areas

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.
- An overall sanitation plan will be developed for all urban settlements by city District governments 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
- 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.
- Raw sewerage use for agriculture must be stopped.
- Lying of pipes that facilitate self-cleaning function.

8.2.7 Priority Projects

i. Repair & Rehabilitation of existing Sewerage and drainage network (69% of DHQ Town approx. 2085.67 acres)

➢ **Project Scope & Justification**

In Dadu Town Sewage is mainly disposed of in roadside drains, and untreated sewage collects in ponds/ swamps. The drainage system and structures are in poor condition with open smelly drains and sewers. Drains are in poor condition almost in all the town and need to be repaied. The drainage and sewerage system in Dadu DHQ town consists of surface drains, and reinforced cement concrete (RCC) pipe sewers in part of the town. The sewerage system lacks proper operation and maintenance due to funding constraints, shortage of technical staff and proper equipment and vehicles. The drains are needed to rehabilitate and where the drains are not available there should be provided.

Project Size	
Landuse of DHQ town excluding agriculture, vacant land & water bodies Area in Acres	3353.4
Core Town Area in Acres	330.68
Remaining Urban Area in Acres	3022.72
Repair and Rehabilitation of **existing Sewerage and drainage** served area 69% of DHQ town excluding agriculture, vacant land & water bodies and Core Town Area @ of one million per acre	2085.67

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

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

➢ **Project Size**

According to the landuse survey conducted by client, the total Landuse of DHQ town excluding agriculture, vacant land, water bodies and core area is about 3022.72 acres approximately. According to socio economic survey results 69% (2085.67 Acres) of town area is served with drainage system. 80% of respondents from the town are dissatisfied with the current sewerage

system. Therefore it is proposed to repair & rehabilitate existing drainage scheme for DHQ town on priority basis covering an area of 2085.67 acres excluding core town area.

- **Project Benefit**
  After the implementation of the project of surface drainage network with easy disposal to river/canals after the treatment, the risk of urban flooding will be mitigated.

- **Implementing Authority – PHED Government of Sindh, Dadu MC**

- **Estimate Cost: Rs. 2085.67 million approx.**

ii. Installation of new Sewerage and drainage network for 31% un-served areas of the Dadu MC (approx. 937.04 acres).

- **Project Scope**

As per socio-eocnomic survey results, 31% of total area is unserved due to unavailability of drainage network. The drains are needed to rehabilitate and where the drains are not available there should be provided.
Construction of storm water and sewerage works will include the following components.

i. Construction of Walls, bed and Top slab of drains, manholes and chambers
ii. Installation of drains, chambers and manholes where found completely damage
iii. Laying of pipes, chambers, drains and inlet gratings

Project Size	
Landuse of DHQ town excluding agriculture, vacant land & water bodies Area in Acres	3353.4
Core Town Area in Acres	330.68
Remaining Urban Area in Acres	3022.72
Installation of new Sewerage and drainage network for 31% un-served areas of the Dadu MC (approx. **937.04** acres). Excluding agriculture, vacant land & water bodies and Core Town Area @ of three million per acre	**937.04 Acres**

- **Project Size**
  Therefore it is proposed to install new drainage scheme for unserved 31% area of DHQ town on priority basis, covering an area of 937.04 acres. The remaining area of the Dadu MC needs to be provided a proper drainage and sewerage network in the town. This project will help the inhabitants of the town for easy disposal of storm water drainage and sewage water in to main drainage system.

- **Project Benefit**
  After the implementation of the project, the area of the town which is missing the facility of the drainge network will be served.

- **Estimate Cost: Rs.3.00 million per acre cost – Rs. 2,811.13 million approx.**

- **Implementing Authority – PHED Government of Sindh, Dadu MC**

iii. Construction of Sewage Treatment Plant

- **Project Scope & Justification**

  Final disposal of effluent is mostly to oxidation ponds and irrigation canals, which in many cases are the main water supply source for towns downstream, this pollution of water supply sources leads to widespread waterborne diseases. Analyses of wastewater samples carried out earlier show that SEPA Allowable Standards for total suspended solids (TSS) and biological oxygen demand (BOD) were exceeded (i.e. not complied with) in nearly all the wastewater samples tested.

  The drainage system is in poor condition, with open smelly drains and sewers. There is no sewerage treatment, and untreated sewerage collects in ponds/swamps. Drains are blocked by garbage and vegetation. Sewerage is mainly disposed of in roadside drains. All HHs (100%) would prefer a toilet connected to a sewerage system. Flooding of properties and approach roads is significant during the rainy season. The umping station is discharging into sim Drain (Nalla)

  Due to unavailabilty of sewage treatment plant, the preference is given to conventional / Natural treatment of waste water through oxidation ponds. Therefore it is proposed to construct Sewage Treatment Plant for DHQ town on priority basis & convert existing oxidation Ponds area into STP.

- **Project Size**

  Initially, construction of STP having capacity of 4 Million Gallon is proposed on priority basis for the year of 2021. And also procurement of land is required for treatment works on priority basis.

- **Project Benefit**

  After the implementation of the plan wastewater will be used for landscaping or maybe for other use.

- **Implementing Authority - Government of Sindh, Dadu MC.**
- **Estimate Cost: Rs.700.00 million approx.**

S. No.	Project Name	Area (acres)	Estimated Cost In Millions	Short Term	Justification
Sewage & Drainage					
1	Repair & Rehabilitation of existing Sewerage and drainage network (69% of DHQ Town approx. 2085.67 acres) (exluding the core area)	2085.67	2085.67	**Short Term**	At the rate of 1.0 million per acre for overall Repair, Rehabilitation and construction of existing scheme.
2	Installation of new Sewerage and drainage network for un-served (31%)areas of the Dadu MC (approx. 937.04 acres). (exluding the core area)	937.04	2,811.13	**Short Term**	At the rate of 3.0 million per acre for installation of new scheme.
3	Construction of Sewage Treatment Plant (4.00 Million Gallon)	5.00	700.00	**Short Term**	Area reserved 5.0 acres, having capacity of 4.00 Million Gallons tentative cost for overall construction.

Proposed Utilities & Services Landuse for Dadu Town

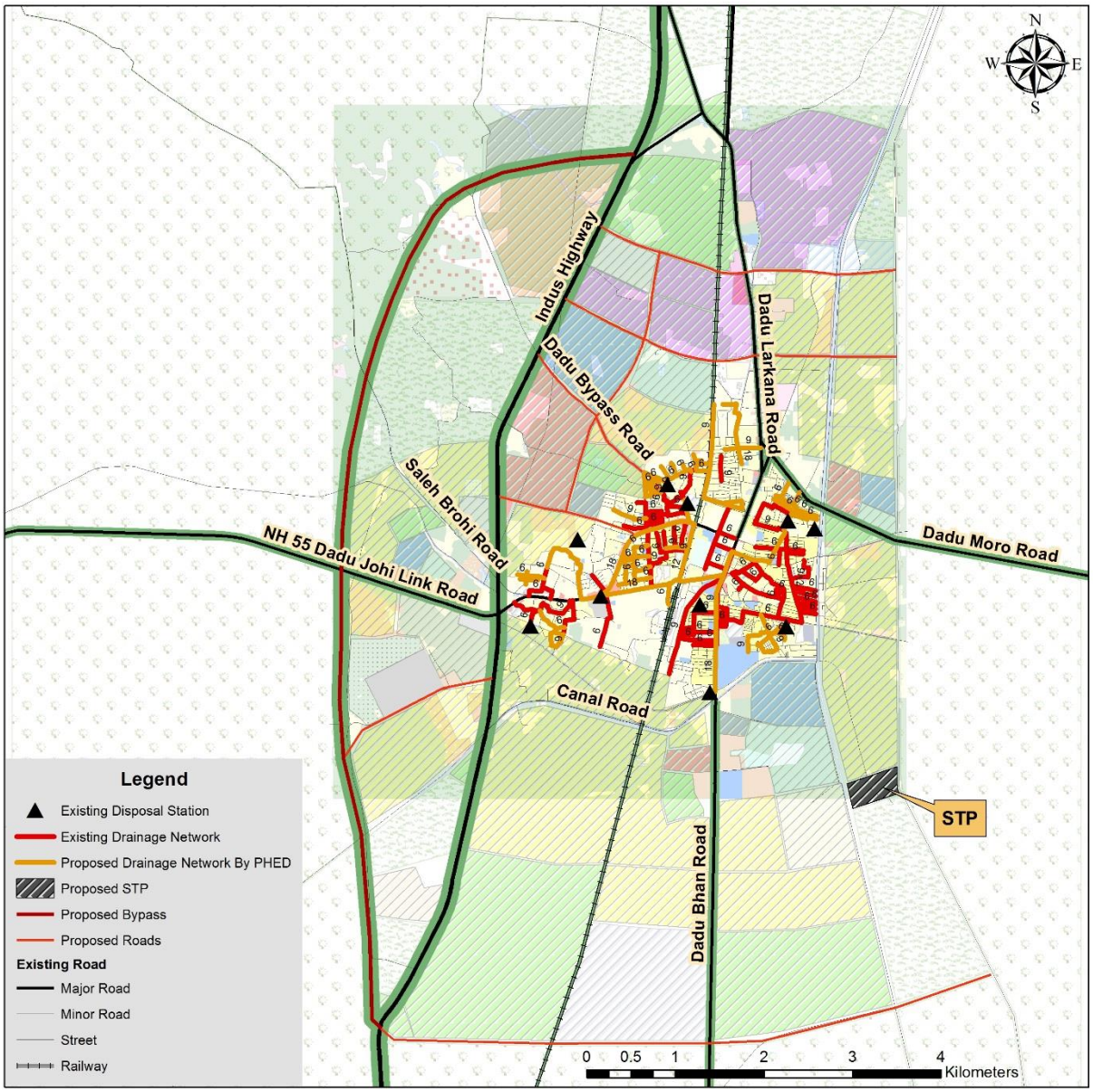


Figure 8:9: Future Landuses Reserved for Proposed STP Works for Dadu Town

8.2.8 Immediate Action Plan for Core Urban Area

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

S. No.	Name	Area (acre)	Per acre cost (PKR) million	Cost (PKR)
Total Core Urban Area : 360.68 Acre				
1	Sewerage System	**360.68**	**1.0 million Per acre**	**360.68**
2	Storm Water Drain System			
			Total Cost (PKR). Million	**360.68**

Note:

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

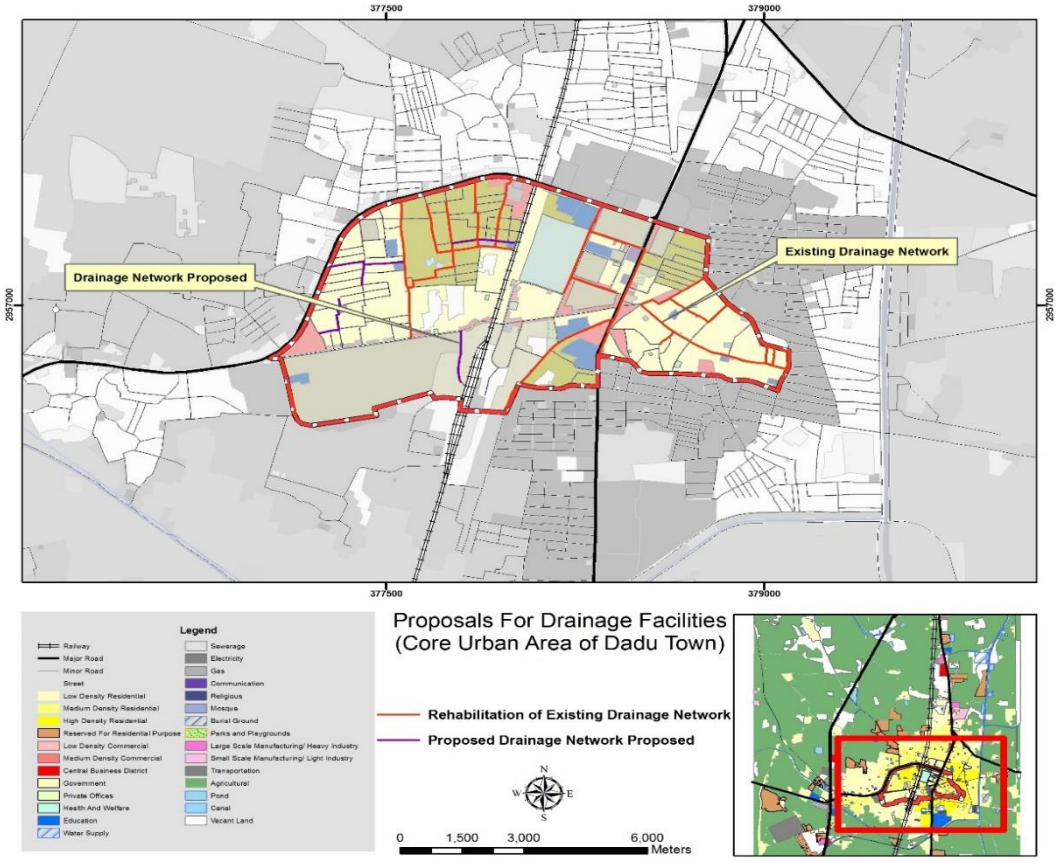


Figure 8:10: Rehabilitation of Drainage Network for Core Urban Area

8.3 Solid Waste Management

8.3.1 Existing Situation

Dadu is the west border district of Sindh touching Balochistan. "Solid Waste Management (SWM) is the generation, separation, collection, transfer, transportation, and disposal of waste in a way that takes into account public health, economics, conservation, aesthetics, and the environment, and is responsive to public demands. In district Dadu, Municipal Committee is responsible for solid waste disposal, drainage and sanitation, and water supply facilities. Regarding the urban water supply schemes in district Dadu, all urban localities are covered. As far as the provision of urban drainage schemes in district Dadu is concerned, all urban localities are provided with an open pakka drain system (IBID).

Due to the poor infrastructure of municipal services at district and its concerned talukas level municipalities, there is no latest data/statistics on the current situation of the solid waste management system of district Dadu available. Likewise, other major districts of Sindh, district Dadu also face irregularities in the solid waste management system majorly at the talukas level, as well as, district level too. However, a common method of solid waste collection from the source point to the disposal at the landfill site is followed. Furthermore, indiscriminate dumping and open burning of waste is a common practice in many areas of district Dadu.

Current Practice of Solid waste Collection & Disposal

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

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

The collection mechanism that exists in Dadu is the primary collection system. The garbage is collected in open containers and the collected waste is transfer/ transport outside limits of the town to non-designated dumping sites by means of refuse vehicles and tractor trolleys which are inadequate in numbers for the handling of MSW by the sanitary/waste collection staff. The total actual numbers of Sweepers and Cleaning staff is 379. The employed staff in the municipality is 300 in numbers and the sanctioned employees are 383 in numbers.

The equipment, machinery, and vehicles presently in possession with the municipality are:

1. Refuse Vans 03 Nos.
2. Tractors Trolleys 04 Nos.
3. Dozer 01 No.
4. Sucker Machine Vehicle 01 No.
5. Fire Tenders 01 No.

The vehicles and equipment required by the municipality is as follows:

Fire Tender 01 Nos.

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 Dadu 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.
- 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 Municipal Committee	1. Poor financial and operational management system. 2. There is no system to identify toxic wastes produced by various activities 3. 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 plants 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[34]. However it is recommended to undertake the field study for the determination of waste generation and characterization for Dadu 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 Dadu as 171,191 the total municipal solid waste load arising in the municipality is approx. 77,036 kg or 77.1 tons per day. Based on National Refrence Manual (NRM): on population of 10, 000, one acre of landfill area is required. So for the population of 171,191 in 2017, landfill area of 17.11 acre is needed and for the projected population in 2037 of 293,589, landfill area of approx. 29.35 acre is required.

8.3.5 Policy Guidelines[35]

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.

34 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

[35] Sindh Water and sanitation policy 2017

- 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.
- To understand, accept and support the role that communities, NGOs and the formal and informal sector are playing in SWM.
- Develop and use technologies that are affordable, applicable and cost effective to maintain the solid waste management.
- SWM program and projects will be coordinated with settlement planning, housing, environment, health and education policy guidelines, program and projects.
- Best possible use of existing staff and equipment, including re-planned beats and shifts where necessary, and improved staff attendance.
- Allocation of proper landfill sites outside of the urban area and Final disposal of waste at least 500m from housing to a contained area chosen and designed according to geological conditions, water table, wind etc.

8.3.6 Strategic Development Plan

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

I. Long Term Plan

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

- **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

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

8.3.7 Priority Project

i. Feasibility Study for Solid Waste Management Mechanism and Mechanism for Primary and Secondary Collection and recycling.

➢ **Project Scope & Justification**

The collection of the solid waste is the responsibility of Dadu MC. MC has been contributing to keep clean the city by providing the basic municipal services includes solid waste management. As street sweeping and collection are by far the most expensive activities in MC's waste-management system, the collection system needs to be made more effective and efficient. A detailed feasibility study is proposed to develop the efficient solid waste management mechanism. There is a practice in Dadu MC that at community level garbage generated from household is placed outside the house that is collected by the sweepers in the morning through door-to-door collection.

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 setup of large-scale central composting plant is required. This should be done with private sector 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.

- **Project Benefit**
  The project will identify the feasible solution to improve hygienic conditions of the town.
- **Implementing Authority -Government of Sindh, Dadu MC**
- **Estimate Cost: Rs.80.00** million approx.

S. No.	Project Name	Area (Acres)	Estimated Cost In Millions	Short Term	Justification
Sewage & Drainage					
1	Feasibility Study for Solid Waste Management Mechanism and Mechanism for Primary and Secondary Collection and recycling	3,022.72	30.00	**Short Term**	At the present, the town lacks in the provision of integrated mechanism of municipal solid waste management.
2	Land acquisition for landfill site.	20.0	50.00	**Short Term**	At the rate of 2.50 million per acre

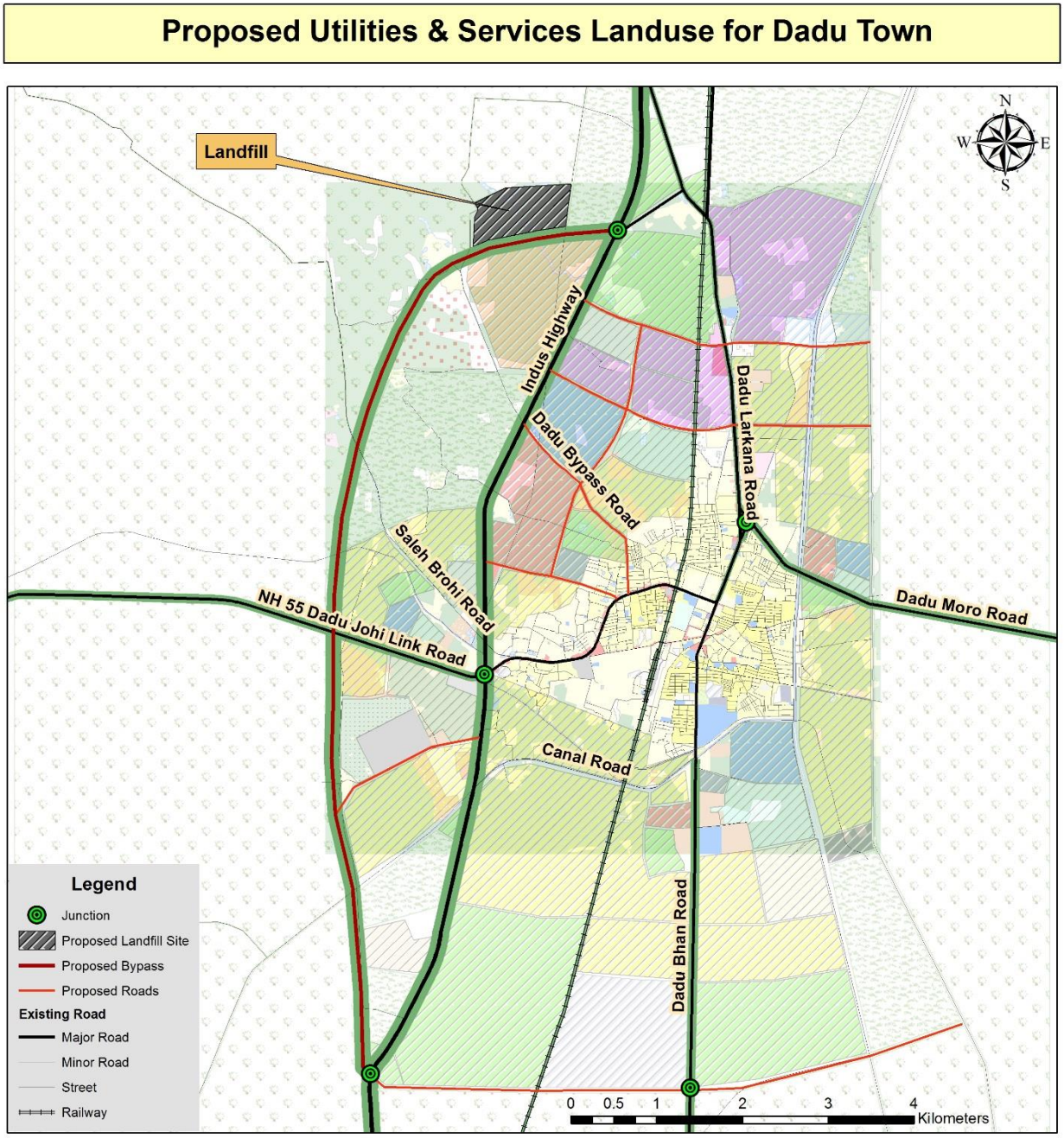


Figure 8-11: Future Landuses Reserved for Proposed Landfill Site for Dadu Town

8.3.8 Immediate Action Plan for Core Urban Area



There are number of recognized / established active primary collection points in the town. These are not permanent structures but rather empty or vacant corners. Besides regularly served designated collection points, every locality has got throw away sites in the form of depressions, empty areas, cuttings areas etc. These types of non-designated points if come in the collection route are often served by the municipality staff or usually avoided due to shortage of time and resources constraints. Solid Waste that is collected from Streets and Roads etc. by sanitary workers is transferred and transported to the outside limits of the town. There are some areas where open containers have been placed for solid waste collection but due to lack of civic sense in the people of the town, they are still useless. Solid Waste collection is done from the designated points by means of vehicles such as; tractor trolleys and refuses vehicles as when necessary to transport the waste to dumping sites.

Solid Waste Management System (Solid Waste Garbage Collection Containers)				
S. No.	**Name**	**Containers No.s**	**Cost / Container**	**Cost (PKR)**
Total Core Urban Area : 360.68 Acre				
1	Placing of Garbage Container at different sites/locations in core town area	100.00	520,000.00	**52,000,000.00**
			Total Cost (PKR). Million	**52.00**

Note:

1. Each site located for garbage container must be strictly followed by MC to collect and manage solid waste from this site for proper management of the core area.

2. Containers must be fully get maintained by MC office.

3. Sindh solid waste management department/authority should kept control on each project for the uplifting of town as per master plans.

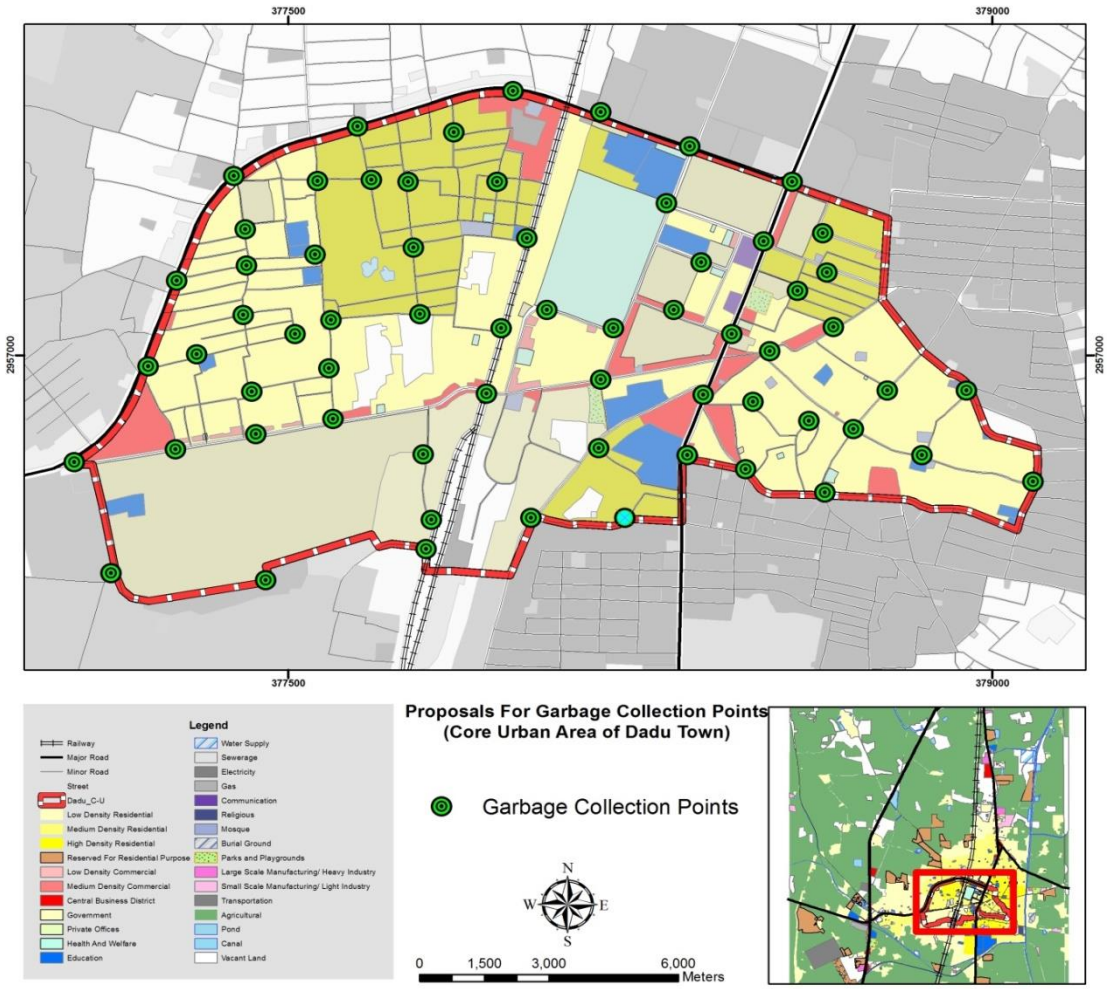


Figure 8-12: Proposed Garbage Collection Points Core Urban Area Dadu

8.4 Firefighting

8.4.1 **Existing** Situation

Currently there is one fire brigade station situated in Dadu with 18[36] firefighting staff and one functional firefighting vehicle. The Municipal committee Dadu 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 Dadu is 171,191, which will be 293,377 in 2037. As per National reference manual the one fire station is recommended for 0.1 million population and one fire engine is required for 50,000 population. Currently there is one vehicle is available with municipal committee. So 5 more vehicles are needed for Dadu Town.

8.4.3 **Strategies**

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

[36] MC office Dadu

9. TRANSPORT AND COMMUNICATION

9.1 Transport and Communication

9.1.1 Regional Connectivity (Air, Rail, Road)

- **Airport**

  Dadu district has an airport strip which is being used occasionally.

- **Railway Station**

  The City is also linked with the main national network of Pakistan Railways through Karachi-Lahore-Rawalpindi railway line via Karachi-Lahore lane and Karachi Quetta lane. This line is the part of first railway line (Karachi-Kotri) for public traffic between Karachi and Lahore. Currently this railway track is considered as busiest track for long route trains running on tracks to facilitate the public.



Railway Station in Dadu

- **Bus and Truck Stand**

  There are no major Bus and Truck stands within Dadu. 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 Dadu. Unregistered Qingqi and Rikshaws are more than buses. Some bus and truck stands are observed on the periphery of District Dadu.



Bus Stand in Dadu

9.1.2 Local Road Network

- **Condition of Road**

  Indus Highway (N-55) passes through this district, with a total length of 127km within the district. The existing road network, in Dadu district, is fairly good. The district headquarter, Dadu, is connected with other taluka headquarters of Johi, Meharand K.N Shah through metalled roads. Two provincial highways, comprising of a total length of 124 km, are mentioned in official statistics, provided by the government of Sindh. Also, there is a comprehensive network of access roads, comprising of 250 km, inter connecting the whole district.

  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
- Unauthorized Qinqui system
- Drainage and parking issues

9.1.4 SWOT Analysis:

LAND USE & TRANSPORTAION			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Mixed land uses (residential, commercial, industrial, administration) 2. Good national / regional connectivity through railway and road networks 3. Strong network of inter and intra city. 4. The existing road network in the district is fairly good.	1. Unplanned street network 2. Absence of public transport 3. Ribbon type commercial development in residential neighborhoods. 4. Poor traffic management. Lack of opportunities for integrated transport provisions 5. Lack of coordination between different transport operating agencies. 6. Lack of parking spaces & street furniture 7. Haphazard on street parking reduces road capacity 8. Poor maintenance of railway station. 9. Poor administration and management control 10. Drainage issues on road are evident	1. Promotes compact development. 2. Opportunities in the form of wide roads available for mass transit system development 3. Adequate space available for street furniture installation 4. Proper management can promote public transport services. 5. If properly administrated and space utilized, could promote smooth flow of traffic on nearby corridors. 6. 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

9.1.5 Policy Guidelines

- Decrease in private vehicles, especially during peak hours and in CBD areas.[37]
- Decrease in traffic delay.[20]
- Decrease/stability in air and noise pollution.[20]
- Involvement of private sector in transportation infrastructure and services projects.[20]
- Establishment of Mass Transit System.[38]
- Infrastructure development and up-gradation.[21]
- Integration of public transport services and networks.[21]
- Modernize goods transport and freight facilities.[21]
- Planning for Unplanned street network
- 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 of Encroachments around bus bays and railway land sites.

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

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

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

i. Universal access to destination:

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

ii. Equal Right of use:

[37] Sustainable Urban Transport Policy-Sindh 2016
[38] ADP 2017-18 Transport Punjab
[39] For detail please refer; The Sindh Empowerment of 'Persons with Disabilities' Act, 2018 (https://depd.sindh.gov.pk/sindh-empowerment-of-persons-with-disabilities-act-2018)

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

iii. Accessible surfaces:

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

iv. Crossable Roadways:

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

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

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 Plan:

- Build a local / district / regional transportation system.
- Rehabilitation of existing roads should be scratched from its compaction level and reconstruct as per specification of design perimeters.
- 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.

II. Short Term Plan:

- Create Traffic Engineering Bureaus (TEBs) at divisional level to perform functions as specified in Karachi Division (Traffic Engineering) Act 1985.
- 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.
- Declaring private vehicle free zones, especially in peak hours, in CBD areas to reduce noise and air pollutions.
- Reduce traffic growth and congestion by achieving a mode shift.
- Satisfy mobility needs via integration of existing and planned routes, services and Infrastructure.
- Enhance institutional efficiency to improve service delivery.
- Dualization of main arteries.
- Improvement of existing roads geometry.
- Undertaking improvements in road design and specifications.

9.1.8 Priority Projects:

i. Repair and Rehabilitation and Improvement of Major Roads, Minor Roads and Streets (excluding Core Urban Area)

- **Project Justification**

  The condition of secondary and tertiary roads of Dadu is in very poor condition. Due to un-availability of proper 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 Dadu.

  However, the overall situation indicates narrow street width, poor pavement conditions, encroachments on footpaths and road sides, haphazard and illegal parking, open drains, lack of traffic signals and signs, etc. Space along with major roads is available for provision of missing facilities.

  There is an unplanned & haphazard street network & absence of quality public transportation system in DHQ Town. Major roads & junctions i.e. Dadu Moro Road, Dadu Bhan Road, NH 55 Dadu Johi Link Road, Dadu Larkana Road, Dadu Bypass Road, Saleh Brohi Road, Canal Road, Phulji Station Road, Dadu Larkana Road and Indus Highway needs repair rehabilitation with provision of allied missing facilities.

- **Project Benefit – By** implementation of the project agricultural, industry sector could be enhanced.

- **Implementing Authority-**Government of Sindh, Dadu MC, Works and Services Department Dadu.

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

- **Project Justification**

  Most of the roads & Streets of Dadu Town are without street lights in over all the town and all roads and are devoid of this facility. Street Lighting is essential for safe maneuvering of vehicles at night time and enhance sense of security of pedestrians on roads in dark hours. Given the energy crisis in the country, it is recommended to have solar street lights on streets and major roads.
- **Implementing Authority – Dadu MC, Government of Sindh**

- **Estimated cost : 2098.07 Millions**

S. No.	Project Name	Estimated Cost In Millions	ADP	Non ADP	Status	
					Short Term	Long Term
Roads and Communication Network						
1	Repair & Rehabilitation of Major & Minor Urban Roads (Excluding Core Urban Area) 29,764.26 meters (29.764 Kms) with tentative RoW of 10 Meters @ rate of 4500 per sq.meter) 1,339.39 Million Repair & Rehabilitation of Streets (Excluding Core Urban Area) (Approx. 40,000 meters @ rate of 2,000 per running meter) 658.68 Million • Pedestrian pathways • Designated Parking Spaces • Provision of Footpaths and Street Furniture • Installation of traffic signals & new solar Street Lighting On main roads **Lump sum Amount 100.00/ Million**	2098.07	-	Non ADP	**Short Term**	-

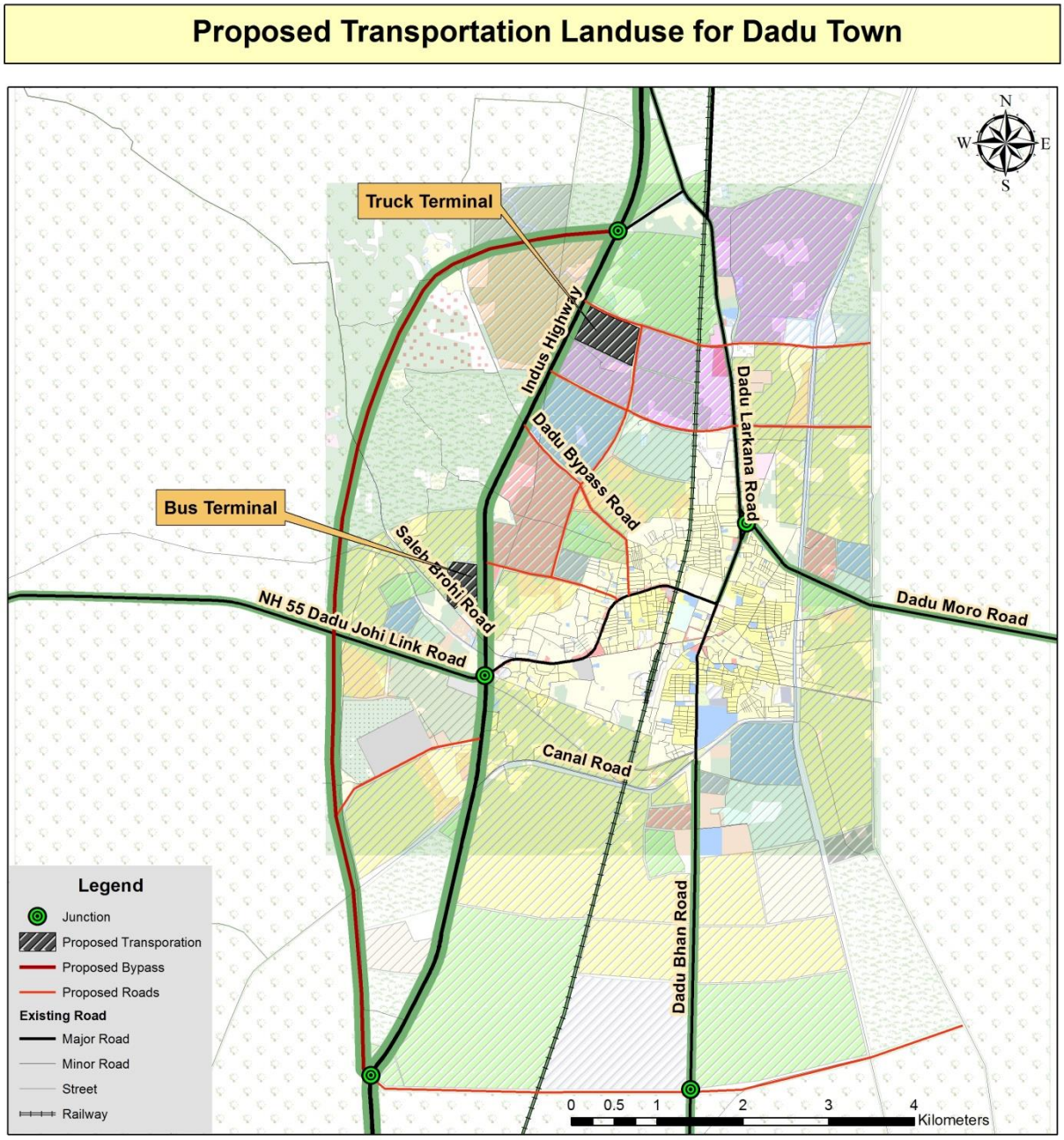


Figure 9-1: Future Transportation Reserved Landuses for Dadu Town

9.1.9 Immediate Action Plan



Repair & Rehabilitation of major roads, minor roads and streets i.e. Dadu-Larkana Road and Akhund Najam Road. Civil Hospital Road, Girls College Road, Sabzi Mandi Road, Madrassa Road, Wadhan Shah Road, Dhamali Chowk Road, Machi Market Road, Police Line Road, Old Bus Stop Road and Station Road etc. The improvement in road pavements with green medians, road markings, signals, pedestrian crossings, will be developed.



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

Immediate action plan for core urban area in Dadu requires that the right of way of roads should be restored by removing all encroachments along the CBD roads.

The road pavements will be improved and tree lined medians will be developed on all main roads.

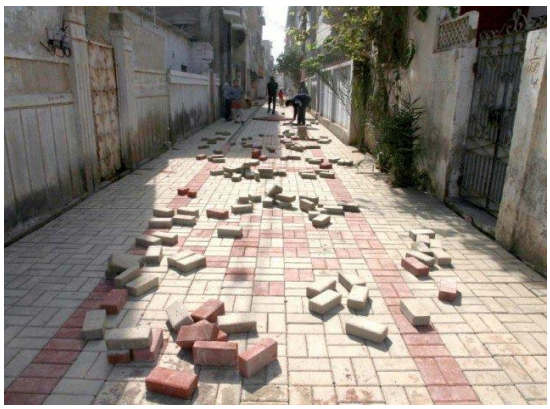


Figure 9-3: Concrete Pavers for Streets



Figure 9-3: Model of Monuments

DADU - CORE TOWN AREA						REHABILITATION OF ROADS		
S. No	Area / Locality / Address Major and Minor Roads	Length (km)	Length (m)	Width (feet)	Width (m)	Area (sq.m)	Per sq.m cost (PKR)	Total Cost in Millions (PKR)
1	Repair and Rehabilitation of Akhund Najam Road	**0.79**	**790.00**	**40.00**	**12.20**	**9,634.15**	**4,500**	**43.35**
2	Repair and Rehabilitation of Workshop Road	0.23	**230.00**	**40.00**	**12.20**	**2,804.88**	**4,501**	**12.62**
3	Repair and Rehabilitation of Police Line Road	0.89	**890.00**	**40.00**	**12.20**	**10,853.66**	**4,502**	**48.86**
4	Repair and Rehabilitation of Mandi Road	0.39	**390.00**	**20.00**	**6.10**	**2,378.05**	**4,503**	**10.71**
5	Repair and Rehabilitation of Chandni Chowk Road	0.27	**270.00**	**40.00**	**12.20**	**3,292.68**	**4,504**	**14.83**
6	Repair and Rehabilitation of Madrassa Road	0.67	**670.00**	**30.00**	**9.15**	**6,128.05**	**4,505**	**27.61**
7	Repair and Rehabilitation of Mukhi Market Road	0.16	**160.00**	**20.00**	**6.10**	**975.61**	**4,506**	**4.40**
8	Repair and Rehabilitation of Railway Station Road	0.51	**510.00**	**30.00**	**9.15**	**4,664.63**	**4,507**	**21.02**
10	Machi Market Road	0.65	**650.00**	**20.00**	**6.10**	**3,963.41**	**4,509**	**17.87**
Total PKR Rs. Million (A).								**201.28**
1	Up-gradation of streets of Core Town Area Dadu	**12.00**	**12,000**	**12**	**3.66**	**43,902.44**	**2,000**	**87.80**
Total PKR Rs. Million (B).								**87.80**
Lump sum Amount for beautification of Monuments (Millions)								**10.00**
(Repair, Rehabilitation and Beautification of Major Roads, Minor Roads, Streets and Monuments) - Total PKR Rs. Million (A+B+C).								**298.08**

- **Monuments**
  Repair, rehabilitation and beautification of Chandni Chowk and Cinema Chowk is Proposed on Immediate basis.

- **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.

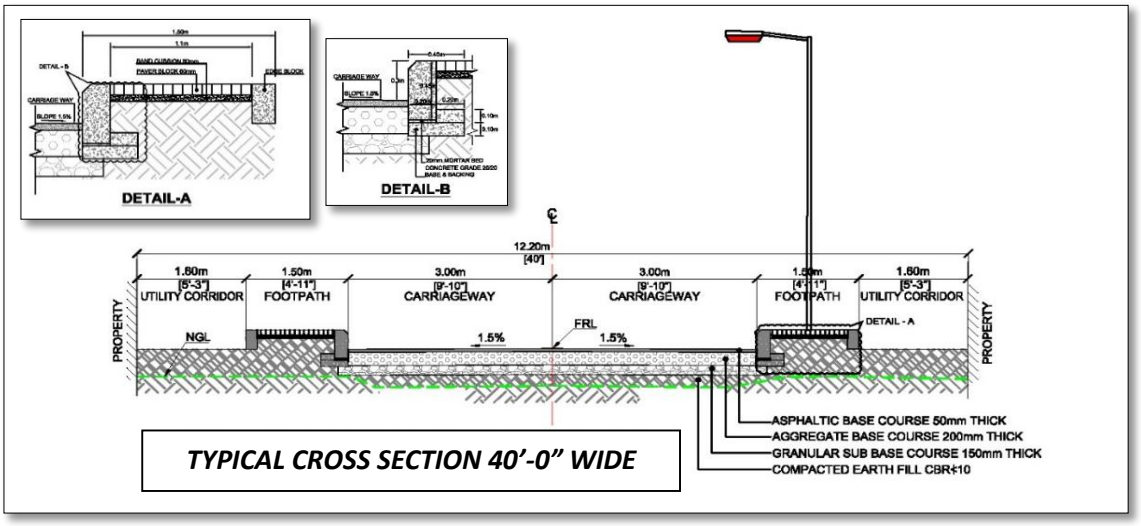


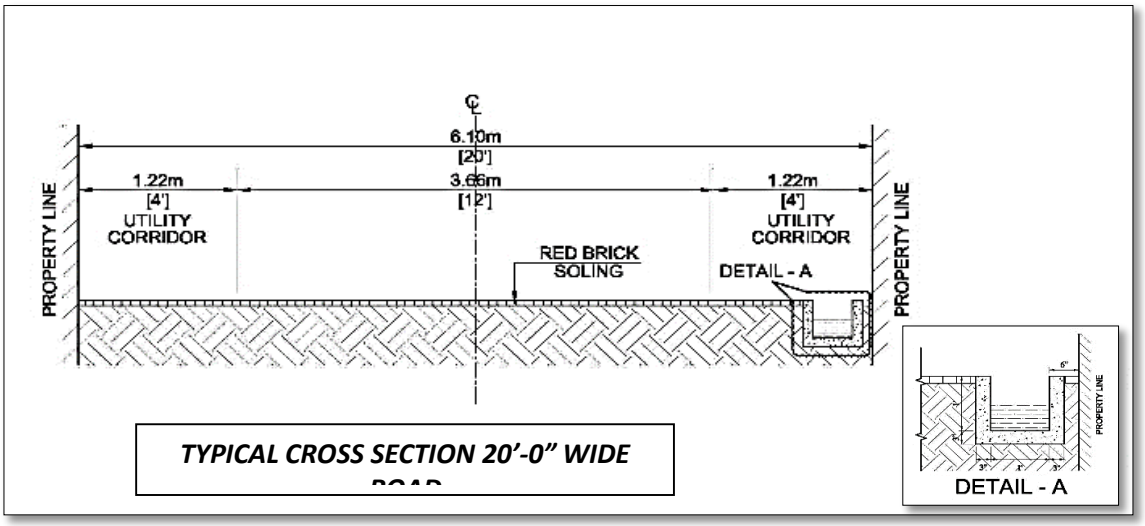
Figure 9-4: Model of Footpath



Figure 9-5: Model of Walkway

Typical cross section is given as below;





- **Provision of Footpaths and Street Furniture**

Pedestrian movement will be encouraged in core urban area by restoring footpaths on both sides of the roads in the city center. All existing encroachments on the footpaths should be removed to allow walkability in the city canter. Additionally some walkways should be designed in the CBD area by applying the pedestrianization policy there. Provision of street furniture in the core urban area also needs immediate attention. Street lights, benches, footpaths restoration, traffic signals, zebra crossings and bus stops with shades should be installed on immediate basis.



Figure 9-6: Model of Footpath and Walkways

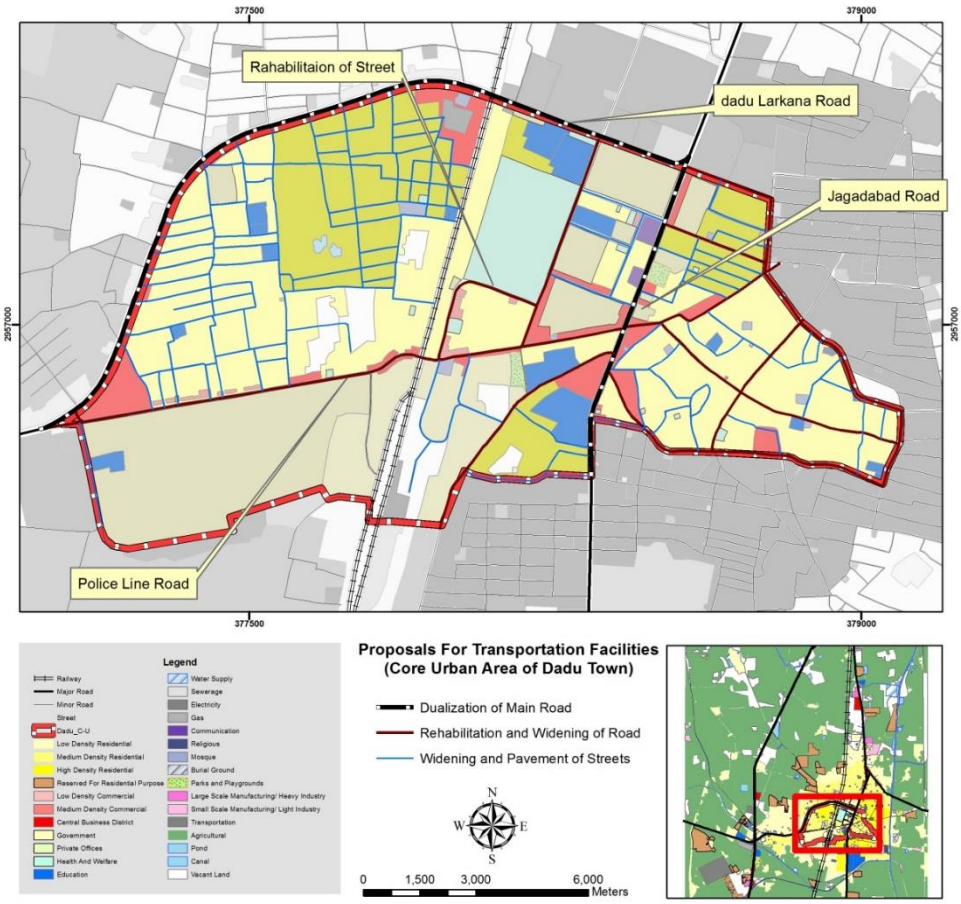


Figure 9-7: Proposal for transportation sector of Core Urban Area Dadu

9.2 Communication

9.2.1 Telephone, Mobile, Internet

The present-day situation of Dadu falls in the developing urban area; the preliminary survey of households show that only 52 households have PTCL land line out of 921 who responded. The present survey also revealed that in Dadu most population is using cell mobile phone.

Table 9-1: Mode of Telephonic Communication

ROW LABELS	WHICH MODE OF COMMUNICATION YOU USED MOSTLY
Cellular Phones/ Mobile phones	253
Cellular Phones/ Mobile phones , PTCL/ Landlines	4
PTCL/ Landlines, Cellular Phones/ Mobile phones	9
PTCL/ Landlines	1
Grand Total	**267**

Internet/Wi-Fi

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.

The survey showed that only 17% households are using internet & Wi-Fi, as per the survey team collected the data from 927 households. Some individuals may also using internet on their smart cell phones provided by service providers.

Importance of Communication Infrastructure in Agriculture Sector:

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

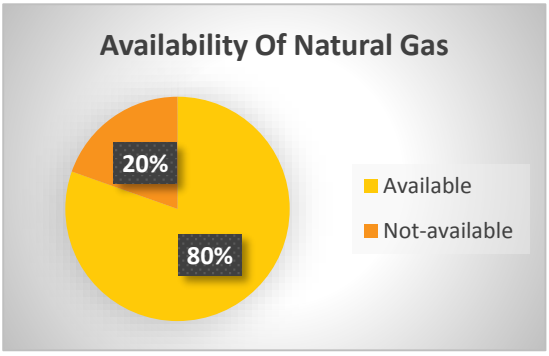
9.3 Gas Supply

9.3.1 Existing Situation:

A total of 925 houses were surveyed and a maximum of house residents had responded to the questions asked on availability of Gas. As given in the Table below, 743 houses had the gas available to them, while the gas was not available to 181 houses. Therefore about 80% households have the gas supply by SSGC and 20% were using alternate source of fuel for their daily household needs.

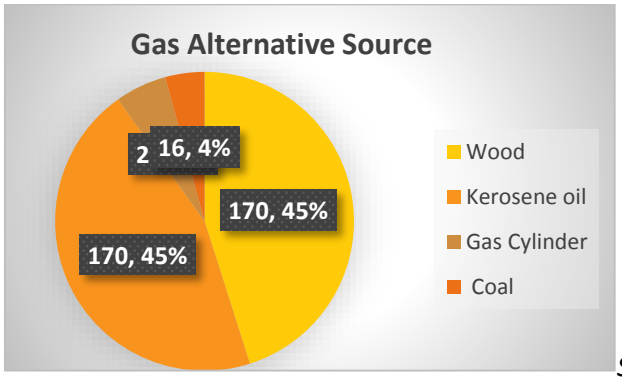
Availability of Natural Gas	Percentage
Available	80%
Not-available	20%
Total	**100%**

Source: Consultant's Survey, July 2017



Households not having Natural Gas provided by SSGC are dependent of alternate sources. 377 respondents not having gas availability are using following alternate resources.

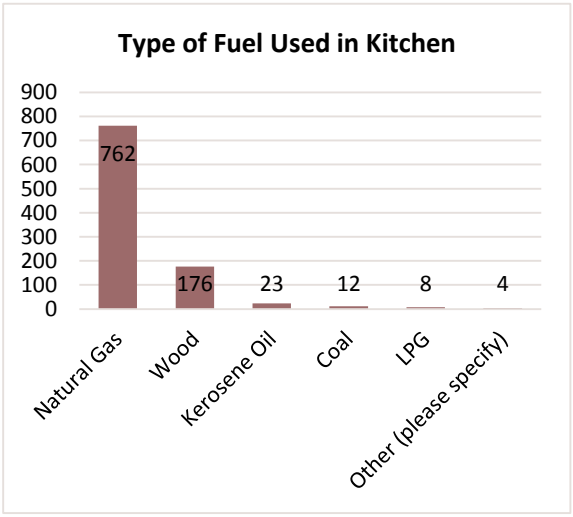
S. No.	Alternate Source	%
1	**Wood**	45%
2	**Kerosene oil**	45%
3	**Gas Cylinder**	6%
4	**Coal**	4%
	Total	**100%**



Source: Consultant's Survey, July 2017

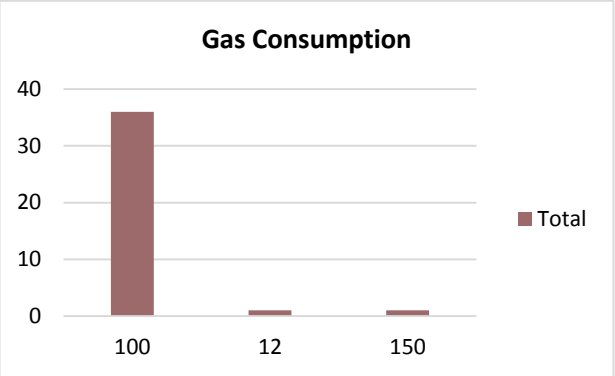
S. No.	Type of Fuel used in Kitchen	Percentage (%)
1	**Natural Gas**	77%
2	**Wood**	19%
3	**Kerosene Oil**	2%
4	**Coal**	1%
5	**LPG**	1%
6	**Other**	0%
	Total	100%

Source: Consultant's Survey, July 2



The table below shows the monthly average gas consumption as provided by only 38 houses due to lack of awareness. Unit of gas consumption is Cubic Meters (CMS).

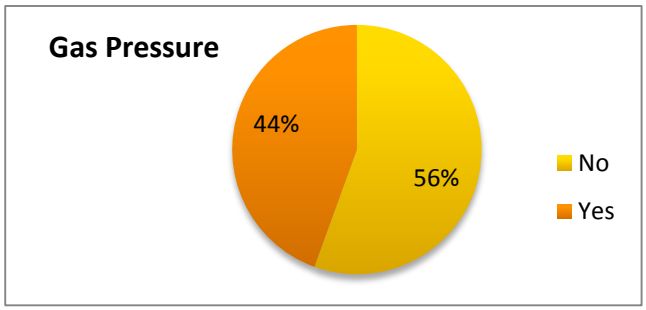
Monthly Average Gas Consumption	
Units (CMS)	**No. of Houses**
100	36
12	1
150	1
Total	**38**
Source: Consultant's Survey, July 2017	



Sufficiency of Gas Pressure

The Table below shows the sufficiency of gas pressure as provided by 895 houses. Around 56% of the households suffer with low gas pressure whereas 44% of the households are satisfied with the Gas pressure.

Sufficient Gas Pressure	Number of Houses
No	497
Yes	398
Total	**895**



Source: Consultant's Survey, July 2017

Survey results also reveal that 68% 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.

9.3.2 Strategies

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

9.4 Electricity Power

9.4.1 Existing Situation

There is no power generation facility in Dadu (MC) vicinity. The Power Supply to District Dadu is through Sukkur Electric Power Company (HESCO) WAPDA via 132KV Dadu grid station feeding district by ten 11 KV feeders. The distribution system will be needed to be extended to the new areas absorbing future urban growth.

The construction work on the small dam for hydro power plant of capacity 4.2 MW at Nai Gaj Dam was started on April 25, 2012 and the project was supposed to be completed by April 2015. But due to the inordinate delay it is now expected to be completed by June 2019.

Results of primary data reveals that only 896 are using SEPCO power, the remaining 27 are using alternate source i.e. 97% of the households have availability of electric power, whereas 3% of the household does not have SEPCO electric power.

The power demand is not only for houses & business, but also for street lighting, industry and irrigation. The main industrial units are sugar mills, flour mills, workshops, exploration concession and small industries. The electricity consumers in the district (MC) Dadu are categorized as domestic, commercial, industrial, agriculture and other services. The major portion of electricity supplied is being consumed by domestic sectors, followed by industries.

9.4.2 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.
- There is no power generation facility in Dadu (MC) vicinity.
- Shortage of electricity & power supply.
- Poor maintenance of electricity supply infrastructure.
- Power shortage due to non-payments of bills.
- Line losses and power theft.
- Outdated network in old town areas.
- Old transformers available for transferring electricity.
- Existing capacity of electricity supply is short to meet the growing demand of utility.
- No alternate source of electricity is available in the district.

9.4.3 SWOT Analysis:

Power Supply & Distribution			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Availability of Electricity supply network for urban area. 2. Good recovery outcomes as business community in urban area want quality services 3. The power supply is through Sukkur Electric Supply Company (SESCO) - WAPDA transmission system	1. There is no power generation facility in Dadu (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. Outdated network in old town areas 6. Old transformers available for transferring electricity 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. Licensing and legal issues. 5. Electricity theft

9.4.4 Need Assessment:

- 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 a gap between supply and demand and therefore there is regular load shedding, causing difficulty to households and shopkeepers. The average consumption of electricity by households varies according to living standard, 33% of households consume between 101 to 200 KWH.

- Average power consumption per household in the area is about 220 KWH, which takes the total domestic load of 9.458 MW.

9.4.5 Strategic Development Plan

Transmission and Distribution losses should be curtailed as Dadu is facing 20 to 25% transmission and distribution losses.

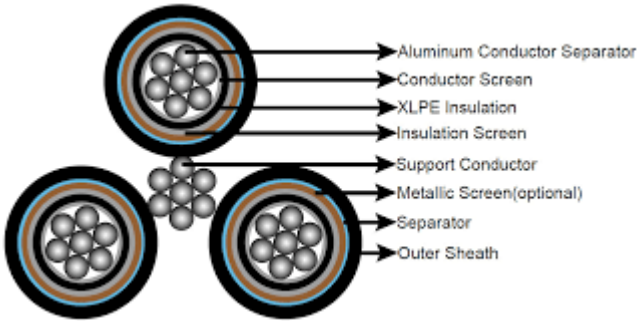
I. Long Term Plan

- 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.)

9.4.6 Immediate Action Plan

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.

Proposed Wall Mounted Street Lights				
S. No.	**Name**	**length (km)**	**length (feet)**	**Cost (PKR)**
1	Proposed Total Length of Street (km) for wall mounted streets lights.	10.00	32,800	7,500,000
			Total Cost (PKR). Million	**7.50**

- Wall mounted street lights approximately should be placed on distance of 15 to 20 feet apart.
- Each wall mounted street light cost (Rs.5000/-).
- As per total length of Streets for this proposal 1,500 No.s of street lights/wall mounted streets should be placed in core town area.
- Operation and maintenance is the 1st priority to ensure after installation of all equipment's and machinery and kept under strict control of TC office for proper usage of facilities.

10. ENVIRONMENT

10.1 Existing Situation

Dadu city is located on the western bank of river Indus. While, Kirthar Mountain range is about 63 km on the west. The terrain around the city is mountainous, however, the land is suitable for agriculture although it has been affected by salinity. Land in Dadu is classified as Semi-arid to arid. The soils afford very sparse shrub and grass vegetation offering limited grazing, the rocky outcrop only has a water catchment value.

The topography within 3 kilometers of Dadu is essentially flat, with a maximum elevation change of 11 meters and an average elevation above sea level of 41 meters. Within 16 kilometers is essentially flat (33 meters). Within 80 kilometers contains only modest variations in elevation (2,085 meters).

The area within 3 kilometers of Dadu is covered by cropland (82%) and artificial surfaces (18%), within 16 kilometers by cropland (79%), and within 80 kilometers by bare soil (45%) and cropland (45%).

District Dadu is situated between the River Indus and Kirthar mountain range. River Indus flows on the eastern side of Dadu and on the west is the long range of tall Kirthar Mountain. Therefore, Dadu district may be divided into three regions which are entirely dissimilar in character namely (i) the Kohistan and kachho area (ii) the barrage zone and (iii) the low land riverine area. The soil is rich alluvial loam of the Indus valley. The northern part of the district used to be subject to the Indus flood. There is magnificent water supply in the north (middle of the district) from canals. To the west, canal irrigation is restricted by the gradual rising of the area in the direction of the hills with the result that this area of the district which is known as kachho assumes the bare and dreary aspect.

Seismically, Dadu lies in the Zone 2A and 2B of seismic zoning map of Pakistan (2015) 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.

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

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

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.

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.

The district is irrigated by Sukkur barrage except for a small portion, which is irrigated by Kotri Barrage. There are two main canals in the district Rice canal and Dadu canal. Besides, land is also irrigated by tube wells and spillover of river Indus. Agriculture, in Dadu, mainly depends upon canal irrigation.

The northern part of the district used to be subject to the Indus flood. There is magnificent water supply in the north (middle of the district) from canals. To the west, canal irrigation is restricted by the gradual rising of the area in the direction of the hills with the result that this area of the district, which is known as kachho, assumes the bare and dreary aspect.

Ground water is generally available at an average depth of 150 feet. Due to escalating urbanization and lack of adequate drainage system, the surface water is being polluted.

1. The Climate of District is intensively hot about 45 Degree Centigrade in summer and below 5 Degree Centigrade in winter.
2. The Climate is immensely conducive for the Agriculture, which is main source of income of the population.
3. The other peculiar feature of climate of District is the Gorakh Hill range which has minus temperature in winter and mercury meter remains below than 20 Degree Centigrade even in June and July.

- **Fauna**

  The lake and surrounding areas provide habitat for a variety of animals including fishes, migratory birds, reptiles and mammals. The important wildlife habitats include: main lake, lake shore, hilly/stony areas, agricultural areas, mudflats, wasteland, marshes and villages.

- **Wildlife**

  The Mammalian fauna is less diverse in the area. There has been impact of flood of 2010 on the mammals of the area. Their habitat was inundated due to flood resulting in the decline in their population. Five species of large mammals were recorded including the Jackal, Red Fox, Jungle Cat, Small Indian Mongoose and Grey Mongoose.]

- **Birds**

  Manchar Lake has been an important area for water birds and the water birds previously recorded here include: Little Grebe, Cotton Teal, White Pelican, Common Teal, Shoveler, Common Pochard,

Great Crested Grebe, Large Cormorant, Gadwall, Mallard, Tufted Duck, Red-crested Pochard and the Coot. Until recently, the lake was a stop-over on the Indus flyway, but now the numbers have declined drastically.

- **Reptiles**

  Reptilian Species reported are Indian Flap shell turtle, Afghan Ground Agama, Indian Garden Lizard, Spotted Indian House Gecko, Three fingered sand fish, Black Cobra. While the amphibian species are Marbled Toad and Skittering Frog. The avian species in the area are Little Grebe, White Pelican, Large Cormorant, Indian Pond Heron, Large Egret, Intermediate Egret, Cattle Egret, Spoonbill, Yellow wattled Lapwing and House Bunting.

- **Livestock**

  Livestock has been a major asset base for the inhabitant of arid zones. Locals also maintain stocks of cows, goats, and sheep as a second source of livelihood after agriculture. Livestock and ruminants include: Domestic Goat (Capra hircus) Bakri/Bakra; Domestic Sheep (Ovisaries) Bhairru/Bhairr; Domestic Cattle (Bostaurus) Gaon/Dhaggo, Dhaggi (male, female); Domestic Donkey (Equusasinus) Gadduh/Gadah.

- **Ecologically Sensitive Areas**

  There are no ecologically protected areas found in District Dadu

- **Forest Resource**

  In Dadu District the forest area is spread over 217.0 thousand hectares which is 18.7% of the total area under forest in Sindh. Dadu district produced 239.0 thousand cubic feet timber wood and 78.0 thousand cubic feet fire wood at the value of Rs.1167.7 thousand which contributes about 6.6% of the total value of forest Timber & Fire wood in Sindh in 1997- 9862. (PESA, District Dadu, 2015).

- **Irrigated Plantations**

  Irrigated plantations of Sindh, also known as inland forests, were once riverine forests but isolated from Indus waters by earthen embankments constructed in the 1930s. Presently, these plantations are irrigated from Sukkur, Kotri, and Guddu barrage irrigation systems.

10.2 Issues and Problems

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

- Over cutting / Thinning out of forest density
- Total area of the forest is only 1% of the total geographical area.

- **Land:**
  - Unplanned land uses
  - Limited availability of govt. land for future spatial growth
  - Incomplete development of agricultural land parcels (scattered agricultural growth)
  - Poor administration by agencies monitoring urban growth of the city.

- **Water Supply:**
  - Water contamination due to waste disposal
  - Contamination of standing water bodies created by rain and flood water at open lots is an invitation to malaria and dengue.
  - There is no any area associated with the fisheries department. Also no any area is pre identified by Fisheries Department for usage.
- **Climate:**
  - Rainfall shortages affect the efficiency of canal system.

10.3 SWOT Analysis:

ENVIRONMENT			
Land			
Strength	**Weakness**	**Opportunity**	**Threats**
1. Flat fertile land suitable for development 2. Rural rich fertile agriculture land that produces quality crops	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. Peculiar feature of climate of District is the Gorakh Hill range (highest peak in Kirthar)	1. Rainfall shortages affect the efficiency of canal system 2. Hot winds blow from May to August from south to north which	1. Agricultural practices can be changed in accordance with weather condition	1. Droughts 2. Heavy rains affects agricultural production

	disturb the inhabitant's life very badly	for maximum production	
Air			
1. The air quality of the city is generally good 2. Air quality in the rich agricultural belt is good for human health 3. Most of the area is air pollution free	1. Inner city is air polluted by high volume of traffic 2. In some areas, where the new construction of roads or dirty roads exist, local air quality is being polluted by dust emissions	1. Development planned with respect to air circulation can provide relief to inner city's polluted environment 2. In future the town can be planned as Green City	1. Air pollution 2. Respiratory diseases

10.4 Policy Guidelines [40]

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

10.5 Strategic Development Plan

I. Long Term Plan:

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

II. **Short Term Plan**:

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

[40] National Forest Policy 2010

- The requirement for Environment Impact Assessments to be binding on all parties including government;
- Restoration and maintenance to preserve ecological cycles, functions and services of environment
- Strengthening forestry education and research institutions to cope with the emerging challenges of deforestation and climate change
- Increase the productivity of rangelands
- Provide recreational facilities for public by improving forest parks
- Rehabilitate degraded ecosystems and create environmental awareness
- Alleviate poverty through creation of forest based income generating opportunities
- Develop and implement policies that integrate the objectives of conservation and development to reduce pressure and protect environmental values and conserve biodiversity
- Fostering public-private partnerships
- Rehabilitation of Irrigated plantation
- Enhance Rangeland production and planting fodder trees for farmer community
- Improvement and Rehabilitation of Forests Parks
- Afforestation of Blank Reaches along Important Highways
- 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

Dadu is the main city and DHQ of Dadu District in Sindh, Pakistan. River Indus flows north to South along the eastern boundary of the district. The region is swampy, fertile, and suitable for growing rice. Some oil fields are located near the Johi town in district Dadu. Dadu district was hit by 2010-2011 and 2012 rains/floods. According to the seismic zone map of Pakistan, the Dadu district is situated at zone where moderate to severe damage can occur. District Dadu is vulnerable to floods and heavy rainfalls.

Dadu district has a history of disasters. It was consecutively hit by heavy floods in 2010, 2011 and now again in 2012. The relative severity of floods was ranked as high in district Dadu. River Indus, after receiving water from 5 of its tributary rivers, causes floods in the northern and southern parts of Sindh province.

These districts on the right and left banks of River Indus are prone to severe threat when River Indus is in high flood. The districts in the lower Sindh, prone to riverine flooding, include Dadu, Jamshoro and Thatta on the right bank of River Indus and Tando Muhammad Khan, Matiari and Hyderabad on the left bank of the river. The length of River Indus along the province is 750 kms long.

I. Impacts of Floods

- **Food Security**

  It has been previously established that district Dadu is food insecure district of Pakistan. This district is agro-based with majority of the households engaged in agriculture farming, livestock rearing activities and casual labor. Among these three types of households, empirical studies have shown that poverty has been relatively higher in the non-agriculture households, followed by livestock households and small farmers. Many individuals of flood affected areas have lost their homes (18,594 houses were damaged due to floods 2011), their crops have been destroyed (59% of the crop area damaged due to floods 2011) and heads of livestock have been lost. All the social indicators show higher level of poverty and deprivation in these areas with large household size, poor literacy level, higher mortality rate and poor level of infrastructure with poor access to education and health facilities.

  Through the destruction of roads, transport and market infrastructure, the floods have a significant negative impact on commodity market. This phenomenon hinders the socio-economic access of food in the district. While comparing the prices after the flood with the July 2010 Federal Bureau of Statistics prices, the prices of rice and wheat have increased in flooded areas by about 10 percent in Sindh. The price of sugar, a key commodity, has increased by an average of about 20%.

  Thus the flood affected people of district Dadu have to face a number of key challenges to recover their livelihood, agriculture and livestock; directly affecting the food security situation.

- **Health**

  During 2011 floods, out of 45 BHUs, 9 BHUs were reportedly damaged and the only Rural Health Centre was also damaged. During these floods it lack of communication was observed among

government offices. It was observed that reporting mechanism was not timely, systematic and comprehensive.

- **Education**

  During 2010 floods, Out of a total of 2,136 schools, 672 schools were damaged by floods, 45 were damaged by torrential rains, 184 schools were used as IDP camps and 102 schools were reportedly damaged by a combination of floods, rains and IDP camps. Whereas in the same source total damaged schools are reported as 996. Schools damaged by levels are.

  - Primary: 925
  - Middle: 24
  - Secondary: 39
  - Higher Secondary: 8

  During 2011 floods, 44 schools (boys': 32, girls': 12) were destroyed and 128 (boys': 106, girls': 22) Were partially damaged53. As of 8th October 2012, no schools were reportedly damaged by the 2012's floods.

- **Livestock**

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

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

11.2 Issues and Problems

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

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 Dadu which are potential crowd pulling places.

Table 11-1 Potential Terrorists Threat

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

- **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.

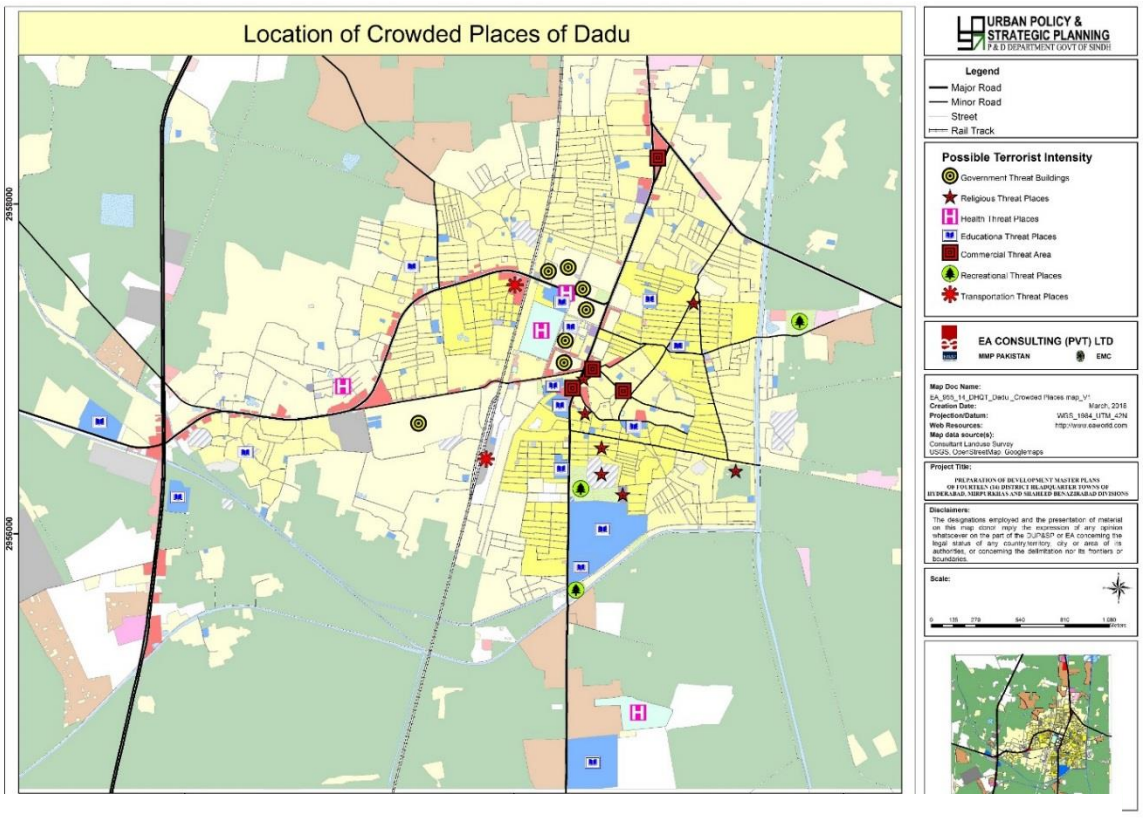


Figure 11:1 Crowded Places of DHQ Town Dadu

- **Possible Terrorist Intensity Places of DHQ Town Dadu**
  Consultants identified some possible terrorist Intensity places of DHQ Town Dadu on the basis of Crowd and most visiting places by the residents of DHQ Town Dadu, 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.

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

11.4 Policy Guidelines[41]

- 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.

11.5 Strategic Development Plan

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

I. Long Term Plan

- 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.

[41] National Disaster Risk Reduction Policy 2013

- DRR needs to address and involve local level actors in high-risk communities to be effective and produce sustainable results.
- There is need to clarify mutual roles and responsibilities (horizontal and vertical) and coordination arrangements in an updated, multi-hazard national response plan that is based upon current legislation.

II. Short Term:

- Develop coordination mechanism with PMD for ascertaining flood discharge.
- Develop mechanism for regulation of water discharge into canals, distributaries and drains before onset of monsoon season.
- Develop monitoring mechanism for inspection of embankments, weak parts of drains, IPs (inspection parts) and NIPs (Non-Inspection Parts) of all irrigation channels.
- Provide necessary medical facilities at relief camps.
- Close coordination and communication with DDMA.
- Depending on the calamity, the D.H.O will declare emergency at all medical points/health facilities.
- Detail of medical/paramedical staff at all points requiring medical health cover during any disaster.
- Vigilance of canals / drains round the clock.
- Closure of canals at the heads as soon as possible in case of any breach or heavy downpour, etc.
- Ensure smooth flow of water, plugging up of breaches, if any, in the shortest possible time.
- Prompt dewatering of stagnant water from affected and low lying areas of the district.
- The Executive Engineers, HESCO Division shall ensure uninterrupted supply of electricity particularly to municipal services such as pumping stations for draining out rain water from the low lying and slum areas. Shall make arrangements for immediate removal/repair of fallen live wires to avoid any untoward incident of electrocution
- Arrange and provide adequate stock of medicines and medical supplies including Anti-Snake Venoms (ASVs) and Anti-Rabbi Venoms (ARVs), blood plasma, Saline Water, and other medical fluids for victims.
- Arrange medical teams for providing medical cover to the IDPs settled in any relief camp.
- Fumigate the affected areas and areas at risks of spread of any of epidemic disease.
- Ensure that all ambulances are in working order and road worthy conditions.
- Ensure vacant possession of all schools buildings at the time of emergency for setting up relief camps.
- Ensure sanitation and cleanliness as well as clean drinking water facilities wherever possible at all school buildings declared as relief camps through by binding down their concerned Headmasters.

12. CLIMATE CHANGE EMERGENCY CONTINGENCY PLAN

- **District Level Plan**

  Dadu 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.

- **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.

I. Flood Forecasting Division (FFD)

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

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

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

III. District Disaster Management Authority (DDMA) Response

- DDMAs shall activate District Emergency Operation Centers (DEOCs)
- In the event of a disaster, organize emergency response through the District Emergency Operation Center (DEOC)
- Setup early warning mechanisms and dissemination of proper information to public, prepare district level response, plans and guidelines, establish stockpiles of relief and rescue material; provide information to PDMA on different aspects of Disaster Management.

- Inform/update PDMA regarding the overall situation.
- Organize evacuation on priority basis.
- Conduct initial and subsequent assessment of disaster affected areas and determine the extent of loss and damage.
- Collect information on damage status and promptly plan for the resources requirement for relief operation and share it with the PDMA.
- Provide food, drinking water, medical supplies and NFIs to the affected population
- Preferably, set up tent cities / relief camps on open land and provide relief to the affected in camps.
- Coordinate with PDMAs to deploy resources for emergency response.
- Mobilize community volunteer groups and civil defense for emergency operations.
- Forward timely situation reports (SITREP) on daily basis to PDMA for its timely dissemination to concerned quarters.
- Ensure registration of all relocated population in the camps and overall affected population on gender-segregated basis.
- Prioritize vulnerable segments of society in their relief operations.
- Facilitate early return of relocated population and help in restoring their livelihoods.

12.1 Health Department

I. Pre-Disaster

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

II. During Disaster

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

III. Post Disaster

- Establishment of medical camps, vaccination, ensuring safe food & water in camps

- Conduct impact assessment on health, intervene to stop outbreak of diseases
- Rehabilitation of health infrastructure

12.2 Education Department

I. Pre-Disaster

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

II. During Disaster

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

III. Post-Disaster

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

12.3 Agriculture Department

I. Pre-Disaster

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

II. During Disaster

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

III. Post-Disaster

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

12.4 Livestock and Fisheries Department

I. Pre-Disaster

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

II. During Disaster

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

III. Post-Disaster

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

12.5 Planning and Development Department

I. Pre-Disaster

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

II. Post-Disaster

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

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

12.6 Revenue Department

I. Pre-Disaster

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

II. During Disaster

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

III. Post-Disaster

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

12.7 Police Department

I. Pre-Disaster

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

II. During Disaster

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

III. Post-Disaster

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

12.8 Civil Defense

I. Pre-Disaster

- Information sharing regarding technical and personnel expertise with DDMA.
- Conduct training for volunteers in first aid & other activities
- Effectively train & mobilize volunteers and initiate mass awareness regarding necessary first aid rescue activities

II. During Disaster

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

III. Post-Disaster

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

12.9 Civil Society and Private Sector Response[42]

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

12.10 Scouts

I. Pre-Disaster

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

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

II. 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

III. Post-Disaster

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

12.11 Standard Operating Procedures (SOPS)

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

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

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

12.12 Implementation and Monitoring

I. 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[43].

II. Qualitative Indicators

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

[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

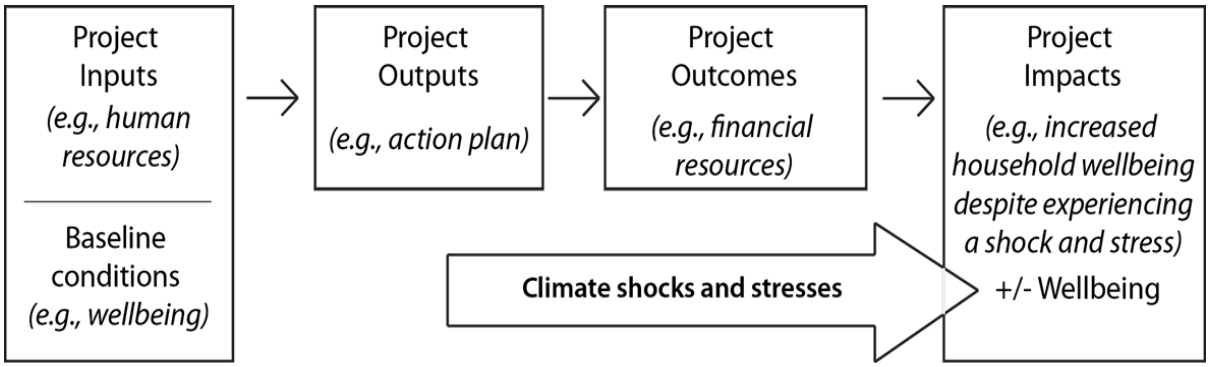


Figure 12:1: Four phases of a resilience initiative, and the timing of baseline and post-shock measurements of wellbeing (Brown, et al., 2018)

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

III. Process Indicators

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

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

IV. Impact Indicators

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

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

V. Identified Indicators[44]

Collection of Data to Perform Vulnerability Assessments to Floods

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

Building Technical Capacity to Generate Vulnerability Assessments to Floods

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

Institutional Framework and Mechanisms to Support Adaptation and Adaptive Capacity

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

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

- Percentage 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.

VI. Responsibility of Plan Implementation:

Table 12-1: Authorities Responsible for Implementation

S#	Department	Designation
1	**Administration**	District Commissioner
		Assistant District Commissioner-I
		Assistant District Commissioner-II
2	**Irrigation**	District Irrigation Officer
3	**Agriculture**	District Agriculture Officer
4	**Health**	District Health Officer
5	**Education**	District Education Officer
6	**Social Welfare**	District Officer
7	**Livestock**	District Officer

Monitoring and Evaluation[45]

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.

d) Key Principles of Monitoring, Evaluation and Reporting System[46]

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.

[45] 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

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

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.

13. URBAN LAND MANAGEMENT

13.1 Introduction

Urban areas throughout the developing world are experiencing a problem in the supply of adequate and affordable serviced land to meet the housing needs of their rapidly expanding urban populations. As a result, low income groups who are mostly denied access to land due to shortfall in supply are forced to either seek for residential land through illegal means or to crowd into existing low income settlements, creating slum conditions. In Sindh, the shortfall in land supply arises not from the lack of virgin land but partly from the lack of resources, capacity to service the lands and land ownership by landlords and make them ripe for development and also partly from the use of ineffective and inappropriate land and landuse policies and practices.

"Land management" is defined as an activity on the ground, using appropriate technologies in the respective land use systems. It is known by different names in different parts of the world; basically all are land management tools. In Pakistan land management is not being practiced till yet because of non-absence of policies / framework. Strong land owner opposition to forcible land acquisition, combined with extremely limited fiscal capacity has left the urban local bodies (ULBs) with very few options to develop well-planned and serviced urban land. Land pooling and reconstitution (LPR) is a tool that addresses both these issues by allowing the land owners to share the gain in the land value post provision of infrastructure and services. In lieu, the land owners pay betterment charges and contribute a part of their land to fund the infrastructure and services.

13.2 Goals

As most of towns in Sindh strive to become centers of global production, trade and development, they are increasingly concerned with improving their attractiveness for foreign direct investment and employment generation. For example, towns must have efficient spatial structures, adequate infrastructure and urban services, affordable housing and healthy environments. Effective urban land management is required to promote urban regeneration and development of new industrial and commercial districts, investments to upgrade and expand critical infrastructure systems, programs to enhance and protect the environment, and initiatives to upgrade social overhead capital (housing, education, healthcare).

13.3 Objectives

To implement these initiatives for Dadu, there is a need to develop urban land management strategies to provide land for industrial and commercial development, to facilitate the formation of public-private partnerships, and to finance the provision of infrastructure and social overhead capital investments. Unfortunately, in many cities around the world such strategies do not exist and foreign investment is either stifled or, if it does take place, causes significant adverse side effects.

Cities and towns are crucial to the economic well-being of Sindh. For this, it is imperative that its cities and towns are transformed and pressures of new growth are dealt with so that they are more liveable, efficient, and environmentally sustainable. Only then will the rapid pace of economic growth that Sindh is undergoing be sustained and the targets of environmental sustainability achieved. To manage the transformation of Sindh's cities and towns and effectively manage new growth requires effective urban planning protocols, processes, and institutions underpinned by effective legislation. To effectively manage the new growth implies that the agricultural land at the periphery of the cities and towns or smaller settlements that are not yet "urban" is transformed to be made suitable for urban or non-agricultural uses. This essentially means that the irregular landholdings and plots will have to be given regular shapes; they must be ordered; each plot must be given access; infrastructure services such as water supply and drainage must be provided; land must be appropriated for providing roads, parks, social amenities, and low-income housing, development controls must be prescribed to result in a good quality-built form and levy development or betterment charges to offset the cost of developing the physical and social infrastructure. But most importantly, all of this must happen in a timely and such manner that it is acceptable to the "landowners" to avoid conflict in the growth management process.

13.4 Urban Land Management in Dadu

Due to absence of provincial policy / framework for utilizing Urban Land especially in District headquarter towns, planners / development authorities have not carefully assessed the land use and transportation impacts of foreign investment. Due to non-existence / less effectiveness of Development authority mechanism, schemes / projects in private sector faces low exposure due to non-availability of basic facilities and monitoring mechanism by approval authority. As a result traffic congestion and infrastructure problems with the water supply and sewerage treatment are mounting.

Getting access to land for factories and commercial facilities is problematic, particularly in agricultural rich fertile land. Decades of inefficient allocation of land for industrial uses have literally blighted / dis-courage agricultural activities in the region. Unfortunately, a lack of clarity over land rights, corruption and bureaucratic inertia are impeding redevelopment. To compound matters, land use plans in many transition economy towns have not been planner to reflect the new land use requirements necessary to support post-industrial development.

To effectively exploit the benefits of inward investment flows and to ensure that social and environmental goals are met, the public sector needs to take the lead in planning and formulating urban land management strategies to promote sustainable urban economic development.

13.5 Land Pooling and Reconstitution

Simply put, in LPR, a number of small holdings are pooled together, a part of land is taken from each plot for provision of infrastructure and public facilities and the rest returned to the original land owners. It is basically a land management tool and is used all over the world under different names with slight modifications in their working.

Land Management Techniques

The strategies available for access to urban land could be through Guided land development for large areas; Land pooling and reconstitution; Land reconstitution / redevelopment; Acquisition for public purpose under the Land Acquisition Act, 1894; Joint Sector Model of land assembly and development; Transferable Development Rights (for built up areas); Saleable FAR and mixed use concept (for regeneration of inner city); Land Pooling and Redistribution Scheme.

A. Land Acquisition Act, 1984

In Pakistan, the Land Acquisition Act, 1894 gives the right for Government authorities to acquire parcels of land for the implementation of development projects. The origin of the practice of land acquisition by public entities in Subcontinent goes back to 1824, when the British Government of India instituted regulations to facilitate urban land public acquisition from private owners. In fact, the obligation for owners to give up their land had to find a legitimate justification. The initial reason advanced to acquiring the land against their will was the need for constructing public buildings in Bengal provinces. These regulations enabled the British government to take possession of the land for the construction of roads and canals. From 1850 on, the scope of these laws was extended to other provinces in order to facilitate the operation of further infrastructure projects such as railways.

The Land Acquisition Act was edited in 1894. It harmonized and consolidated previous regulations into one single act, applicable within the whole British India. After Pakistan's independence in 1947, the Pakistan Government started using this act as a tool to purchase land at a lower price than that on the regular market, as it was meant to be used in the public interest. Several amendments have been made on this act, but its procedures have not changed.

B. Land readjustment / pooling

Land readjustment / pooling Land re-adjustment is a process whereby a public authority assembles numerous small parcels of raw land without paying compensation to the owners. The authority then sub-divides such assembled lands for urban use returning most of the building sites to the original owners in proportion to the value of their land contribution and permitting them the right of alienating such sites. The authority retains a portion of the assembled lands, applying them partly to provide civic amenities such as roads, parks and gardens or schools, and the remainder land for public sale to recover the cost of development. Thus, land re-adjustment acts as tool to achieve unified control over large areas of land and as an instrument of financing public service installations in the process of planned urban growth.

C. Guided Urban Development

The concept of Guided Urban Development (GUD) emerged in response to ad hoc, uncontrolled urban development with no regard to infrastructure services. It also aims to secure a limited availability of urban land for economically weaker sections. GUD has been practicing in India and developing world. The objectives of the scheme are as follows:

- Ensure provision of serviced plots for low income families at affordable prices (approximately 75% of total plots to be reserved for EWS / LIG); and
- Provide incentives to the land owner / private developer to participate in the provision of low income shelter by guaranteeing fair return on investments (profit of 20-30%).

13.6 City Survey

City survey is very important to manage land records for city. City survey will help to resolve present hassle in property transactions besides impeding planning & development. It will also help to resolve several issues i.e. Verification of ownership & Land grabbing issues respectively. Therefore it is suggested to conduct city survey & deal as separate project for Dadu

13.7 SWOT Analysis and Need Assessment

Strength	Weakness	Weakness	Threats
GOVERNANCE			
Planning Actors			
1. Politicians 2. Existence of Local government 3. Public Health Engineering Department	1. Lack of co-ordination among departments. 2. Weak technical support of government departments. 3. Weak financial base of departments. 4. Absence of development authority. 5. Shortage of technical staff, town planners, urban designer and policy makers at SMC, Regional Office of SBCA) 6. Overlapping of administrative functions 7. Need based ad-hoc planning system (day-to-day basis)	1. Strengthen the institutions, responsible for planning and execution 2. Immediate preparation of overall urban development strategy 3. Detailed land use zoning plan 4. Sectoral development plans 5. Detailed subject plans to regulate with density development. 6. Enhancing the role of local government on sustainable basis.	1. Inaccurate funding in development projects. 2. Wastage of local resources 3. Infrastructure development of poor quality, non-standard infrastructure. 4. Failure to provide technical support on issues required innovation. 5. May give birth to unwilling political interference and hidden interests based on nepotism and discrimination.
Coordination of Public Agencies / Department			
1. Town Committee / Taluka Municipal Administration 2. Politicians in charge 3. Participation of Sindh Building Control Authority (SBCA)	1. Weak co-ordination mechanism. 2. Lack of information sharing between line departments.	1. Preparation of local co-ordination standard procedures through policy frameworks. 2. Organizing events to make strong coordination between different departments.	1. Week coordination may give birth to poor governance. 2. Political interference

Strength	Weakness	Weakness	Threats
Local Council			
1. Availability of Town Committee.	1. Not actively pursuing the stated objectives.	1. With awareness and training of councilors the local councils can be more effective. 2. Workshops and meetings can enhance the coordination as well as clear the vision about development perspectives.	1. Confusion and chaos in the local development affairs at present until local bodies are established.
Financial Resources			
1. Institution and system are in place. 2. Regular provincial grants available for development project. 3. Programme based medium-term donors funding.	1. The council does not affectively generate funds. 2. Less efforts offer by local councils for revenue generation through available local resources. 3. High dependency on provincial grant. 4. Lacking capacity in collection and financial management. 5. Very low capacity for capital investment in development projects.	1. Self-sustainable financial system needs to be effectively introduced. 2. Development of self-reliance and suitable financial model. 3. Resource generation through PPP. 4. Exploitation of local potentials for resource generation. 5. To curb mismanagement and corruption.	1. Poor maintenance of infrastructure relating utility services. 2. Political pressure and financial leakages. 3. Lacking M&E and implementation of strict accountability measures during audits.

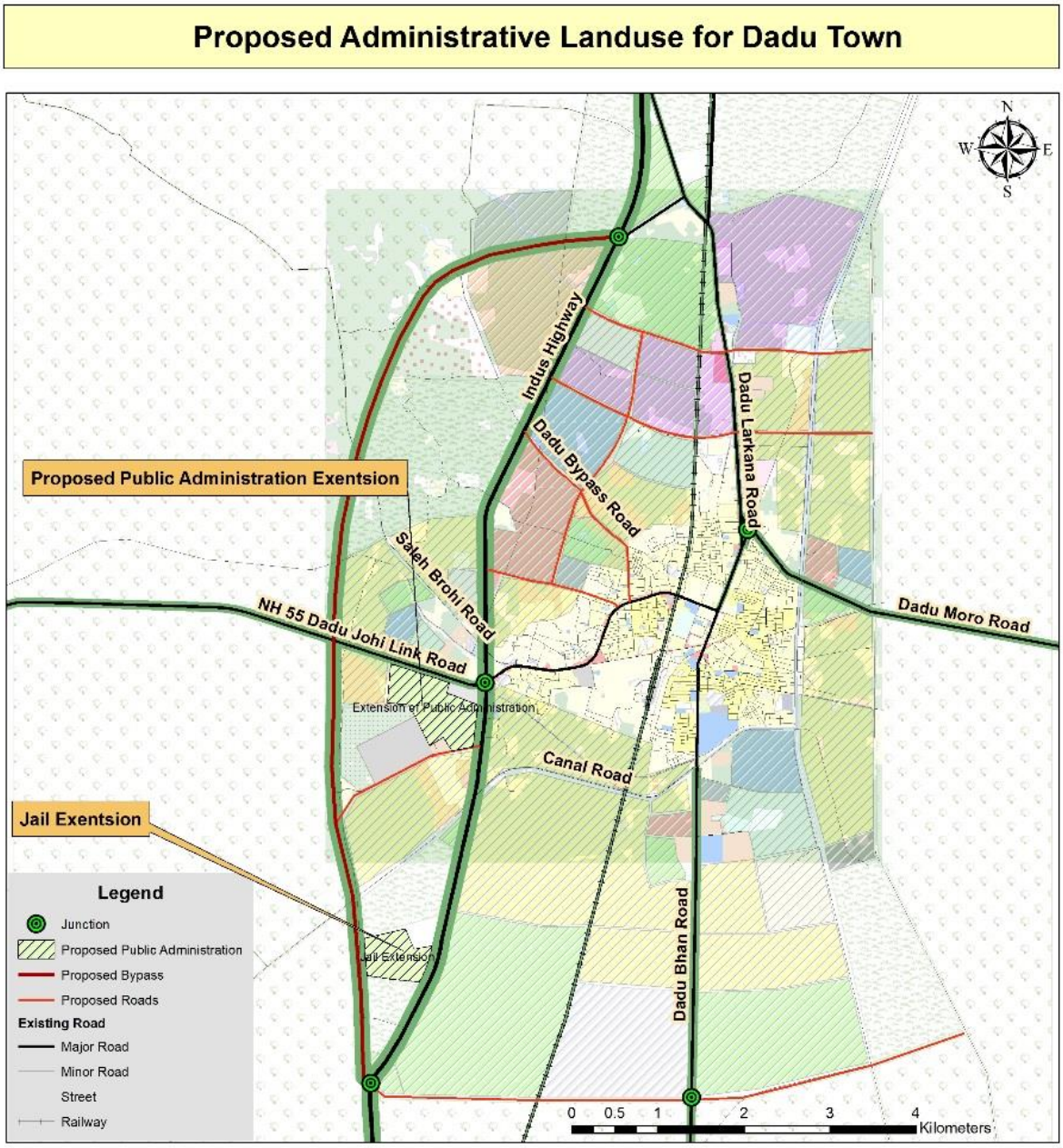


Figure 13-1: Future Administrative Proposal of Dadu

14. IMPLEMENTATION STRATEGY

This part of the report aims to provide an implementation framework for various development proposals recommended in 'Strategic Development Plan' to drive future growth of Dadu DHQ town up to 2037, under the present governance framework of Government of Sindh.

14.1 Process of Implementation

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

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

14.2 Implementation Agency

The office of the Deputy Commissioner and in case of Local Bodies/Local Government, the Chairman of district council and Mayor of metropolitan city will be the key implementation agency to execute Strategic Development Plan Dadu 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 Dadu. The concerned agency must ensure that the overall process must go after following themes of implementation process.

a) ***The overreaching theme of the implementation of Strategic Development Plan Dadu is:***

- Consultation with stakeholders during implementation at all levels.
- Decentralize decision making to the greatest extent possible.
- Promote transparency and accountability of decision making and implementation enforcement.
- Rationalize impacts where necessary;
- Ensure compensation to affected communities

- Enhance the quality of infrastructure provisions, promote utility services opportunities, and focus facilitating poor segments of society.

b) ***The principals that implementation process will follow:***

- The overall implementation process to be carried out in coordination with Town Planning and Urban Development Standards (Frameworks) in which redevelopment will be phased to prioritization;
- The implementation process will be based on updated planning codes and regulations;
- Special consideration will be paid to implement planning standards relating to disaster (Drought) preparedness in all development proposals/projects;
- Facilitate communities, government machinery, and other organizations of community to participate in overall implementation process;
- Educate stakeholders for technical assistance;
- Be comprehensive, coherent, and coordinate to avoid errors through continuous monitoring and evaluation
- Arrange supple of financial resources

Legal Frameworks

Local governance agencies dealing with any development proposal must ensure that all development related activities and their approval consent should be carried out in accordance with urban planning statutory frameworks of government of Pakistan operational at all government level levels. This includes all legal frameworks substantiated through the relevant articles of constitution of Pakistan and the primary act (LAA 1984) governing land acquisition and compensation.

a) ***National Level Policy Frameworks***

The constitution of the Islamic Republic of Pakistan passed on the 10th April 1973 and as modified thereafter, is the supreme law of Pakistan Government. This constitution provides legal cover to all laws and acts, particularly those embedded in chapter-3 pertaining with land acquisition, development and compensation.

b) ***State level Statutory Frameworks pertaining to planning and development Control***

On 14th Feb 2011, the government of Sindh notified the extension of the jurisdiction of Karachi Building Control Authority to the whole of Sindh. The five Regions of Sindh Building Control Authority notified by the Government of Sindh are: **Karachi, Hyderabad, Mirpurkhas, Sukkur & Larkana,** having the Head Quarter **Karachi. Thus, any development activity within juridical boundary of these districts must be carried out in accordance with the primary planning instrument ' *Sindh Town Planning and Building Control Regulation*'.**

c) ***Local Planning Instruments***

There is variety of regulations dealing with municipal services offences and penalties (Fines) in case of violation have been constituted in Schedule-VI (Section 139) 'Offences under the Act' Part-1 of Local Government Act-2013 (Third Amendment 2016) of Sindh Government.

In this regulation, various well defined public activity management and control regulations dealing with Public Health Safety, Land use Planning, Development Control, Encroachments, preparedness of safety measures from Natural & manmade disaster, quality of Drinking water, Solid Waste & Waste Water generating though multiple activities, Preservation of Heritage Sites, Open Space management and associated penalties, in case of violation, have been defined in detail.

d) ***Other relevant planning and design standard instruments***

There are varieties of other documents that support assessment of development proposals prior to implementation. e.g. 'National Reference Manual' - Ministry of Housing and works, Environment and Public Affair Division, etc.

If regularization requirements of any of development proposal is beyond the capacity of regularity frameworks mentioned above, the concerned agency dealing with development/implementation process in Dadu may develop their own regulatory frameworks/ building codec's to regularize the status of development with consent of local/provincial government authorities, if necessary.

14.2.1 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 Implementation & Management Unit*' will mainly consist of urban planners supported by other technical staff; architects, project managers, engineers, finance officers and any other technical staff expert in their relevant fields.

The *'Project Implementation & Management Unit'* shall supervise and coordinate respective urban developers involved in development activities, conduct monitory audits, preparer evaluation and impact reports and will report to the head of respective governance agency.

Development authorities will be responsible for implementing new approved town planning and building codes with the assistance of office of head of respective governance agency. The office of district coordinator will be responsible for the overall coordination and monitoring and will provide support for development/redevelopment activity from federal to district level.

The district Project Implementation & Management Unit would also facilitate the office of district coordinator/ deputy commission for all development/ implementation related (a) needs identification (b) revision of annual plans (c) coordination (d) financial management and (e) monitoring of all development activities assigned to developers or government departments.

14.2.2 Implementation Schedule

Strategy: **Balanced Urban Growth**		**Programs/ Policies** **1. <u>Land Use Zoning</u>** Mostly growth pattern of Dadu city is expanding towards the north-east and north-west. Whereas other two direction north-south and north-east are fixed and growth is constrained due to canal. Mostly public development projects are established along the Indus Highway-Johi link road longitudinally. **2. <u>Development Control</u>** Amendment in Zoning Bye laws Restrict the provision of utility services for approved planned areas Dadu is a thickly populated HQ town of District Dadu. Internal road pattern of city is on grid iron pattern. The administrative complex and offices i.e. SSP office, DC Office, Session Court and Excise Office etc., are situated along Indus Highway- Johi link road. Land Use Control especially regularization and formation of Katchi Abadi's. **3. <u>Transportation</u>** Strong network of inter and intra city Transport. **<u>Roads</u>** Need Dualization & Rehabilitation of Existing Roads.
Responsibilities to Plan: Detailed Urban Design Strategy Development Assessment Impact of property Assessment Environmental Impact Study (EIA,IEE)		**Implementation Responsibilities:** Public Sector/ Private developers
Concerned Agencies:		**Time of Implementation:**

P & D Department Government of Sindh/ District Government/ Line Departments of local Government /Private Developers		Short Term (1 year to 5 Years) Long Term (5 years to 20 Years)

Strategy: **Future Transport Sector Development & Improvement**		**Programs/ Policies** **<u>(A)Traffic Management Program</u>** • Parking restrictions / Charged parking system • Control traffic movement specially cargo Qingqis and Pick-ups • Manage unidirectional traffic flow. • Enforcement of traffic rules • Improved road infrastructure and street furniture • Implementation of traffic bylaws **<u>(C) Congestion Reduction in Core Urban /CBD Area</u>** • Designated stan/ds 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		**Time of Implementation** Short Term (1 year to 5 Years) Long Term (5 years to 20 Years)

Government/District Government/ Private Developers Line Departments of local Government.		
Strategy: **Water Supply System Improvement**		**Programs/ Policies** • In the long term, piped water supply system for 100% population by 2037 • Installation of localize network in the planned housing schemes first and gradually cover the whole population in five year plans. • Reuse of treated effluent • Implementation of Tariff System for utilities through Water Metering (first for water usage above marginal consumption then in long run for all users). • Construction / Rehabilitation Of Water Supply Network • Improvement of Water Intake Works
Responsibilities to Plan • Need Assessment/Demand & Supply Study • Separate Master Plan for water supply and infrastructure development plan		**Implementation Responsibilities** Public Sector/ Private developers
Concerned Agencies Provincial / Local Government/ Public Health Engineering Department		**Time of Implementation** Short Term (1 year to 5 Years) Long Term (above 5 years)

Strategy: **Drainage & Sewerage System Improvement**	**Programs/ Policies** • Improvement and reconstruction of existing Combined system of sewerage and drainage (Phase-wise approach of replacing open drains with covered sewers of PE pipes). • Provision of wastewater treatment plant.
Responsibilities to Plan • Need Assessment/Demand & Supply Study • New Master Plan for Drainage & Sewerage services improvement.	**Implementation Responsibilities** Public sector / Private developers
Concerned Agencies Provincial / Local Government/ Public Health Engineering Department 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	**Time of Implementation**

Dadu Municipal Committee.	Short Term (1 year to 5 Years)

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

Strategy: **Health Sector** **Improve access to healthcare facilities & minimize the long journeys to access basic medical facilities**	**Programs/ Policies** • Check and balance to accomplished existing health care projects. • Addition of 3921 beds to achieve the target of 2 beds per 1000 district population • Hiring of 1774 doctors and paramedical staff to cater future population.

	• Installation of incinerators.
Responsibilities to Plan • Health reforms	**Implementation Responsibilities** Public Sector and Welfare Agencies
Concerned Agencies State Government/District Health Department. Provincial and District Health Department	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (above 5 year)

Strategy: **Education Sector Strategy**	**Programs/ Policies** • Short term plan provision of 678 classrooms at school and college level. • Repairing of school existing buildings with furniture • Training of teaching staff • 6329 additional classrooms (school and colleges) by 2037
Responsibilities to Plan • Education Infrastructure Improvement Mater Plan	**Implementation Responsibilities** Public Sector
Concerned Agencies Provincial Government/District Education Department.	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (more than 5 years)

Strategy: **Improving Recreation Sector**	**Programs/ Policies**

	• Repairing of existing recreational facilities and completion of under construction work. • Introduce financial mechanism i.e. facility use charges, to generate revenue to make them self-sustaining. • Special arrangement for security, parking and alternate route during religious and cultural activities in the city. • 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 • Provisions of New Recreation sites	**Implementation Responsibilities** Public Sector
Concerned Agencies Provincial Government / Culture, Tourism & Antiquities Department/ Government of Sindh/ District / Local Government / MC	**Time of Implementation** Short Term (1 year to 2 Years) Long Term (More than 5 years)

Strategy: **Disaster Risk Management**	**Programs/ Policies** • Engage all stakeholders of entire district in overall disaster rehabilitation process. • Recognize the commitment of stakeholders and the need for collaboration across all levels of government, community, industry, commerce, and government owned corporations, private and volunteer organizations and

	local communities within all aspects of disaster management. • Aligned job responsibilities of key stakeholders with job descriptions mentioned in principal guidelines proposed in *Pakistan National Disaster Risk Management Act 2010*, *National Disaster Risk Management Guidelines* and *Disaster Risk Management Plan, Sindh.* • Ensure establishment of straight relationships, trust, teamwork, consultative decision-making and shared responsibilities among stakeholders. • Develop disaster risk assessment system through statistical information, risk maps, emerging hazards information and their affects. • Adopt measures of sustainability of local communities by utilizing local resources available to avoid post disaster cataclysms (dearth, theft, spread of epidemic diseases, etc). • Promote economic sustainability after disasters.
Responsibilities to Plan • Identification of Disaster Prone Areas and Early warning and shelter homes • Development of Community Training and Drill Organization Manual and SOP. • Development Local stakeholders Roles and Responsibility SOP.	**Implementation Responsibilities** Public Sector and National /International Welfare agencies
Concerned Agencies NDMA/PDMA/ P & D department Gos/ SUPARCO/ Provincial Irrigation Department Gos/ Line departments of local government/District Disaster Management Authority.	**Time of Implementation** Short Term (1 year to 5 Years)

Strategy **Economic Development Plan**	**Programs/ Policies** • Rehabilitation of Infrastructure in existing Small Industrial Estate (roads, street lights, parking for loading/unloading goods vehicles, etc.) • Increase strategic storage through construction of cold storage / Godowns for agro products to cater drought situation. • Provide good incentives near peripheries for shifting / re-location of whole sale markets from the inner city to reduce congestion. • Encourage Local Private Investors by giving them subsidies. • Consider changing trends of crop production through periodically revise Economic Policy Framework (feasible studies for economic potentials) • Ensure measures for security / risk recovery plan for economic zone. • Market and logistics should also be added to enhance trade and commerce. • Livestock and dairy sector needs to encourage and facilitated. • Centralize wholesale markets to create connectivity with regional markets. • Drought measures
Responsibilities to Plan Feasible studies for economic potentials	**Implementation Responsibilities** Public /private developers
Concerned Agencies Provincial Government/District Government/Local Government/Dadu Chamber of Commerce and Industries	**Time of Implementation** Short Term (1 year to 5 Years) Long Term (5 years to 20 Years)

Annexure – A

Sustainable Development Goals Acceleration Plan

Sustainable Development Goals (SDGs) Acceleration Plan
Dadu DHQ Town

Sustainable Development Goals:

The Agenda 2030 comprises of Sustainable Development Goals (SDGs) which are a call for action by all countries – poor, rich and middle-income – to promote prosperity while protecting the planet. They recognize that ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, health, social protection, housing and job opportunities, while tackling climate change and environmental protection.

The 17 goals of SDGs provide a direction for targeting human prosperity and have a global scope – applying on both developed and developing countries. SDGs have come into action since the beginning of 2016 and will continue as the leading global development agenda until 2030. The SDGs targets are defined as aspirational, with each government setting its own national/subnational targets while considering its circumstances and priorities. In consultation with stakeholders, governments are also to decide how to incorporate SDGs in its planning processes, policies and strategies, and to recognize the link between sustainable development and other relevant ongoing processes in the economic, social and environmental fields[1].

Pakistan signed the international agreement on the 2030 agenda in September 2015 during the United Nations General Assembly (UNGA) Session for sustainable development, committing to achieve the 17 SDGs between 2016 and 2030. In February 2016, under a unanimous resolution, the National Assembly of Pakistan endorsed SDGs as Pakistan's national development agenda. The country has thereafter made rapid progress in adopting and formally launching the 17 SDGs.

SDGs in Sindh:

In line with the National Initiative on SDGs, Government of Sindh (GoS) has also made focused efforts to support the mainstreaming, localization, and implementation of the 2030 Agenda through a support project for SDGs implementation in Sindh, jointly-funded by the GoS and United Nations Development Programme (UNDP), with the aim to address socio-economic challenges in the province and steer it in a progressive direction towards achievement of the SDGs. Under the project, the SDGs Support Unit Sindh has been established in Planning & Development Department, Government of Sindh with effect from May 2017. The Unit contributes towards accelerating progress on SDGs in the province by working through following four approaches:

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

Policies and Plans	Data Reporting	Financing	Innovation
Mainstreaming SDGs in local development plans and strategies clearly delineating the resource requirements.	Strengthening coordination, reporting and monitoring mechanisms for SDGs	Financing flows increasingly aligned with 2030 Agenda	Supporting integrated and innovative approaches to accelerate progress on SDGs on priority areas.

GoS has also taken the crucial step towards mainstreaming and localizing SDGs in the province by approving prioritization of SDGs in the immediate, medium and long-term for the province. The prioritization has been done by considering severity of development issues and challenges, resource availability, and Sindh's economic and social endowments, value for money, and magnitude of impacts, in line with Sindh 2025 vision and other policies and strategies.

Sindh's SDGs Priorities

Ranking of Priorities	Goal #	Sustainable Development Goals (SDGs)	Immediate Priorities	Intermediate Priorities (Up-to 2025)	Long-term Priorities (Up-to 2030)
1	Goal 4:	Quality Education			
2	Goal 3:	Good Health and Well Being			
3	Goal 6:	Clean water and Sanitation			
4	Goal 7:	Affordable and Clean Energy			
5	Goal 2:	No Hunger			
6	Goal 8:	Decent work and Economic Growth			
7	Goal 9:	Industry, Innovation and Infrastructure			
8	Goal 16:	Peace and Justice			
9	Goal 11:	Sustainable cities and communities			
10	Goal 1:	No Poverty			
11	Goal 12:	Sustainable Consumption and Production			
12	Goal 10:	Reduce Inequalities			
13	Goal 5:	Gender Equality			
14	Goal 17:	Partnership development			
15	Goal 13:	Climate Change			
16	Goal 14:	Life Below Water			
17	Goal 15:	Life on Land			

The above table indicates that the SDG Goal # 4, 3, 6,7,2 and 8 are on the Immediate priority, whereas Goal # 1,9,16,11,12 and 10 are on Intermediate priority i.e. upto year 2025. The remaining goals which are Goal # 5, 17, 13, 14, and 15 will be on the Long term priority i.e upto year (2030).

Urban Development Planning and the SDGs:

Today's common urban development challenges like affordable housing, provision of basic services, municipal functions, controlling crime, poverty, disease and the exhaustion of natural resources do not respect regional borders or limits between the built and the non-built domains. Therefore, the scope of urbanization should always include the livable environment while also considering the regional dimension. In this connection, the rigorous consultation and analysis being done by GoS to prepare Development Master Plan of 14 DHQ Towns of Sindh, it is being realized with even more significance that sustainable development cannot be achieved without significantly transforming the way we plan, build and manage our urban spaces. The rapid growth of cities resulting in rising population and increasing migration that has led to a boom in urban areas and slums, is becoming a more significant challenge for urban areas.

Under the contract of the preparation of development Master Plan of 14 DHQ towns, SDG Acceleration plan was not part of the approved TORs but keeping in view the Sindh government's initiatives to mainstream SDGs targets in provincial planning (taking Islamkot as a model SDG Taluka) the Directorate and Consultant after due consultative process felt the need to include brief SDG Acceleration Plan as part of Development Master Plans. Accordingly in consultation with SDG unit Sindh, SDG 11 was selected for SDG Acceleration Plan for 14 DHQ towns since is pertinent to urban planning and development.

SDG 11 – *Sustainable Cities and Communities* sets the basis for urban-planning techniques and policies for the future. For a tangible acceleration towards achievement of SDG 11, simultaneous interventions will need to be executed directly through urban-planning interventions. While this involves investments in public transport, housing, creating green public spaces and improved urban planning and management in participatory and inclusive ways, an in-depth review of SDG 11 targets reveals a much stronger interlinkage with other SDGs such as poverty, health, education, clean energy, provision of basic services (social services as well as urban municipal services), etc. thereby generating a holistic societal impact, which is of prime importance in the context of Agenda 2030.

Using the key mechanism for periodic updating of the Development Master Plan after every five years, the SDGs Acceleration Plan also proposes embedding SDGs agenda targets against projects and schemes designed at local level and assesses the available and potential financing flows in context of future opportunities. Therefore, the targets and indicators of

SDG 11 – Sustainable Cities & Communities is being reviewed against the Master Plan, along with identification of supportive plans, policies and interventions.

The SDGs Acceleration Plan table below explicitly underlays the outline for how the Master plan of the town addresses the targets and indicators under SDG 11 – Sustainable Cities & Communities. The plan also takes note of the local social and economic data to identify services provision gaps at the local level, as well as key challenges at district level.

SDG Acceleration Action Plan - Dadu 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]6% of the urban town population lives in katcha houses	- Increase in proportion of small size plots (Plot size will be depend on land value) could be made for low income groups in all new housing schemes. - Affordable housing program for low income group in different phases up to 2037, through one window operation (including technical guidance, easy loan provisions, legal procedures)	Sindh Katchi Abadis, Squatter Settlements & Slums Policy - The process of regularization and up-gradation of the pre-1985 katchi abadis shall continue as per current policy. However, katchi abadis, which are hazardous by virtue of being close to railways tracks or located under high tension power lines, or are on or close to the riverbeds, or on lands needed for operational /security purposes, need to be relocated at appropriate places by LOAs. - Formation of new katchi abadis shall not be allowed and shall be discouraged by exercising strict development controls in all urban areas. - Formation of Resettlement Plans - Resettlement plans shall be prepared by the concerned Land Owning Agencies (LOAs) in consultation with

[2] Socioeconomic Survey 2017 by Consultant

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	65% 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 Dadu DHQ town in the future.	o The total extent of the area included in the overall proposed Dadu Master Plan is 17,300 acres approx. for a population of 293,400 by 2037	Sindh Colonization of Government Lands Act 1912 and Disposal of Government Lands Rules, 2005.[5] National Housing Policy 2001[6]
	11.4 Strengthen efforts to protect and safeguard the world's	11.4.1 Total expenditure (public and private) per capita spent on the	Baseline will be established at the start of	• Protection of historical places and cultural heritage	Heritage act for policies 2012[7]

[5] http://sindhlaws.gov.pk/setup/publications_SindhCode/PUB-16-000113.pdf
[6] http://mohw.gov.pk/mohw/userfiles1/file/National%20Housing%20Policy.pdf
[7] https://antiquities.sindhculture.gov.pk/index.php/about-us/acts/343-heritage-act-1994

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	cultural and natural heritage	preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)	implementation of Master Plan.		(2) An agreement under this section may provide for the following matters or 'for such of them as it may be found expedient to include in the agreement--- (a) the maintenance and custody of the protected heritage and the duties of any person who may be employed to watch it; (b) the restriction of the owner's right to destroy, remove, alter or deface the protected heritage; (c) the facilities of access to the public or to any portion of the public and to persons deputed by the Committee to inspect or maintain the protected heritage; (d) the notice to be given to Government in case the land on which the protected heritage is situated is offered for sale by the owner, and the right to reserve by Government to purchase such heritage, or any specified portion of such heritage, at its market value; (e) the payment of any expenses incurred by the owner or Government in connection with the preservation of the protected heritage; and (f) any matter connected with the preservation of the protected heritage which is a subject of agreement between the owner and Government.

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	11.5.1 Number of deaths, missing persons and persons affected by disaster per 100,000 population	Sindh Data [8] No of deaths (1988-2013) = 241 No of People effected (1988-2013) =24,096,173 Deaths per 100,000 population = 0.2491 Affected people per 100,000 population = 241	• The DSM, PPHI shall also be responsible for providing medical cover to the IDPs in the catchment area of BHUs assigned to them particularly, and will perform their due role in supplementing the overall medical cover provided by the District Health Department. • National risk assessment would identify highly vulnerable districts and be complemented by higher resolution work at local level to diagnose the underlying causes of risk, explore concrete risk reduction options and inform development planning and prioritization exercises and/ or disaster preparedness planning. • Arrange medical teams for providing medical cover to the IDPs settled in any relief camp. • Fumigate the affected areas and areas at risks of spread of any of epidemic disease.	National Disaster Risk Reduction Policy 2013[9]

[8] PDMA (2017)
[9] http://www.pdma.gos.pk/new/resources/Sindhidrr-policy.pdf

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
				• Ensure that all ambulances are in working order and road worthy conditions. • Ensure vacant possession of all schools buildings at the time of emergency for setting up relief camps. • Ensure sanitation and cleanliness as well as clean drinking water facilities wherever possible at all school buildings declared as relief camps through by binding down their concerned Headmasters. • The creation of an integrated multi-hazard damage loss data-base is therefore a prerequisite for systematic vulnerability and risk monitoring	
	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid	[10]Present Total solid waste generation in Dadu DHQ town is 77 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 Dadu
[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
	paying special attention to air quality and municipal and other waste management	waste generated, by cities	by municipal is about 50-60%	biomedical-waste management. It should immediately start segregation practice for biomedical waste collection system. - Techno-economic feasibility and detail study of characterization of waste is proposed on basis of the policy guidelines. - Develop integrated solid waste management system keeping in mind the method, procedure and design at front end, middle end and back end, based on best possible public health practices and environmental protection laws/rules. - Industrial waste disposal should be treated seperately and safely	
	11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in	11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and	Only 0.60% (20.3 acres) out of total 3,353 (13.56 Sq KM[12])acres park area is available in Dadu	• Establishment of Sports Complex along with old SRTC bus stand • Existing open spaces in core urban area should be restored and maintained. New open spaces should be identified and created.	Adopt-a-park policy 2019 (PPP unit, Finance dept. GoS) is still in progress

[12] Based on Landuse Calculations

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	particular for women and children, older persons and persons with disabilities	persons with disabilities		• Development and preservation of cultural heritage • Cater the problem of Shortage of water facility to maintain green spaces, green belts and trees plantation. • Availability of sports infrastructure. • Provision of infrastructure to accommodate visitors into cultural events	
	11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning	11.a.1 Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city	Through inclusive and participatory development of SDP and collaborative implementation, the target for development plan integration is achieved	• Build a local / district / regional transportation system. • Rehabilitation of existing roads should be scratched from its compaction level and reconstruct as per specification of design perimeters. • Discourage direct link roads with bypass • The Consultant suggest that the Master Planning should be reviewed every five years to estimate the land use and area requirement according	• Preparation of Development master plans of DHQ towns by Govt of Sindh • Poverty Reduction Strategy for Sindh approved by cabinet 2018 The key conceptual underpinnings of this strategy are:[13] • The policy is focused on creation/facilitation of rural hubs: • Using principles of agglomeration to support and drive growth • Focusing on those interventions that will have a catalytic effect

[13] Poverty Reduction Strategy for Sindh

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
				to the growth rate and economic investment	• Consolidation of services, for improved service deliver and better impact. The combined effect aims to provide improved facilities, services and opportunities for households in the surrounding cluster of villages served by the hub
	11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change,	11.b.1 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030a 11.b.2 Number of countries with	Provincial policies and strategies in placed	National risk assessment would identify highly vulnerable districts and be complemented by higher resolution work at local level to diagnose the underlying causes of risk, explore concrete risk reduction options and inform development planning and prioritization exercises and/ or disaster preparedness planning. • Arrange medical teams for providing medical cover to the IDPs settled in any relief camp. • Fumigate the affected areas and areas at risks of spread of any of epidemic disease.	National Disaster Risk Reduction Policy 2013[14]

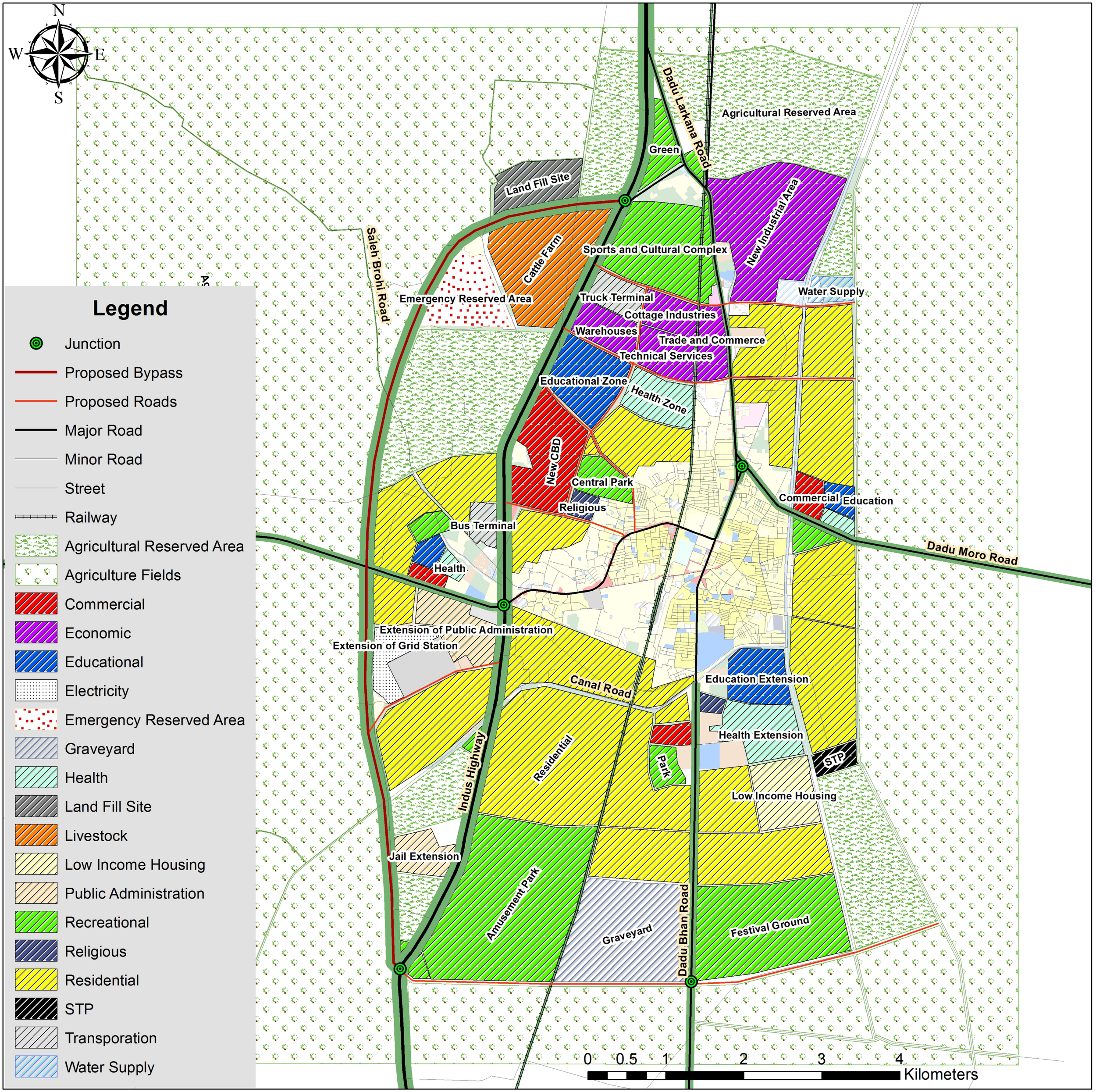
[14] http://www.pdma.gos.pk/new/resources/Sindhidrr-policy.pdf

SN	SDG Target	Indicators	Baseline Survey	Supportive Strategies given in SDP	Policies
	resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels	national and local disaster risk reduction strategies		• Ensure that all ambulances are in working order and road worthy conditions. • Ensure vacant possession of all schools buildings at the time of emergency for setting up relief camps.	

Annexure – B

Atlas

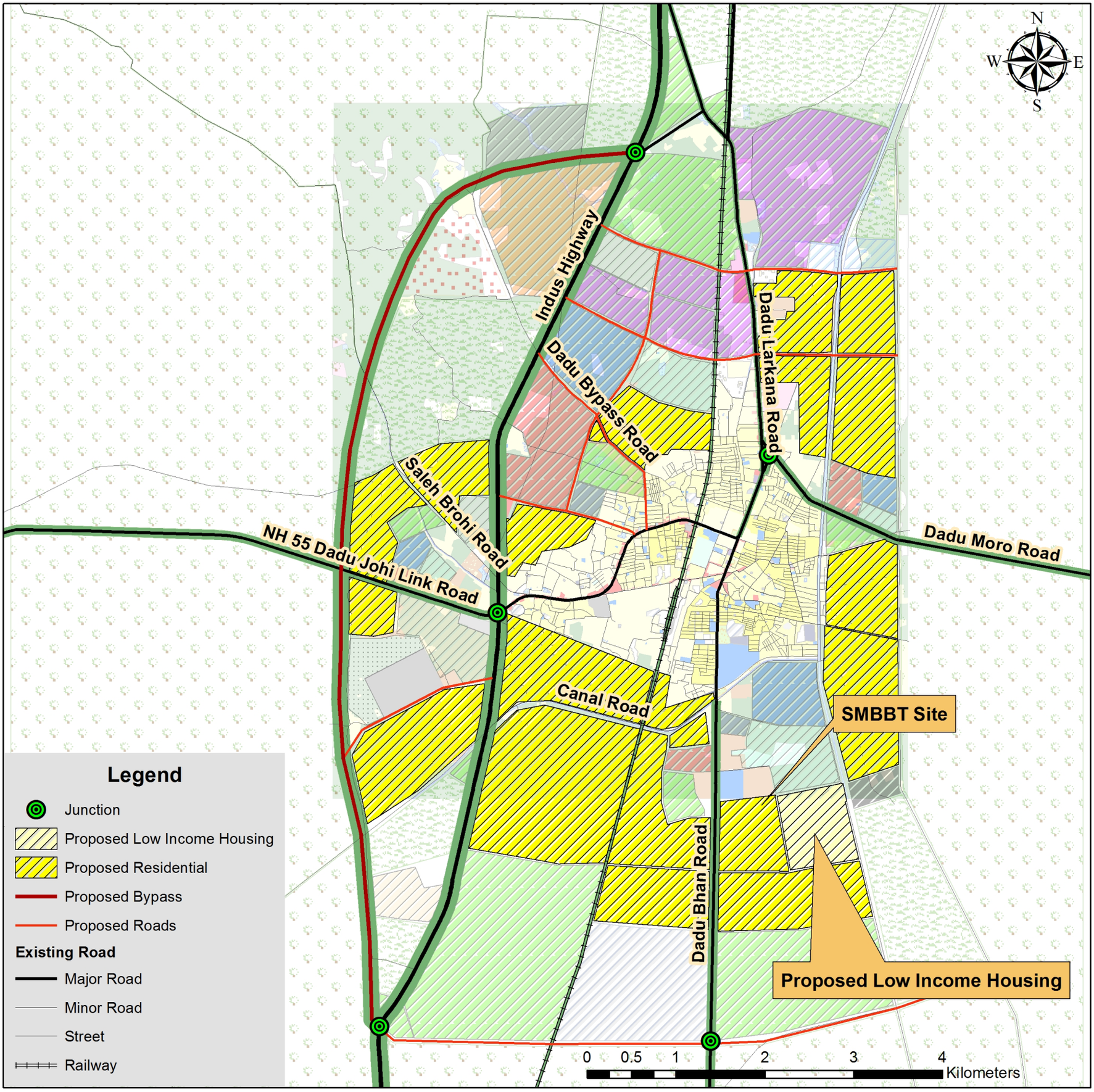
Proposed Master Plan for Dadu Town



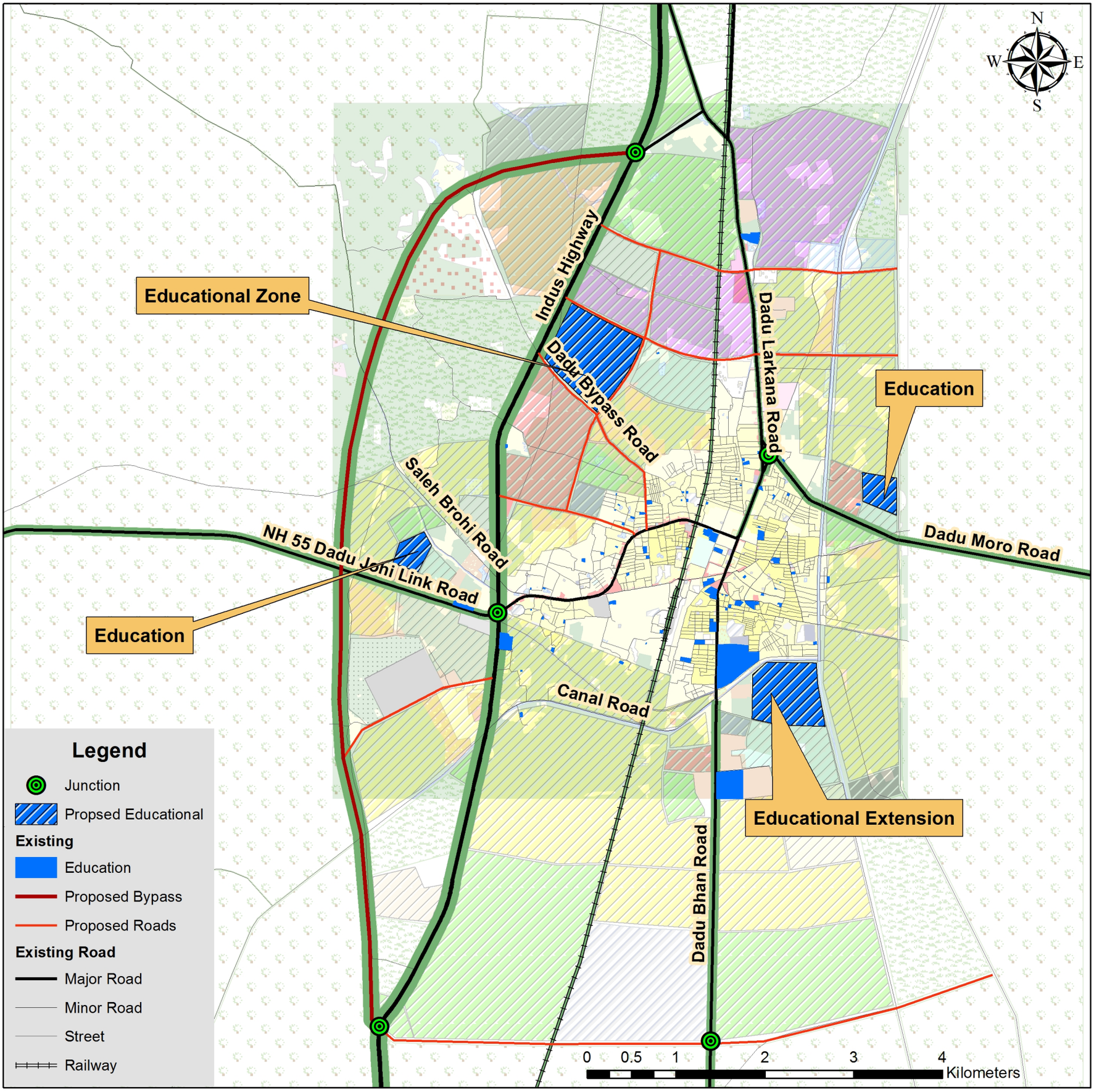
Legend

- Junction
- Proposed Bypass
- Proposed Roads
- Major Road
- Minor Road
- Street
- Railway
- Agricultural Reserved Area
- Agriculture Fields
- Commercial
- Economic
- Educational
- Electricity
- Emergency Reserved Area
- Graveyard
- Health
- Land Fill Site
- Livestock
- Low Income Housing
- Public Administration
- Recreational
- Religious
- Residential
- STP
- Transporation
- Water Supply

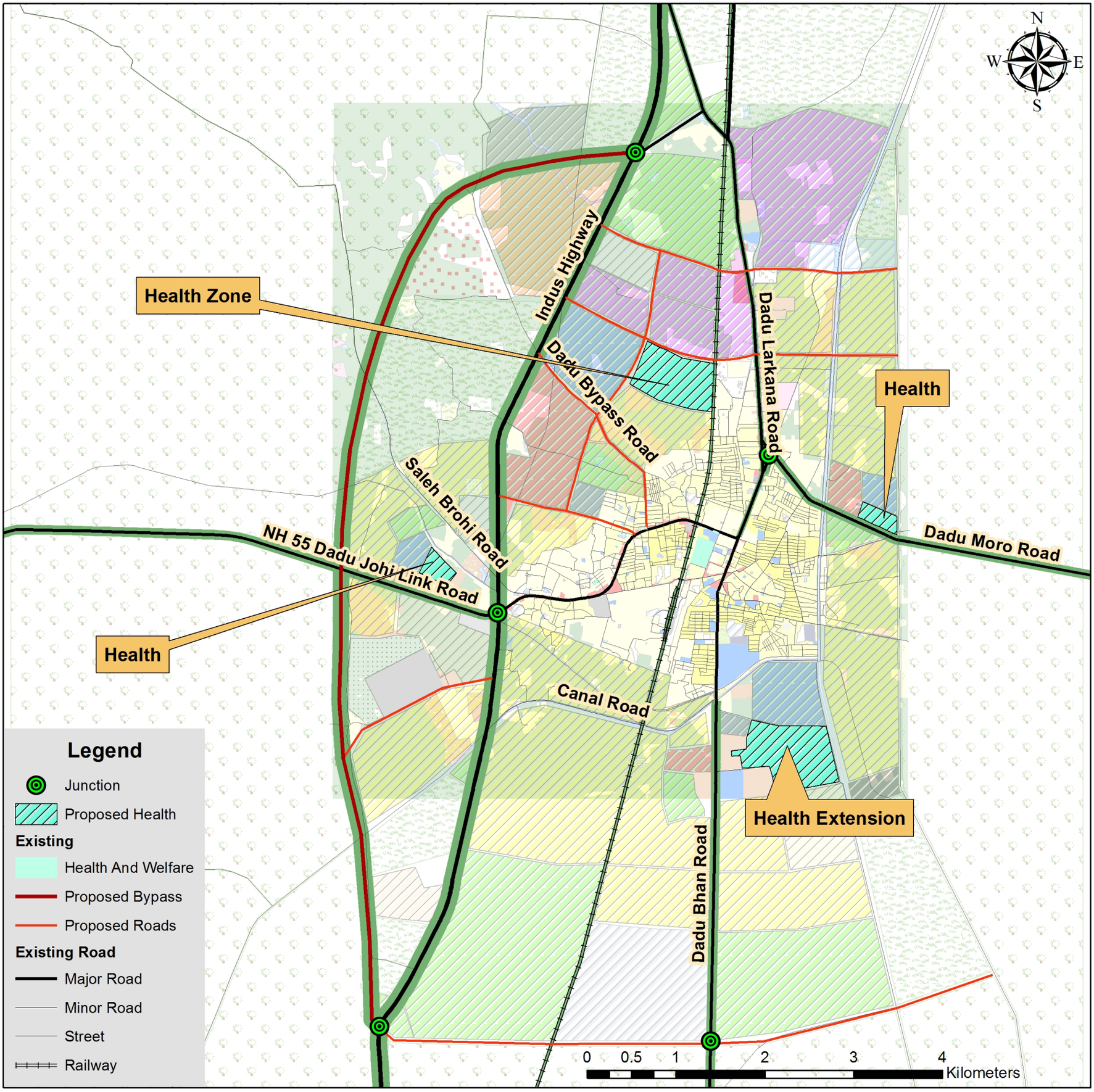
Proposed Residential Landuse for Dadu Town



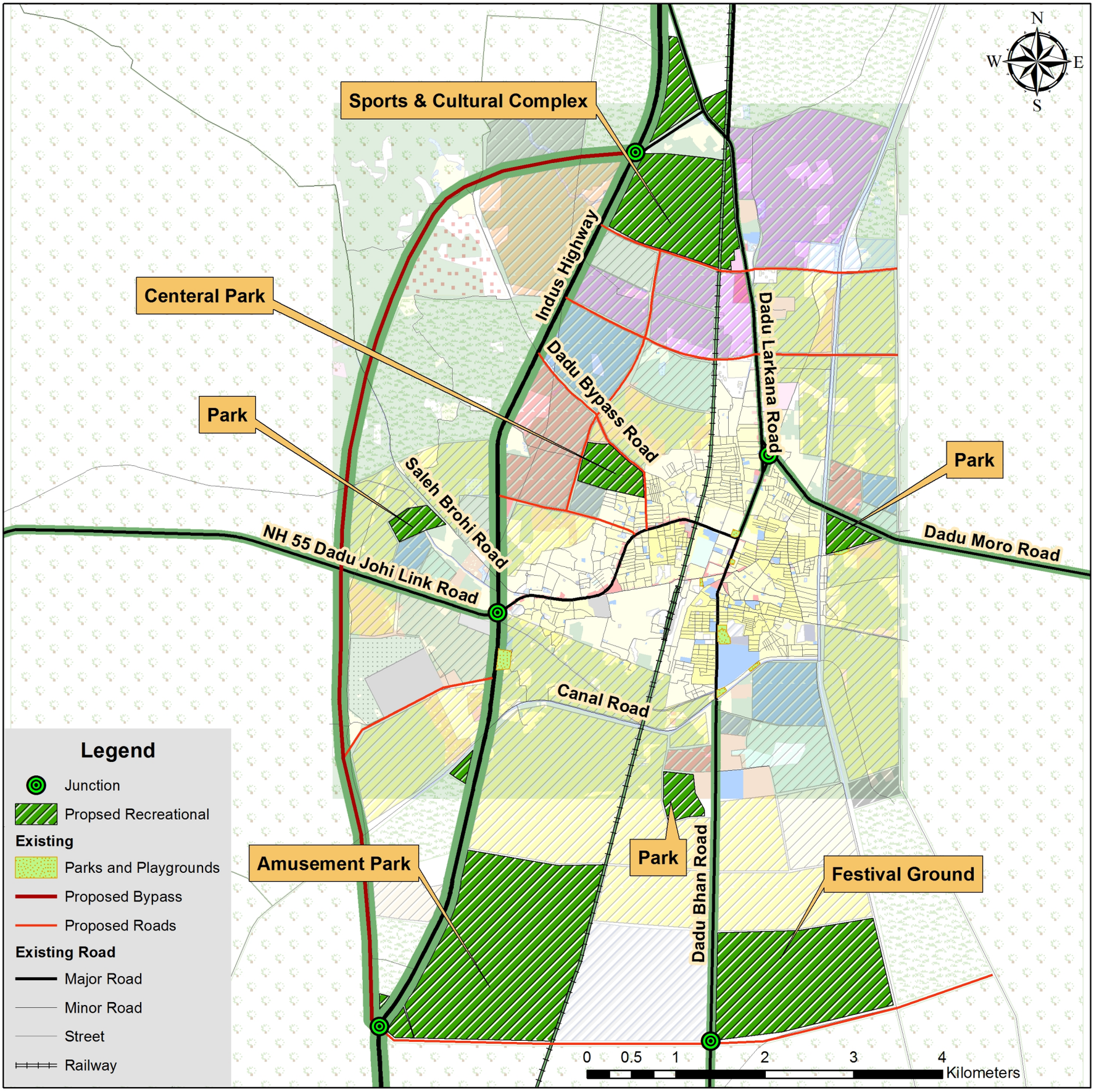
Proposed Educational Landuse for Dadu Town



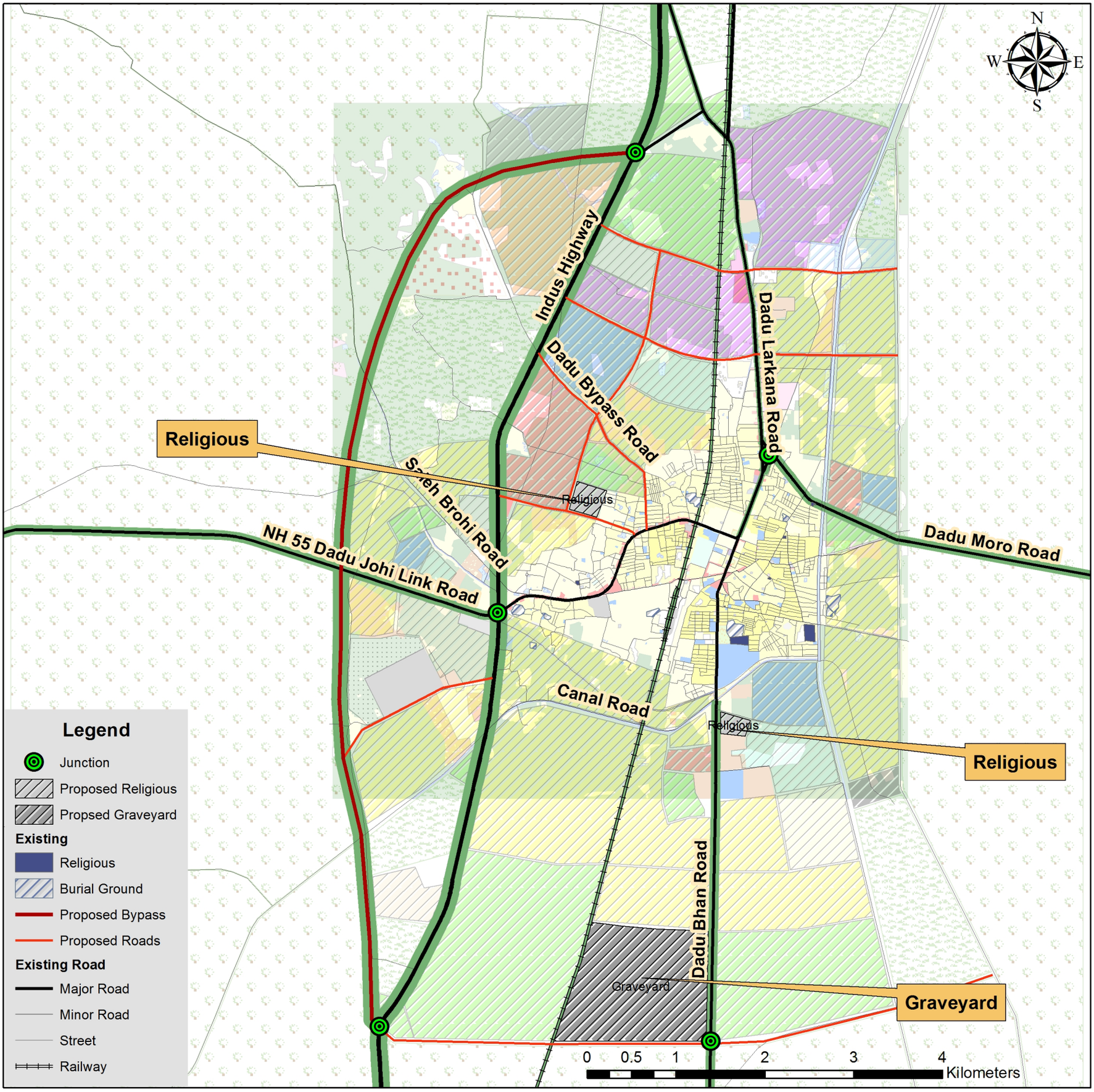
Proposed Health Landuse for Dadu Town



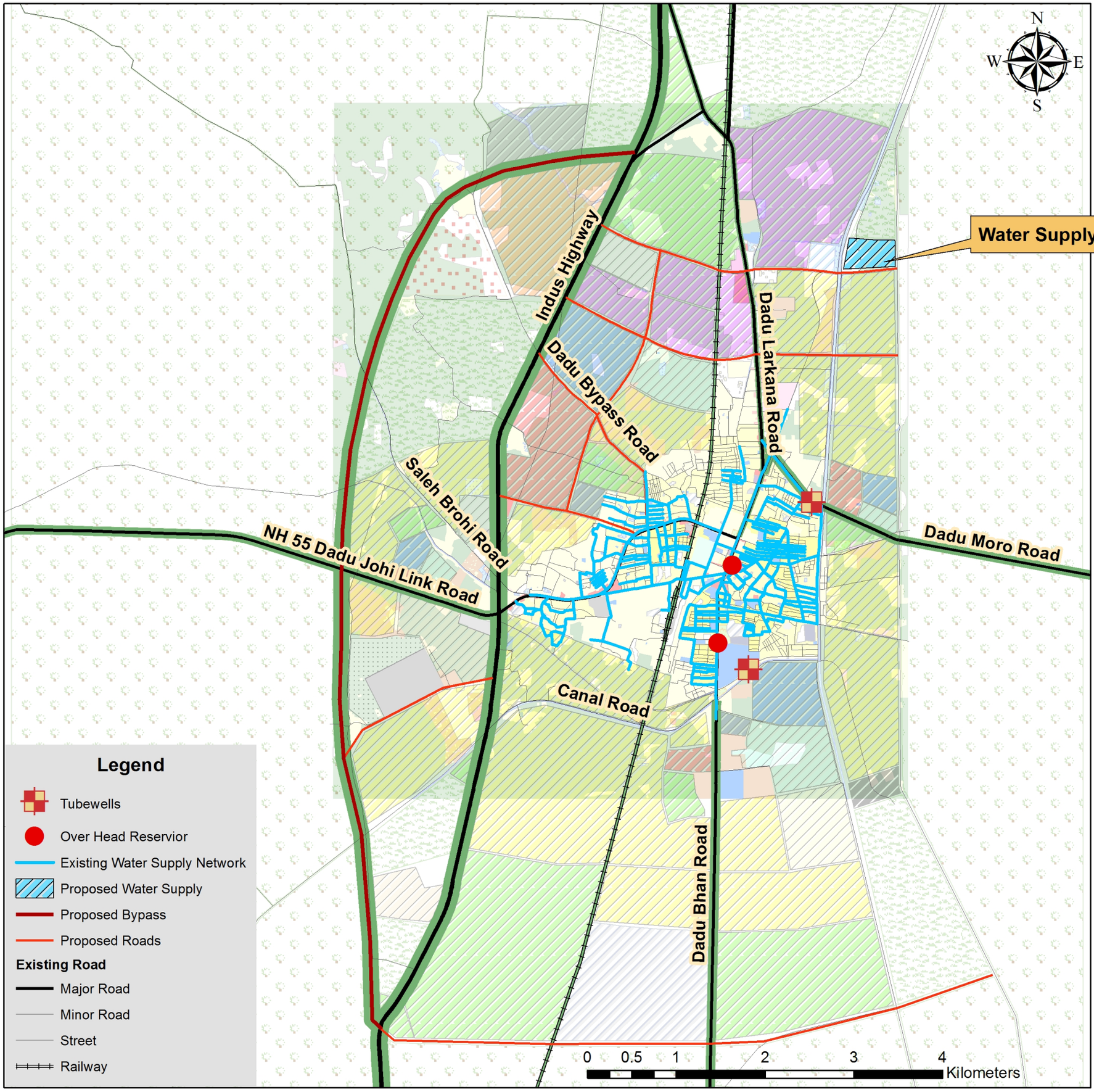
Proposed Recreational Landuse for Dadu Town



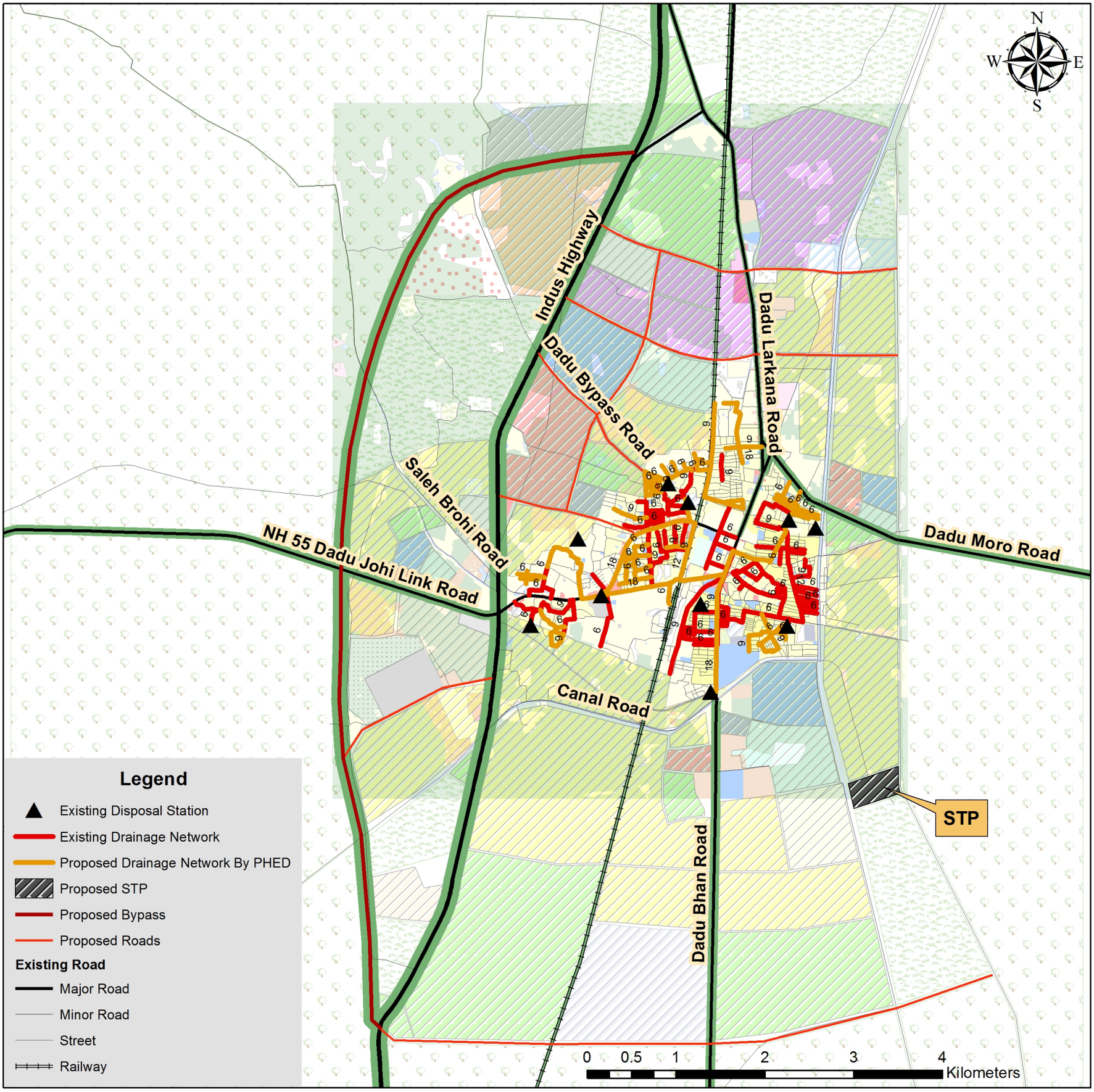
Proposed Regilious & Graveyard Landuse for Dadu Town



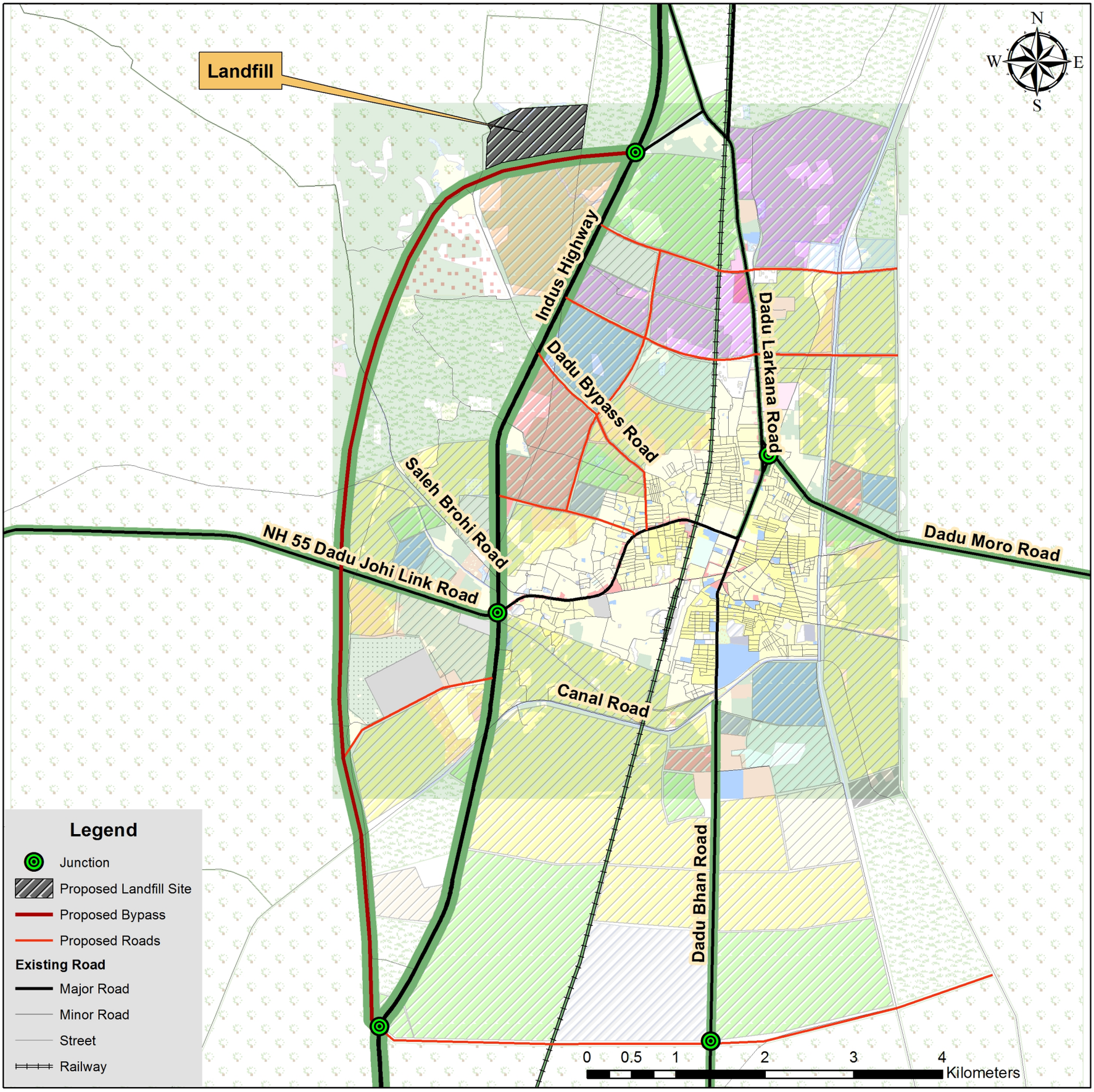
Proposed Utilities & Services Landuse for Dadu Town



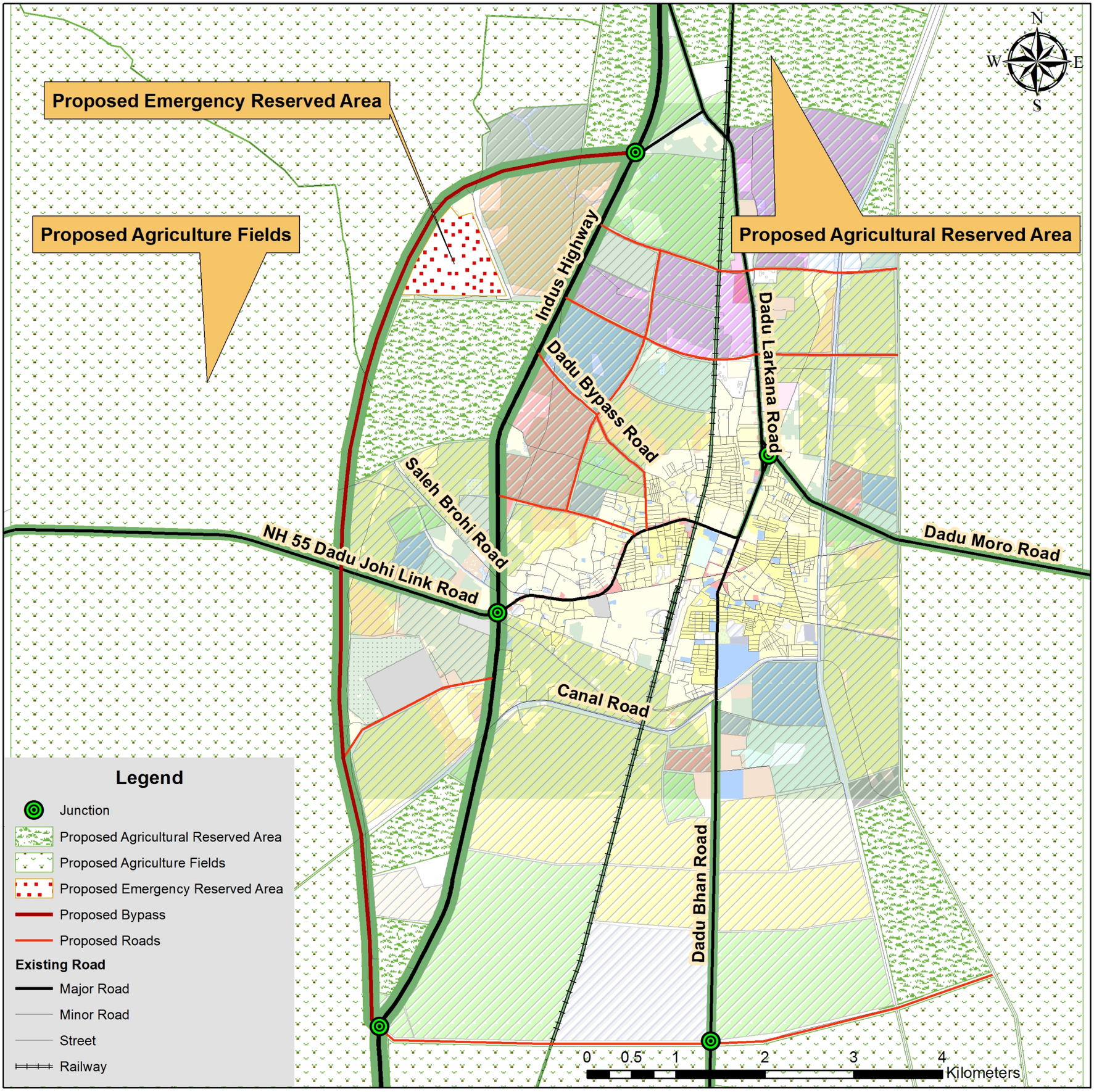
Proposed Utilities & Services Landuse for Dadu Town



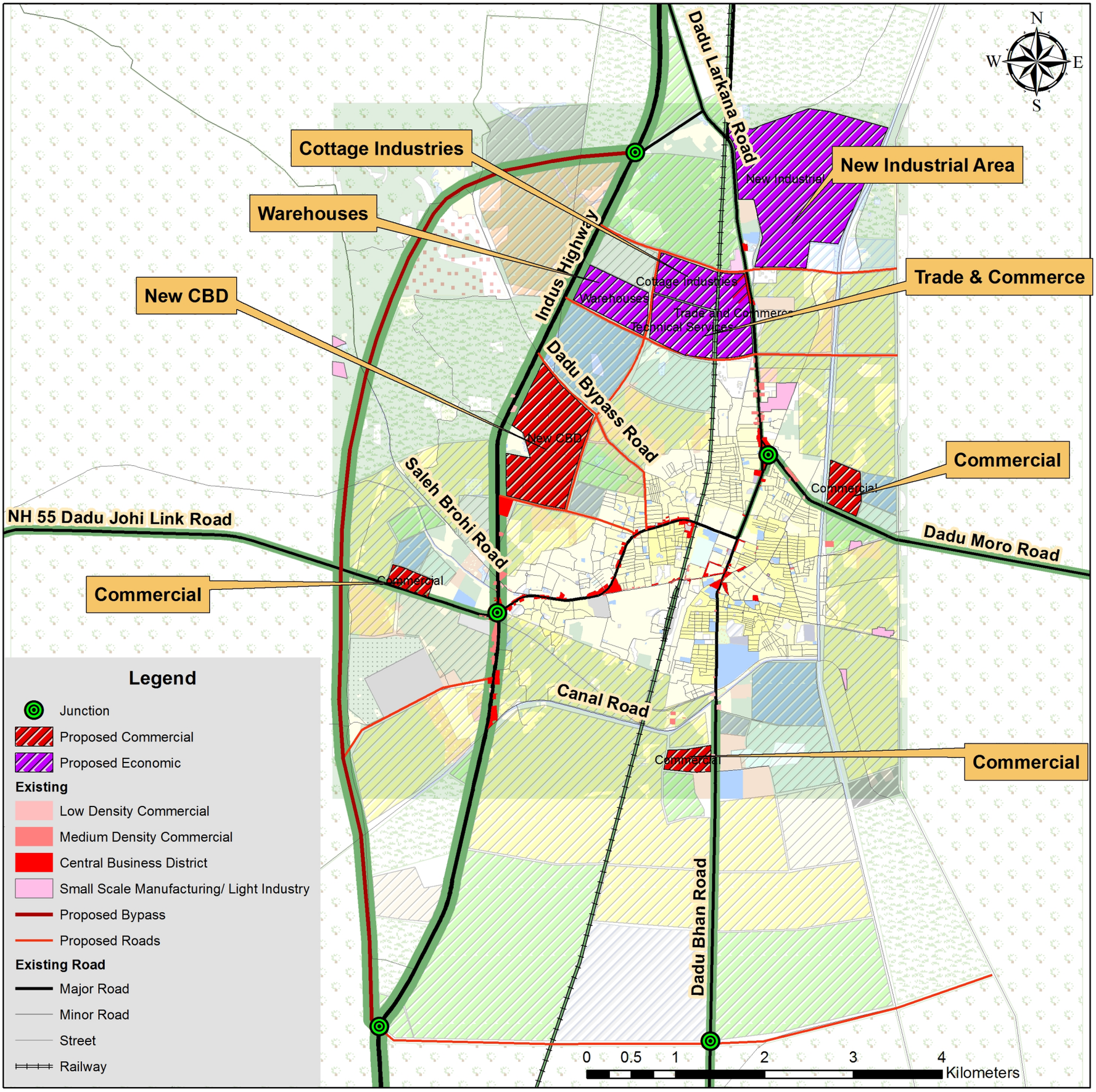
Proposed Utilities & Services Landuse for Dadu Town



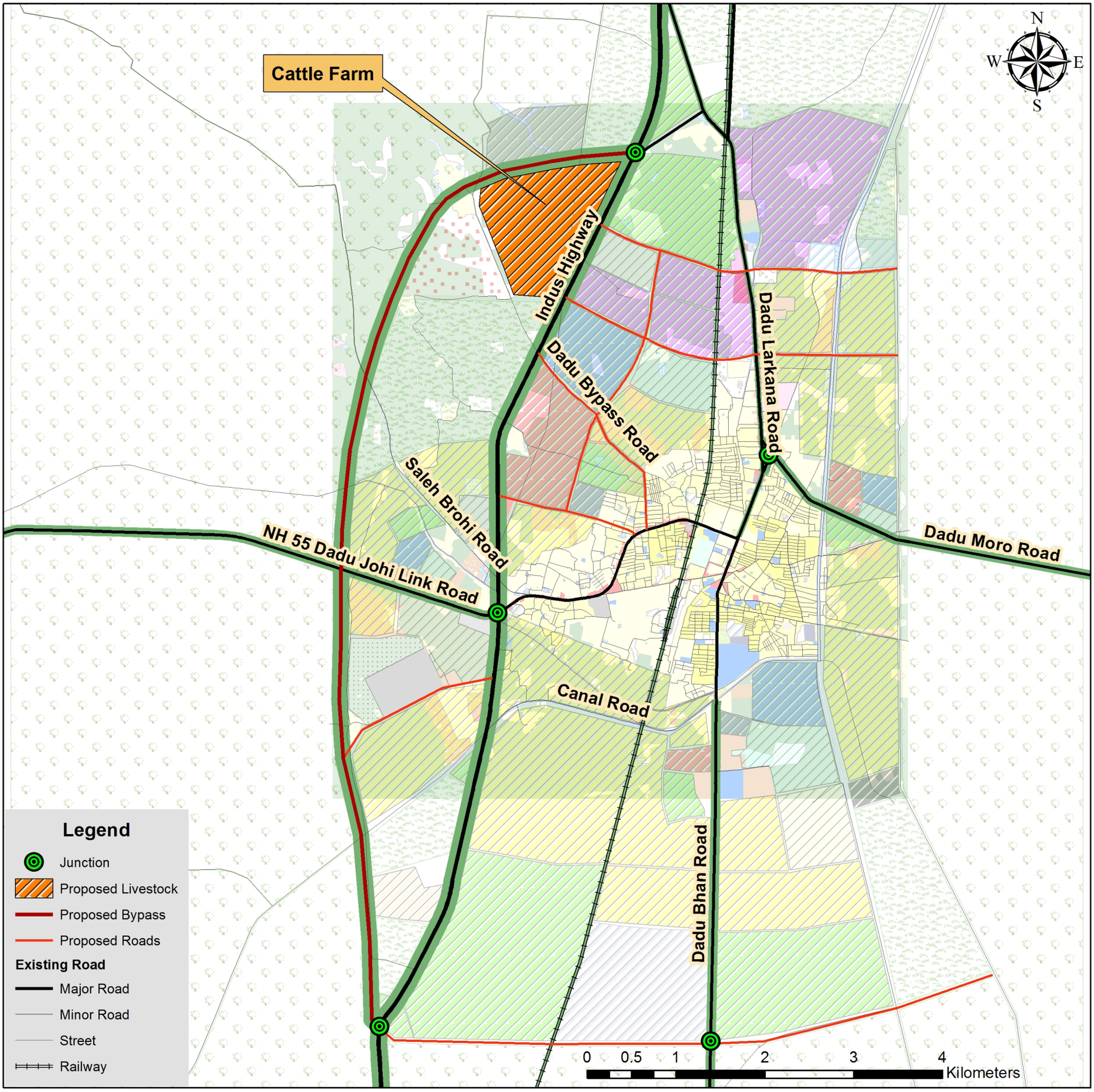
Proposed Agricultural Landuse for Dadu Town



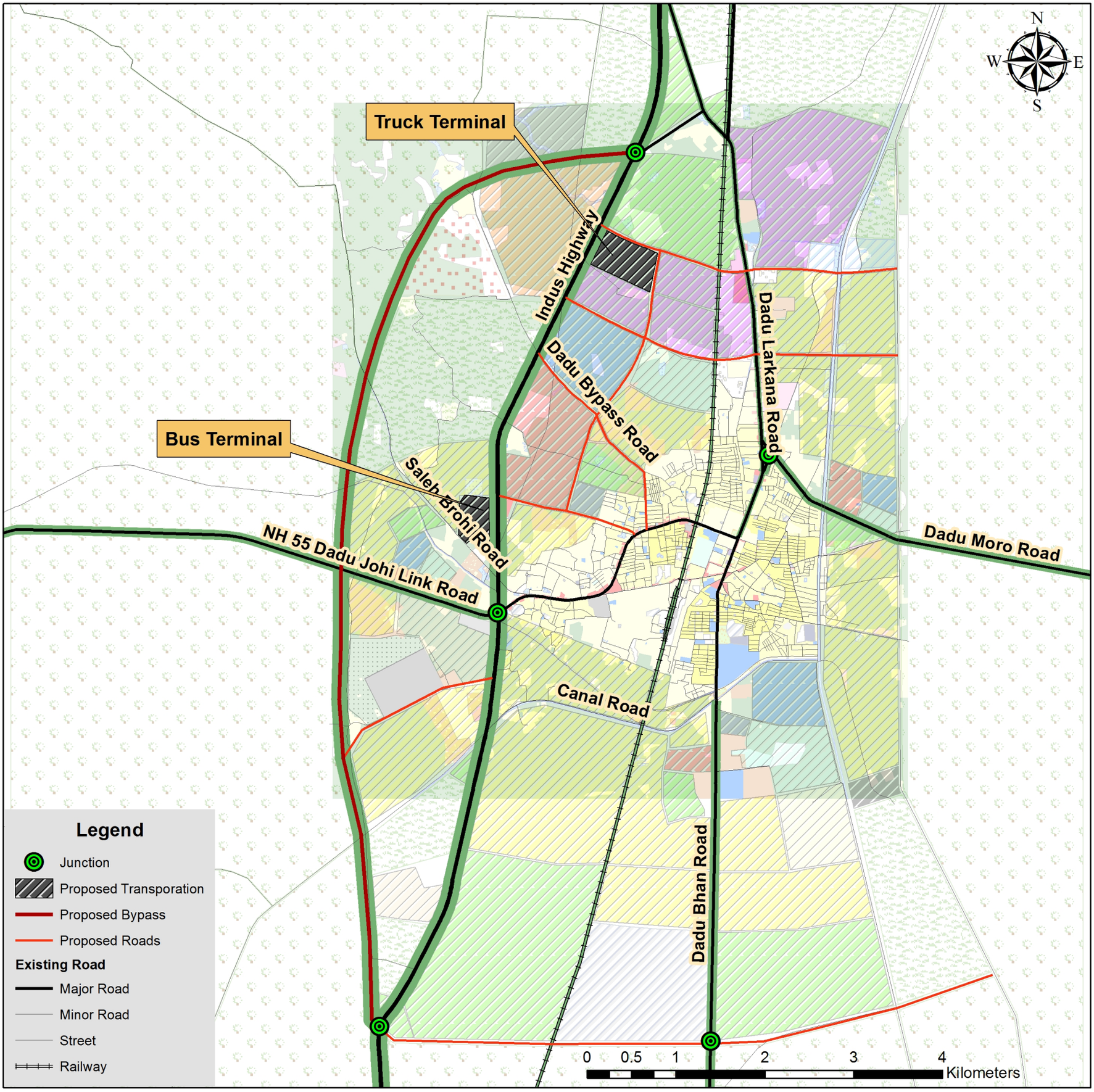
Proposed Economic Landuse for Dadu Town



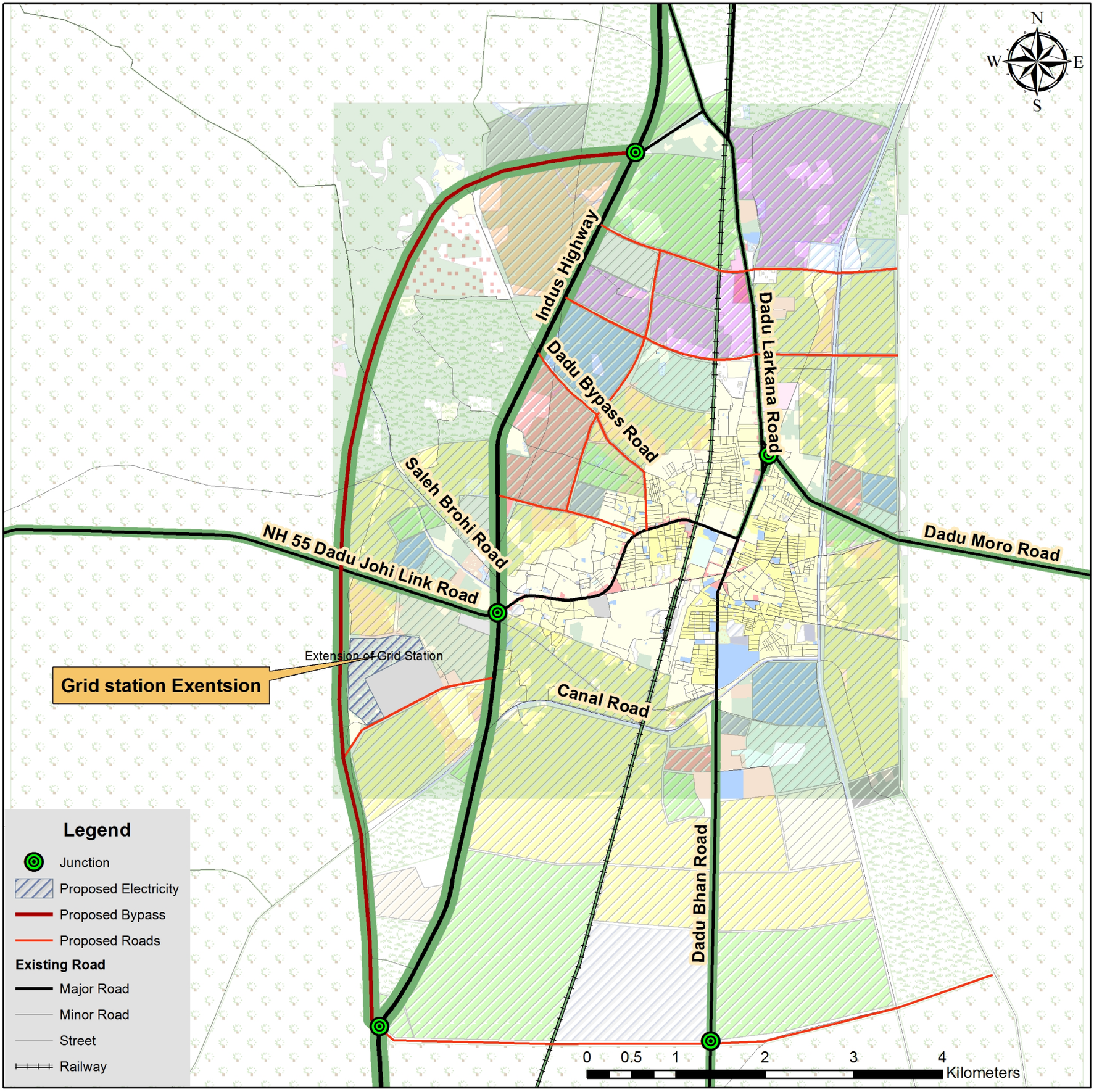
Proposed Livestock Landuse for Dadu Town



Proposed Transportation Landuse for Dadu Town



Proposed Utilities & Services Landuse for Dadu Town



Proposed Administrative Landuse for Dadu Town

