TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN 2031

JUNE, 2013

EXISTING SCENARIO

Volume 1



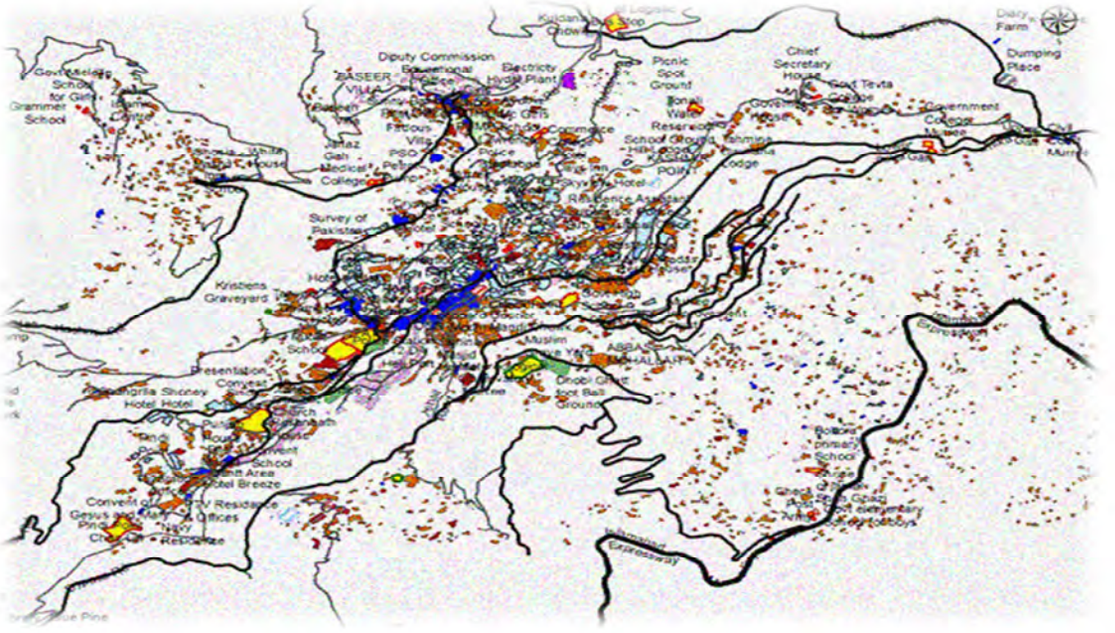


Diputy Commission
Electricity
Picnic
Spot
Ground
Chief
Secretary
House
Dumping
Place
Government
College
Survey of
Pakistan
Kristens
Graveyard
Presentation
Convent
Hotel
Hotel
Hotel

Table of Contents:

FOREWORD

EXECUTIVE SUMMARY:

ACRONYMS / ABBREVIATIONS:

LIST OF FIGURES, MAPS& PICTURES:

LIST OF TABLES:

CHAPTER 1- INTRODUCTION: 1

1.1 PROJECT BACKGROUND: 1

1.2 PROJECT RATIONALE: 2

1.3 VISION STATEMENT: 3

1.4 PROJECT OBJECTIVES: 4

1.5 EXPECTED OUTCOMES: 5

1.6 MASTER PLAN COMPONENTS: 5

1.7 MASTER PLANNING PROCESS & GUIDING PRINCIPLES: 6

CHAPTER 2- ENTOURING MURREE: AN INFOGRAPHIC ACCOUNT: 10

2.1 POPULATION DYNAMICS: 10

2.2 TRIBES&CASTES IN MURREE: 12

2.3 LITERACY: 12

2.4 CLIMATE: 14

2.5 TOPOGRAPHY /TERRAIN: 16

2.6 LAND USE GROWTH: 16

2.7 REGIONAL CONTEXT: 16

2.8 ECOLOGICAL CONTEXT: 18

2.9 LIVELIHOOD CONTEXT: 19

2.10 TOURISM ATTRACTING ACCOUNT: 19

2.11 GOVERNANCE /INSTITUTIONAL FRAMEWORK: 20

2.12 A GENERALISED PROBLEM ASSERTION: 26

CHAPTER-3: EXPLORING EXISTING SCENARIO; STUDY AREA PROFILING: 29

3.1 LOCAL CLIMATIC SYSTEMS AND VARIABILITY: 29

3.2 GEODYNAMICS, SEISMOLOGY & LANDSLIDING: 31

3.3 TOPOGRAPHY / TERRAIN: 37

3.4 HYDROLOGY: 37
3.4.1 WATER: SOURCES, STORAGE & DELIVERY: 40
3.4.2 CONSUMPTION: 40
3.4.3 TARIFFS: 42
3.4.4 QUALITY: 43
3.4.5 WATERSHED: 43
3.5 LANDUSE / URBAN DEVELOPMENT PROFILE: 43
3.5.1 LANDUSE CLASSIFICATION: 43
3.5.2 COMPOSITION: 50
3.5.3 AGE OF BUIDINGS: 52
3.5.4 CONDITION: 52
3.5.5 NUMBER OF STORIES / HEIGHT: 53
3.5.6 OWNERSHIP: 55
3.5.7 QUALITY OF INTERIOR FINISHES: 55
3.5.8 ACCESSIBILITY: 58
3.5.9 FAÇADE' / URBAN DESIGN VALUE: 58
3.5.10 UTILITIES INSTALLED: 58
3.5.11 PLOT AREA COVERAGE: 59
3.5.12HEALTH / SAFETY ASPECTS: 59
3.5.13OWNERSHIP TYPE: 60
3.5. RANGE (HOSPITALITY): 60
3.5.15 QUALITY OF SERVICE (HOSPITALITY) 61
3.5.16 LEISURE / RECREATIONAL/ OPEN SPACES: 61
3.5.17 TOURIST ATTRACTING HERITAGE: 63
3.6 INFRASTRUCTURE PROFILE: 66
3.6.1 PHYSICAL INFRASTRUCTURE: 66
3.6.2 SOCIAL INFRASTRUCTURE: 73
3.7 TRAFFIC, CIRCULATION AND PARKING: 78
3.7.1 ROAD NETWORK: 78
3.7.2 TRAFFIC: 81
3.7.3 PARKING DEMAND ASSESSMENT: 94
3.8 TOURISM INFRASTRUCTURE: 95

3.9 TOURISTS: 99
3.9.1 VISIT/TRIP WISE CLASSIFICATION: 101
3.9.2 AVERAGE LENGTH OF STAY: 102
3.9.3 TOURISM INVENTORY: 103
3.9.5 EVENTS AND ACTIVITIES TO ATTRACT PEOPLE 106
3.9.4 INFORMATION DISSEMINATION 103
3.10 ACCESSIBILITY & CONSTRAINTS: 110
3.11 PUBLIC PARTICIPATION: 111
3.12 QUALITEST ASSESSMENT: 112
3.13 PUBLIC PARTICIPATION & CONSULTATION: 119
3.13.1 PUBLIC CONSULTATION MEETING: 120
3.13.2 STAKEHOLDER CONSULTATION WORKSHOP: 121
3.13.3 PUBLIC REPRESENTATIVE CONSULTATION: 125
3.14ENVIRONMENTAL PROFILE: 126
3.14.1 BIOLOGICAL RESOURCES: 128
3.14.2 AGRICULTURE: 136
3.14.3 PHYSICAL RESOURCES: 137
3.14.4 ENVIRONMENTAL THREATS: 138
3.15 URBAN SECURITY PROFILE: 157
3.15.1 PHYSICAL SECURITY (LAW & ORDER / TERRORISM): 157
3.15.2 HEALTH SECURITY: 158
3.15.3 FOOD SECURITY: 159
3.15.4 HAZARDS / DISASTERS VULNERABLITY: 159
3.16 LIVELIHOOD ASSESSMENT: 163
3.16.1 PEOPLE WORKING IN TOURISM INDEUSTY: 164
3.16.2 TRADING / RETAIL SALES: 164
3.16.3 DEPPENDENE OF AGRICULTURE & LIVESTOCK: 165
3.16.4 ACCESS TO WATER FOR LIVELYHOOD NEEDS 165
3.16.5 AGRICULTURAL PRODUCT AND THEIR USAGE: 165

APPENDIX:

LIST OF PROFESSIONALS CONTRIBUTED:

PROJECT SEQUENCE AND TIMELINES;

PROJECT IN PICTURES;

LIST OF LOCAL DEPARTMENTS CONSULTED IN MURREE:

LIST OF STAKEHOLDERS CONSULTED;

LIST OF STAKEHOLDER WORKSHOP PARTICIPANTS:

FOREWORD:



Murree is Pakistan's tourism capital and it is renowned for its unique natural beauty, pleasant climate and dynamic tourism industry. To maintain and improve its competitive position nationally and internationally for conservation of its natural resources and to deliver prosperity to local communities, it is vital that we anticipate the challenges ahead and plan to ensure that Murree can continue to flourish as a tourist city while protecting its bio-diversity that name it unique. Keeping this objective in mind, a master plan for Survey and Studies to develop Murree as a Pollution free Tourist Town" was got prepared from PEPAC.

The Murree Master Plan integrates land use, infrastructure development and environment conservation planning, providing a framework for sustainable growth and development across the city. This will ensure that the things people love about Murree – its environment and cultural assets – are protected and enhanced as the city grows. The Master Plan for Murree aims to guide the growth of Pakistan's leading tourist city towards greater sustainability, affordability, livability and equity for generations to come.

I would like to thank the Consultants who formulated this Plan through their concerted efforts. I hope that this document will be extremely useful for planning administrative and physical framework for future growth of Murree.

(HABIB UR REHMAN GILANI)
Managing Director
Tourism Development Corporation of Punjab

EXECUTIVE SUMMARY:

ES-1. INTRODUCTION

The project "Master Plan to develop Murree as a Pollution Free Tourist Town 2031" is the outcome of an initiative by the Tourism Development Corporation of Punjab (TDCP) as directed by GoPb. The project has been assigned to a consulting consortium "PEPAC & 4th Dimension" by TDCP, with the overall objective to 'create an eco-friendly niche in Pakistan as well as global tourism market, by establishing Murree as a four season tourist destination, by restoring its cultural and historical heritage and ensuring environmental sustainability.' The Consultants have put in place a team of 20+ competent professionals having varied, rich and diverse national and global professional work experience. The team is being led by a Project Manager from PEPAC and Technical Team Leader from 4th Dimension. The team has worked diligently in close liaison with all local / provincial departments, organisations and the stakeholders in the process. This document comprises of three volumes; Vol I is about Existing Scenario, Vol II states about Analysis & Policy Recommendations and Vol III encompasses Sector Action Plans.

Murree Town is the prime tourist resort in Punjab situated at an altitude of 2,286 meters, with lofty peaks towering over green pine covered slopes and a pleasant serene environment. Spreading along the top of a ridge for about five kilometers, the town was founded by the British in 1849. Murree Tehsil and the Galliat region are well known throughout South Asia for their scenic beauty and fascinating greenery. Murree as a prime tourist destination and a gateway to the Galliat region is visited by more than two million tourists every year. Given its cool climate and unique scenery, Murree has been bestowed with numerous befitting titles including 'Malika-e-Kohsar' (Queen of the Hills), 'a Fantasy City', Paradise on Earth', 'God's Own Land' and a 'City in the Clouds". Murree has also been attributed an icon of tourism in Pakistan with its high contribution in the national tourism development and a lot of infrastructure improvement projects came into being because of this potential. Most of recent developments have not been integrated with the ground realities, like haphazard landuse growth, environmental degradation, mismatch of policies with the local conditions etc.

ES.2. RATIONALE:

The "**Master Plan to Develop Murree a Pollution Free Tourist Town (2011-31)"** is envisioned to help meet the needs of current and future tourists by developing Murree to sustain and improve its cherished and unique recreation assets. The environmentally sustainable development-driven plan establishes a clear direction to guide the city administration, provincial government, tourism ministry, TDCP and local inhabitants in their efforts to enhance the area's natural resources, recreation services and facilities. The Master Plan also provides guidelines to improve the livelihood conditions of the local residents according to the principles of sustainable development.

ES-3. MASTER PLAN VISION STATEMENT:

Master Plan's strategic vision focuses on;

1-Promoting eco-tourism by developing "an eco-friendly urban tourism niche" with a "pragmatic policy vision" to appropriate rich ecological, cultural, heritage and inherent exquisite scenic characteristics of the town.

2-Planning for the residential / commercial, leisure, heritage and green precincts while catering for the needs of permanent / transient residents as well as biodiversity, in an environmentally sustainable manner.

ES.4. MASTER PLANNING PROCESS:

This project team conducted out land use, transportation studies to ascertain challenges & opportunities. This exercise does include livelihood assessments of local residents and a comprehensive 'QUALITEST' to evaluate the tourist facilities available to tourists. It also prepared environmental profile of the area regarding current situation of environmental pollution, municipal sewage, solid waste and biological resources. The project team also consulted representatives of different public departments and agencies, NGOs, press, hotel owners and transport companies etc. This collaborative effort creates a plan that fully utilizes the consultant's expertise and incorporates the local knowledge, community participation and inputs from various institutions making it a comprehensively developed plan. The project aimed to deliver following components tasks:

- Development of an integrated GIS based Master Plan of Murree including land use patterns, geological features, terrain, public facilities, transport etc.
- Formulation of Master Plan policy framework for eco-tourism planning, sustainable transport management, solid waste management, sewage treatment, improving local livelihoods and conservation of natural resources etc.
- Developing sectoral action plans for local environmental action planning, community based eco-tourism and resource management and sustainable livelihoods etc.
- Strategic environmental assessment of master plan policy framework.

ES.5. HIGHLIGHTS OF STUDY FINDINGS:

- There has been a vivid increase in tourists in Murree in the last decade demanding an urgent need of plans to cater the needs of this growing number of visitors (about 2.4 million tourists per year),
- The Murree has gone through a phase of rapid, haphazard and unsustainable urban, commercial and infrastructure development putting its natural resource base under severe stress,
- The landscape of Murree is rich in diversity with a range of natural vistas, pine forests, habitats, vegetation types and cool, climatic conditions,
- The project area has undergone extensive tourism-related land use development which has manifested itself in the form of increased construction activities, water scarcity, exploitation of local resources and degradation of landscapes, environmental pollution, deforestation and loss of biodiversity,
- Despite thriving tourism and its related commercialism, the livelihoods of local inhabitants have not improved and they are rather facing negative impacts of this development in the form of traffic congestions, hike in prices and socio-cultural constraints etc.,
- The institutional framework to coordinate and manage this area is fragmented, disorganized and incompetent to manage and tackle multiple

issues of tourism development, resource conservation and sustainable urban development.

ES.6. CORE ISSUES IDENTIFIED:

1-Haphazard land use development
2-Water management
3-Shortage of parking spaces
4-Deforestation
5-Continuously increasing tourism
6-Environmental pollution
7-Poor waste management
8-Land sliding and natural hazards
9-Traffic congestion
10-Loss of biodiversity
11- Poor livelihood status of local residents
12- Loss of cultural and built heritage

ES.7. SUMMARY FINDINGS:

The consultants studied / surveyed climate, geodynamics, topography, hydrology, land use, leisure facilities, physical infrastructure, tourism infrastructure, heritage, traffic, parking through primary and secondary sources and developed a comprehensive profile of study area briefly described in chapter 3 of this report. The findings of this study are:

- Land sliding is the major mass wasting phenomenon caused by inherited lithological and structural weaknesses, high precipitation and anthropogenic disturbances such as deforestation, large scale construction etc.
- Murree lies in a seismic active zone with a history of earth quakes.
- Streams and springs are major source of water supply. The existing system of municipal water supply can cater to the needs of 50-60% persons during peak tourist season causing serious problem of water shortage.
- Land use data showed that 80% of the area is under vegetative cover, 10.5% is open grasslands, 5.2% is built up and 3% is under roads.
- Most (71.8%) of the buildings in Murree are owned by locals, 24.4% by outstations and 2.7% by institutions.
- Patriata Skyride, Pindi Point chair lift, Bansra Gali wildlife park, soft wheel train and walking tracks are the main recreational sites in Murree.
- The traffic entering Murree City mainly consists of cars (74%), wagons (8.7%), pickups (11.6%) and buses (3.6%). The traffic management system in Murree is obsolete with no facilities for pedestrians, no traffic signals and signs, insufficient parking places and frequent traffic jams.
- Murree has 266 registered hotels which provide accommodation of various categories but they lack standard facilities and quality of accommodation, service and food supplied is not satisfactory.
- The environmental profiling revealed that Murree is facing serious environmental problems such as deforestation, air pollution, water pollution, solid waste accumulation, poor sewage disposal and landscape deterioration.

- Due to poor quality of drinking water, poor sewage and solid waste disposal methods, the gastro-intestinal diseases are very common.
- The main employment/livelihood sector is tourism followed by government/private jobs and commerce/trade is the third largest earning activity.

ES.8. ANALYSIS & POLICY RECOMMENDATIONS:

An extensive situational analysis regarding land use development, tourism and environmental resource management, infrastructure development and design quality of urban structure was done on the basis of both primary and secondary information gathered, which is available in the report. Additionally, an analysis of opportunities and constraints to assess the sustainable development options for various sectors was done. This detailed analysis is also present in final report. As conclusive part, the Plan provides comprehensive policy guidelines along with the implementation and review mechanisms. A gist of proposed policy framework is as;

- The plan recommends that all landuse development activities should be planned according to peculiar geo-physical and climatic conditions of Murree. It emphasizes on the development of urban / suburban settlements with self-sustained neighbourhood facilities to reduce pressures on the existing compromised urban core. It also provides guidelines for disaster resilient landuse development while conserving nature and built heritage.
- The plan provides policy guidelines on the achievement of eco-tourism by increasing the education/training of the locals, tourists and tourism industry about the benefits and requisites of eco-tourism. It involves nature-based tourism, increasing walk-ability and improvement of information/guidance facilities for tourists.
- Traffic management has been found as a major issue in the surveys and the plan includes recommendations for its mitigation. The current transport infrastructure needs rehabilitation and improvement. Non-motorized modes of local transportation should be popularized and facilitated. The shortage of parking spaces may be reduced through regular data gathering, converting unused public places into parking lots and establishment of extra-parking places in the suburbs.
- The future of Murree as a tourist attraction depends upon the conservation of its natural capital. It is therefore, mandatory that Murree lives up to its reputation as a tourist station with great natural beauty, distinctively neat and clean environment and dwellings, high-quality facilities, and a superb, un-spoilt environment for out-door activities.
- The focus of providing sustainable green infrastructure in the town is to enhance efficiency through maximum exploitation of existing assests and optimal induction of additional resources, a fair pricing mechanism to enhance the efficient use of supplies, speedy delivery of services and enhancing environmental sustainability with fewer or no negative impacts.
- To achieve sustainable development goals, the proposed plan aims to address all the environmental challenges envisioned to ensure continued benefits to tourism in Murree through continued management practices.

ES.9. LONG RANGE DEVELOPMENT VISION FOR MURREE

This 100-year plan seeks to influence the future direction of urban development of Murree to ensure that it is healthy and sustainable by design and helps make its communities more liveable and closer knit while preserving and protecting its diverse natural assets. Its main objectives are:

- *More liveable and safer city,*
- *Better connected*
- *More efficient and productive*
- *More memorable and distinctive*
- *More sustainable*.

It then proposes some long-range policies/strategies to achieve these targets. Some of these strategies for different sectors are:

Infrastructure.

- Increase the mix-use housing/buildings within communities
- Create incentives for introducing eco-efficient, green land use and homes
- Promote the use of alternative modes of transportation
- Introduce energy efficient, low emission and medium-sized vehicles for public transport
- Develop communication infrastructure to support tourists and residents
- Encourage urban infrastructure that supports energy conservation and use of renewable energy resources
- Improvement of waste collection, transportation and disposal systems

Environmental Conservation

- Introduction of water-conserving infrastructure to minimize impacts on local hydrology, decreased consumption and improved water supply
- Minimize all forms of water and stream pollution
- Reduce soil pollution, soil erosion and land sliding etc
- Protect and improve health of ecosystems through water management, reforestation, control of erosion etc,
- Introduce long term effective legal and management measures to control deforestation

Sustainable tourism

- Provision of adequate facilities for tourists
- Gradual adoption of eco-tourism principles by tourist industry
- Promote good environmental practices within tourism sector

Socio-economic development

- Enhance programs and supports that help unemployed and low income people achieve economic self sufficiency
- Documentation and protection of local poetry, traditions, foods and festivals
- Increased security facilities in tourist attracting areas

ES.10. STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) OF MASTER PLAN

In the last section of the plan, the results of a strategic environmental assessment (SEA) of the Master Plan are presented. Strategic Environmental Assessment (SEA) is a form of environmental impact assessment used to evaluate plans, policies and programs for up-streaming and mainstreaming environmental issues into the decision-making process. The main advantage of SEA is that it allows a coherent overview of a set of proposals that may possibly have effects on the same area or same environmental parameters.

The Strategic Environmental Assessment (SEA) of Murree Master Plan provided very useful information about the Plan;

- In total, the Plan has a sustainable thrust and focus as all its objectives and policies were found to be compatible or non-confronting with the Sustainability Criteria devised for assessment of the Plan.
- In general, all the objectives and policies had no conflict with each other.
- The Master Plan is a comprehensive, robust and clearly formulated document that will serve a strategic framework and guideline for the sustainable development of tourism in Murree and in other tourist destinations of Pakistan.
- Though a plan of this magnitude which has to cover a number of sectors with a wide variety of applications and constraints, inadequacies may arise from the application of some policies. In particular, these tensions may arise in socio-economic sectors in short term phase of the Plan creating resistance from the public towards appropriate implementation of its policies. Such tensions and inadequacies are inevitable and their effects are mitigated by taking adequate measures to protect local environment from adverse impacts.
- The land use policy, if it could be implemented, would have social and economic repercussions which need to be considered if the policy is to be implemented;
- This assessment showed that the Plan includes many policies for dealing with the various environmental problems experienced in Murree in the context of sustainable development.
- For the local communities in Murree, the early identification of social problems resulting from the policies and adoption of their mitigation measures would be useful for increasing level of acceptance of the policies of the Plan among the masses.

ES.11. SECTOR ACTION PLANS

The last part of the plan reflects on how Master Plan's policy directions will be implemented through sequence of integrated actions and projects in short, medium and long terms?. For effective implementation of the broader goals and objectives of the master plan policies, it is imperative to identify the types of downward actions required. It would be also useful to determine the priority, rough costs and timing of the actions so the appropriate resources may be allocated.

ACRONYMs & ABBREVIATIONs:

ADB	Asian Development Bank
BCR	Benefit Cost Ratio
BFSR	Build Finance Share revenue
BOO	Build Own Operate
BOOT	Built Own Operate Transfer
BOT	Built Operate Transfer
BRT	Bus Rapid Transit
BTO	Build Transfer Operate
C & W	Communication & Works Department
CBD	Central Business District
CCB	Citizen Community Board
CDG	City District Government
CNG	Compressed Natural Gas
DCO	District Coordination Officer
DDO	Deputy District Officer
DDO	Drawing and Disbursing Officer
DFID	Department for International Development
DG	Director General
DO	District Officer
DOC	District Officer Coordination
DOP	District Officer Planning
DRTA	District Road Transport Authority
EDO	Executive District Officer
EPI	Environmental Performance Index
EPD	Environmental Protection Department
ESRI	Developers of ARC GIS Software
EOBI	Employees Old Age Benefit Institutions
F&P	Finance & Planning
GIS	Geographical Information System
GPS	Global Positioning System
GoPB.	Government of Punjab
GoP.	Government of Pakistan
HP&EP	Housing Physical & Environmental Planning Department
HOV	High Occupancy Vehicle
IUCN	International Union for Conservation of Nature & Natural Resources
KPK	Khyber Pukhtoon Khawa
LG&CD	Local Government & Community Development
LRT	Light Rail System
MD	Managing Director
MIS	Management Information Systems
MIT	Murree Improvement Trust
MKDA	Murree Kahuta Development Authority
MKR	Murree Kohala Road
MoE	Ministry of Environment

MoT	Ministry of Tourism
MS	Municipal Service
MSC	Murree Steering Committee
MTDF	Medium Term Development Framework
MOV	Medium Occupancy Vehicle
MVA	Motor Vehicles Act
MVO	Motor Vehicles Ordinance
MVR	Motor Vehicles Rules
MVT	Motor Vehicle Tax
NHA	National Highway Authority
NHSO	National Highways Safety Ordinance
P&D	Planning and Development
PCU	Passenger Car Unit
PEPA	Pakistan Environmental Protection Agency
PHE	Public Health Engineering Department
PHATA	Punjab Housing and Town Planning Agency
PLGO	Punjab Local Government Ordinance
PPA	Pakistan Participatory Poverty Assessment
PPP	Public Private Partnership
PRTB	Punjab Road Transport Board
PTDC	Pakistan Tourism Development Corporation
PTA	Provincial Transport Authority
ROT	Rehabilitate Operate Transfer
ROW	Right of Way
SOV	Single Occupancy Vehicle
SP	Spatial Planning
SPV	Special Purpose vehicle
SWM	Solid Waste Management
TEPA	Traffic Engineering Planning Agency
TDCP	Tourism Development Corporation Punjab
TMA	Town Municipal Administration / Tehsil Municipal Administration
TOR	Terms of References
TOD	Transit Oriented Development
TPU	Transport Planning Unit
UC	Union Council
UIPT	Urban Immovable Property Tax
PUU	Punjab Urban Unit
UN	United Nations
UNEP	United Nations Environment Program
WAPDA	Water and Power Development Authority
WASA	Water and Sanitation Agency
WTo	World Tourism Organization
WWF	Worlwide Fund for Nature

List of Tables, Figures & Maps:

	TABLES:	Page
2.1	Population and social infrastructure in union councils of Murree	11
2.2	Literacy in Murree	13
2.3	Murree: a glance at governance / administrative spectrum	21
2.4	Murree physical environment: core issues tree	26
3.1	Land use statistics (planning study area urban)	47
3.2	Land use classification (planning study area urban)	47
3.3	Roof top areas (urban built up)	47
3.4	Land use statistics for planning study area (Tehsil)	50
3.5	Residential (Type)	50
3.6	Commercial land use (composition)	50
3.7	Merchandize type	50
3.8	Use of ground floor (mixed use building)	50
3.9	Use of first floor (mixed use building)	50
3.10	Use of upper floors (mixed use building)	52
3.11	Hospitality use type	52
3.12	Public buildings composition	52
3.13	Age of building	52
3.14	Condition of building	53
3.15	Number of floors (hospitality)	53
3.16	Number of floors (overall)	53
3.17	Ownership (built up area)	55
3.18	Commercial-owned by	55
3.19	Occupied in season by (residential)	55
3.20	Occupied in off season by	55
3.21	Width of access road	58
3.22	Energy source (cooking/ heating) urban	59
3.23	Energy source (cooking/ heating) Tehsil	59
3.24	Source of water supply (Tehsil)	59
3.25	Effluent disposal	59
3.26	Solid Waste Collection/Disposal	59
3.27	Owner	60
3.28	Rent range (hospitality)	61
3.29	Occupancy level in the summer (owners statement)	61
3.30	Source of water supply	66
3.31	Effluent disposal	73
3.32	Solid Waste Collection	73
3.33	Roads in planning study area (urban)	78
3.34	Width of access road (urban)	78
3.35	Incoming traffic to Murree at cordon points, 08:00 am to 08:00 pm	83
3.36	Traffic outgoing from Murree, 08:00 am to 08:00 pm	83
3.37	Traffic Composition	83
3.38	On-street parking in Murree during normal days	90

3.39	Parking practices on peak days	92
3.40	Off-street paid parking available to public	92
3.41	Paid Hotel car parking	93
3.42	Traffic jams / queues / encroachment	93
3.43	Encroachments along road	94
3.44	Parking demand projections	95
3.45	An indicative categorization of hotels is given below	96
3.46	Age and gender composition	99
3.47	Tourist volume projections	101
3.48	Tourist volume distribution over the year	102
3.49	Average length of stay	102
3.50	Itemized average expenditure by type of visitor	103
3.51	Visits to public attractions	104
3.52	Comparison of tourist sites	106
3.53	QUALI-Test assessment matrix	112
3.54	Public Participation Account	120
3.55	Stakeholder consultation workshop account	121
3.56	Floral diversity of Murree	129
3.57	Major herbaceous plants in Murree	130
3.58	Major trees and shrubs in Murree	131
3.59	Faunal diversity of Murree	134
3.60	Mammals of Murree	135
3.61	Common Birds of Murree	136
3.62	Some main fodder plants in Murree region	136
3.63	Chemical characteristics of spring water in Murree	137
3.64	Characteristics of surface water channels	140
3.65	Air pollutant levels in Murree	141
3.66	Municipal solid waste scenario in Murree	143
3.67	Domestic solid waste collection in Murree	146
3.68	Patterns of disposal of domestic sewerage water in Murree	149
3.69	Noise pollution levels in Murree	150
3.70	Cases reported at OPD department THQ hospital Murree	153
3.71	Gastro cases registered at THQ hospital Murree	158
3.72	Hazard vulnerability chart, expected type & extent of risk in Murree urban	158
3.73	Employment sector	160
3.74	Longevity of work	163
3.75	People working in tourism industry	164
3.76	Trading / retail sales	164
3.77	Dependence on agriculture & livestock	164
3.78	Access to water for livelihood needs	165
3.79	Source of water	165
3.80	Usage of agricultural products	165
3.81	Monthly income	166
3.82	Monthly savings	166
3.83	Occupation groups in Murree	166

MAPS:

1	Murree in Region	15
2	Administrative boundaries and planning area in Tehsil Murree	30
3	Topographic Map of Tehsil Murree	33
4	False color composite image of Tehsil Murree	34
5	Earthquake map of Murree urban area	35
6	Elevation and Contour map of Murree urban	38
7	Elevation and Contour map of Tehsil Murree	39
8	Digital Elevation Model and watershed of Tehsil Murree	41
9	Land use map of Murree urban	44
10	Building parcels in Murree Urban	48
11	Commercial and mixed uses	51
12	Building Heights in Murree	54
13	Land ownership in Murree urban	56
14	Education Facilities	57
15	Existing Infrastructure in Murree urban	67
16	Existing Gas Infrastructure in Murree Urban	68
17	Existing Sewerage Infrastructure in Murree Urban	69
18	Existing Water Supply Infrastructure in Murree Urban	70
19	Location of communication towers	72
20	Important buildings in Murree	76
21	Murree Roads Condition	79
22	Hierarchy of Roads in Murree	79 A
23	Traffic flow at cordon points	82
24	Traffic circulation pattern/ ques in peak	84
25	Traffic flow at GPO Chowk	86
26	Traffic flow at Jhikagali Chowk	87
27	Traffic Flow at Kuldana Chowk	88
28	Traffic volume at Sunny Bank Chowk	89
29	On street/ off street parking	91
30	Historical Buildings	100
31	Air Quality in Murree	144
32	Existing Solid Waste Management	148
33	Noise Level in Murree	155
34	Hazard Map	161

PICTURES:

1	Temperature / Murree Climate Graph	17
2	Maps showing earthquake events & intensity in region	35
3	Incompatible multi storeyed structures	46
4	Roads condition	80
5	Historical buildings	100
6	Air pollution	145
7	Solid waste dumping	147
8	Water/Stream pollution	151
9	Condition of water supply infrastructure	152
10	Visual pollution	156
11	Land sliding	162

CHAPTER 1; INTRODUCTION

Murree, a unique abode with lofty peaks towering above green pine-covered slopes, also known as **Malika-e-Kohsar**, which means "the Queen of Hills", has become one of the prime tourist destinations in Pakistan. It has been envisaged in recent years, the town is at unembellished loss of its inherent scenic characteristic. Murree situated at only an hour's drive northeast of Islamabad and 4.5 hour's drive from Lahore (about 46 km from Islamabad and 410Km from Lahore), with an altitude of 2,286 meters offers tourists an easily accessible destination thus attracting an ever growing number of visitors. The consultants have, however, explored this volume around 2.38 million tourists per annum (Field Studies, 2011). Murree urban area (Planning Study Area: Urban) spreads along the top of a ridge extending over about five kilometers and covering 17.9 Sq. Km whereas Murree Tehsil covers 380 sq. Km i.e. Planning Study Area: Tehsil (GIS based mapping done by the consultants). At its northeast end is Kashmir Point, with views across the valley of the Jhelum River into Azad Kashmir and southwest end is Pindi Point, looking back towards Rawalpindi and Islamabad. Between the two runs highly commercialized famous "The Mall", always remained a shopping attraction for tourists as well as a social / recreational node where most people congregate in foggy evenings. The town is inundated by people from across Pakistan during summer (June-August) and Jan-February in snowfall period. With the development of dual carriage way N 75 (Express Way), other access roads from Rawalpindi / Islamabad, Abbotabad / AJK to Murree and construction of Motorway, the people from all parts of the county have got easy access to Murree and in the process of accommodating such huge volume of visitors every year, tourism infrastructure kept consuming Murree's natural GREEN capital thus leaving behind a mess which we all are noticing now a days. This grievous situation called for an immediate elucidation, to which GoPb responded & promises to restore original characteristic of this natural precinct through initiation of titled project.

1.1 PROJECT BACKGROUND:

Unrelenting environmental, transportation and haphazard development issues envisaged in Murree has pressed GoPb to take initiative to conduct an integrated Master Plan exercise to address all these issues in a holistic manner. The Tourism Development Corporation of Punjab (TDCP) has been assigned the task to prepare a comprehensive master plan of Murree for next 20 year and TDCP engaged the consultants (PEPAC & 4th Dimension) for the project titled "**Surveys and Studies to Prepare Master Plan to Develop Murree as a Pollution Free Tourist Town (2011-31) "**on mutually agreed terms and conditions given in the TORs.

Till today, two master plans have been made for Murree, one in 1977 & 1988 by HP&EP Dept. of GoPb. Master Plan in 1988 was proposed for a period of 25 years and supposed to end by 2013. Unfortunately, after devolution of Local Govt. system in 2000, this policy was not taken up for implementation by the governing institution in Murree (TMA, Murree) and fate of this document is still to be ascertained. Despite having good planning intentions in the past, Murree has

faced lots of physical problems like environmental degradation, haphazard land use development, deteriorating physical infrastructure and lack of tourism facilities during last two decades and eventually GoPb took a serious notice of this grave issue and directed TDCP to take initiative to restore the original characteristic of Punjab's prime tourist destination through Master Plan exercise once again. TDCP adopted a standard procedure for the recruitment of consultants and finally appointed a team of highly competent professionals named "PEPAC and 4th Dimension" to prepare this master plan for a period of next 20 years to devise and govern the environmentally sustainable focused growth of Murree urban area and Murree Tehsil at large.

1.2 PROJECT RATIONALE:

An undesired characterization of the study area is its spontaneous growth, environmental degradation and haphazard land use development, which has mainly taken place outside the purview of conscious urban planning intervention. Nevertheless, the lack of clearly-stated policies should be seen as another factor that has had a bearing on their growth and development, in addition to the absence of urban planning instruments, implementation processes and capacities.

It is envisaged that the preparation of a comprehensive urban development policy will be a key milestone in guiding urban development countrywide in resolving other issues like development planning, land management, urban investment and delivery of infrastructure services.

Policies like Master Plans are essentially among the selected options to be used as instruments to achieve intended goals and objectives. They thus only provide general and directive principles in a wider scope and not necessarily consisting of an elaborated action plan. Consequently, it is essential to immediately adopt development strategies, policy implementation methodologies and pertinent action plans to translate the policy into real practices. **The term "Master Plan" as an urban development policy tool can thus be taken to denote the broad approach and direction to be officially followed by the government and other stakeholders towards addressing a host of crosscutting urban development issues.** As a matter of fact, it is a "urban development policy "which makes explicit those desirable intentions and objectives that direct and coordinate all actions and interventions as well as the focus of operation of urban management institutions".

It is thus a national framework for urban development, which shall serve as a guideline for implementation of appropriate urban development strategies like Master Plans at the sub-national and local levels. It should be outlined as based on a "holistic urban approach" that will give explicit attention to urban development. This is qualitatively different from the issuance of "mono-sectoral and spatially ungrounded" policies, the implementation of which might result in terms of uncoordinated and undesired results at the urban level.

Apart from the challenges related to urban growth, it requires a clear framework for enhancing synergies of many institutions and stakeholders

operating in the area, which can be achieved by evoking the whole urban system and not only a selected few aspects.

In order to combat these problems and cater conclusively to the demands of a transient and permanent population; to create facilities to encourage tourism and yet to improve the livelihood of the local population to assist development and still prevent haphazard unplanned expansion, this report intends to prepare a Master Plan to develop Murree as a pollution free tourist place and plan for enhancement and provision of civic amenities at Murree by critically examining the existing Master Plan of Murree (1988 – 2013) and highlighting the deviations during its implementation as well as devising a realistic action plan for implementation of proposed Master Plan for the next 20 years (2011 – 2031) in line with the National Urban Vision as spelled out in the Mid Term Development Frame Work (MTDF) 2005 prepared by the Planning and Development Division, Govt. of Pakistan and other national / local policy framework.

1.3 VISION STATEMENT:

As Murree has grown physically from a small administrative town to a regional hub for tourism activities, the local environmental degradation is assumed to be happening due to the unplanned physical development, environmentally-negative tourism and lack of a viable implementing mechanism to streamline the tourism activities in Murree. The lack of inadequate urban planning and environmental conservation in the town of Murree coupled with enormous tourist influx in Murree throughout the season emphasize the need to plan, design and manage tourism related activities at the municipal level in a systematic and planned way. Thus it is envisaged that the current study shall help in fostering tourism related activities in environmental friendly way. The policies desired to be introduced, shall be self-sustaining and facilitate local administration and the Client to evoke further areas of research in tourism resulting ecological as well as socio-economic impacts and their resolutions.

The Master Plan for Murree to develop it as '**an Eco-tourist town'** will focus on a number of areas, including tourism infrastructure planning, the physical environment, environmental conservation, zonning, spatial planning, transportation systems, development, socio-economic uplift, education and training, the framework for tourism marketing and the development of inter-sectoral linkages between tourism and other sectors.

The foci of Murree Master Plan 2030 vision extends as under:

A- Promoting eco-tourism by developing "an eco-friendly urban tourism niche" with a "pragmatic policy vision" to appropriate rich ecological, cultural, heritage and inherent exquisite scenic characteristics of the town.

B- Planning for the residential / commercial, leisure, heritage and green precincts while catering for the needs of permanent / transient residents as well as biodiversity, in an environmentally sustainable manner.

1.4 PROJECT OBJECTIVES:

The overall objective of the project is "to create an Eco-Tourism niche in Pakistan as well as global tourism market, by establishing Murree as a four season tourist destination, by restoring its rich cultural and historical heritage".

Focusing on integration of all available resources, the overall approach would be need based as well as supply based. Through spatial, environmental & tourism planning the following objectives are targeted:

- To maintain and enhance existing tourism activities / facilities / development and make tourism an instrument for generating employment, alleviating poverty and increasing foreign exchange earnings, by addressing the core issues.
- To incorporate environmental dimension into planning of development activities on a hill station with due considerations to the future projections.
- To regulate development activities in a way to minimize unnecessary adverse impacts on the natural landscapes, surrounding areas and the environment i.e. nurturing the pristine hills.
- To facilitate the local population to get employment in tourism and tourism related business, by engaging local manpower in development and promoting the techniques of local craftsmanship.
- To improve the existing built environment by applying the knowledge of visual design elements, thus giving the place a character of its own.
- To improve levels of visitors' satisfaction in the Murree region, by transforming it from a nostalgic Murree to the gifted Murree i.e. bring back the original charms.
- To enhance and conserve the region's natural; heritage and cultural assets so as to make the region diversified in attractions and take the benefit of avoiding visitors' congestion on the Mall Road only.
- To encourage productivity of the local crafts and small industries, by proposing flower, local crafts and other hawker's items displayed at properly planned but economically feasible ways. This would eliminate the street congestion made by hawkers.
- To enhance coordination between public & private sectors and upgrade resources to ensure desired standards of quality services.
- To plan to cater/accommodate increasing number of domestic and foreign tourists by channelizing traffic without disturbing the natural beauty and tranquility of the area.
- To make use of the feasible urban design strategies to attain the target of developing leisure areas with a desired level of spaciousness, accessibility and visual pleasantness.

- To tackle spatial inefficiencies so as to avoid long travelling distances and times which negatively impact the area and cause urban densification with more efficient public transportation.

The following lists can be viewed in Appendices section in the end of this report.

- Work Plan organization & task assignments
- Institutional arrangements
- PEPAC & 4th Dimension consortium team
- Time lines & milestones

1.5 EXPECTED OUTCOMES:

- Sustainable Land use Management Plan of Murree.
- Sustainable Environmental Planning and Management.
- Ensure The Natural Resource Management By Developing An Effective Policy.
- An Integrated GIS based Master Plan of Murree for the development of a Pollution Free Tourist Town.
- Formulation of an Integrated Comprehensive Master Planning Policy i.e. Transport Policy, Community Based Ecotourism Policy, Community based Disaster Risk Remediation / Management Policy, Environmental Monitoring / Management Policy, Infrastructure Development Policy, for 20 years ahead for Murree town.
- Development of Action Area Plans for different sectors: Eco-Tourism Plan, Integrated Waste Management Plan, Traffic & Transport Management Plan, Infrastructure Development Plan etc.
- Livelihood enhancement by planned tourist facilities.

1.6 MASTER PLAN COMPONENTS:

Following components / sub components mutually constitute the desired end product "Master Plan to develop Murree as pollution free tourist Town 2011-2030".

1. <u>An Integrated GIS development for following components:</u>

    - Digitized Base Map
    - Digitized Map of Land uses and its subclasses
    - Geological features
    - Contour Plan with Geological Features of Urban Area on 5m interval
    - Contour Plan of Tehsil Area with Geological Features on 50m Interval
    - Physical Infrastructure
    - Public Facilities

- Forests Mapping
- Water Management/Watershed
- Commerce
- A map showing Environmentally sensitive areas
- Transportation Mapping
- Digital Elevation / Terrain Model

2. Formulation of Master Plan Policy Framework for:

- Sustainable Land Use Development
- Eco- Tourism Planning
- Sustainable Transportation Management Planning
- Sustainable Environmental Management Planning
- Planning for Green Infrastructure
- Exploring Livelihood Opportunities Through Master Planning
- Planning for Urban Security
- Incorporating Urban Design Themes
- PPP Pro Development Planning
- Restoration / Conservation of Urban & Natural Precincts
-

3. Developing Sectoral Action Plans for

- LEAP (Local Environmental Action Planning)
- Sustainable Transport Management Plan
- Community Based Eco-Tourism Plan
- Waste Management plan
- Community Based Disaster Risk Remediation / Management Plan
- Plan for Development of Residential, Recreational and Leisure Sites
- Plan for Conservation and Sustainable Livelihoods

4. Strategic Environmental Assessment of Master Plan Policy Framework
5. A 100 Years Sustainability Vision for the Murree Town

1.7 MASTER PLANNING PROCESS & GUIDING PRINCIPLES:

Master plan is defined as "a tool to manage and guide through the future growth of urban agglomerations in an organized and planned manner". Here, it must be made clear that the terms Development Plan, Master Plan and Structure Plan are being used as synonyms to each other to some extent having some variations in their formats but they have the same spirit of guiding the future developments in common. The

consultants have a clear vision of developing a **space & people centered policy framework** in due course.

The preparation of Master Plan is one of the main components of the development/land use planning process. Master Plan Process follows as;

- defining some clearly stated objectives;
- anticipating the development needs of the area;
- studying / reviewing previous policy interventions, their implementation and outcomes;
- identifying /studying social, economic, environmental, tourism and physical structure of the area;
- identifying relevant development issues;
- identifying opportunities for and constraints to development;
- identifying areas which are suitable/unsuitable for different types of development;
- bringing stakeholders and public on board to create an acceptable policy framework at large;
- making proposals for the way in which the area should develop over time;
- establishing long term as well as short term policies and strategies to guide through future development ;
- particularizing long term strategies down to short term actions and plans to remediate emergent issues;
- devising implementation mechanism / strategies;
- Feedback and evaluation.

No one can deny the importance of Tourism Master Plan catering the needs of tourists and establishing the infrastructure with local concerns. This scenario gain special interests in countries with a national policy for systematic tourism development. Several factors are evaluated in the process of achieving the goals of Tourism Development which finally govern Master Plan Policies; some of them are as under:

- Positive and negative factors which have influenced or may influence proper exploitation of the particular tourist resource;
- Carrying capacity of particular resource for tourism development in relation to environmental and ecological impacts as well as socio-cultural impacts of tourism development program at national and local levels;
- Problems relating to financing and management of access and infrastructure provision.

Thus the Master Plan Policies can help in

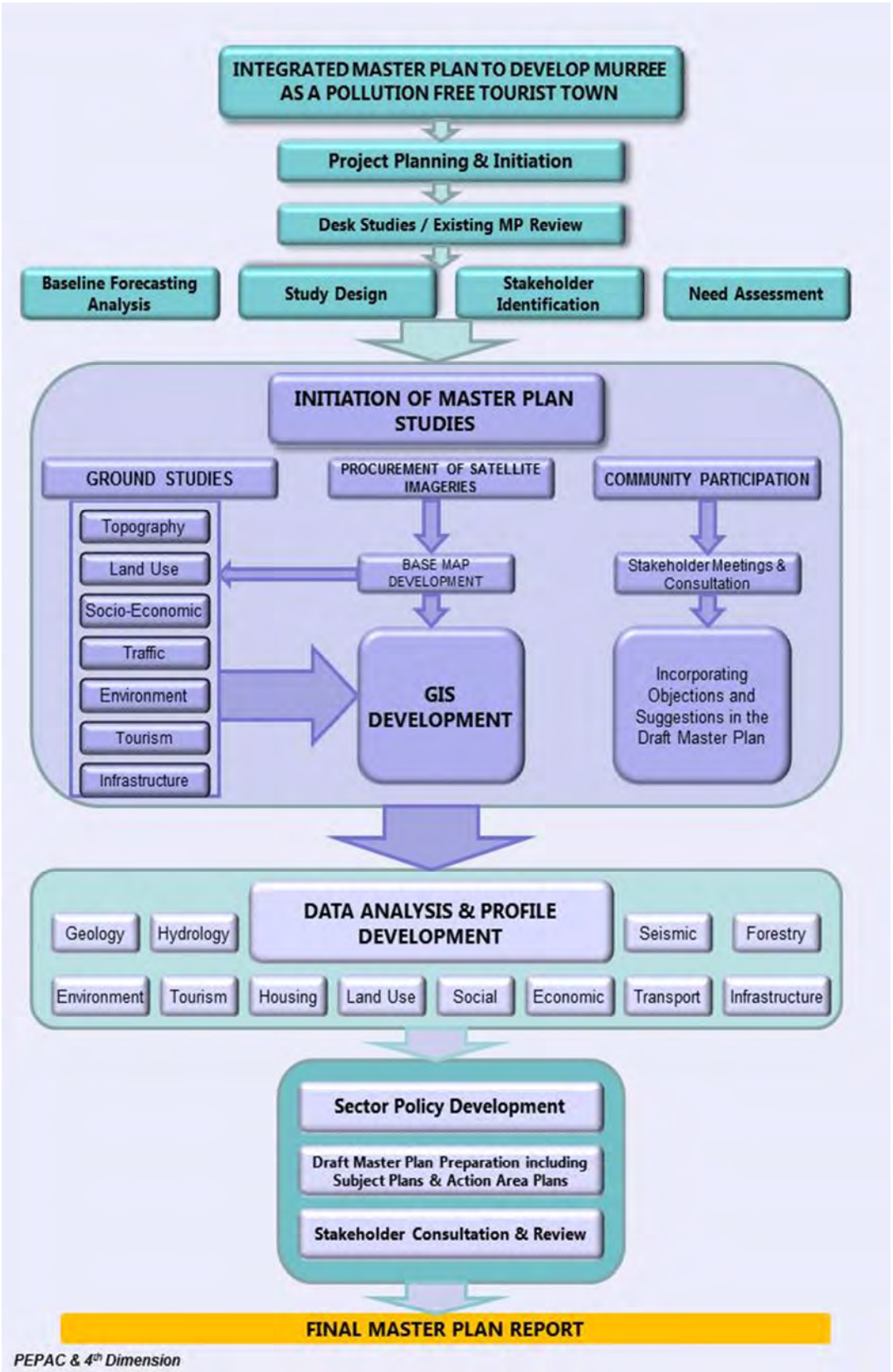
- designation and classification of Pertinent Precincts for tourist infrastructure,
- identification of important Natural and Man-Made Resource Areas and their designation for protection,
- Provision of Environmental and Land Use Control for existing and future development in and around the designated area.

The following sections overview the efforts of tourism related proejcts, their impact on the local and national economy and further explore the possible dimensions of present effort to develop a Master Plan for Murree with a focus to environmental sustainability and harmonised urban development.

Ideally, the Master planning process does not necessarily focus on the challenges related to urban growth only; rather it has a framework for targeting the synergies of major institutions and stakeholders operating in the study area. In this way, the whole urban system is re-evaluated, covering public and private arenas, instead of few facets of economic importance. The following areas are being included in the current Master planning process:-

- Land use Planning
- Physical Growth Corridors Planning
- Transportation Management Planning
- Livelihood Opportunities Planning
- PPP-Pro Development Planning
- Environmental Sustainability Planning
- Tourism Promotion Planning
- Conservation of Built Heritage Planning
- Infrastructure Development Planning
- Disaster Management Planning
- Urban Regeneration Planning
- Regulatory Framework Planning

Integrating Master Planning practices with the cross-cutting themes of tourism and sustainable urban development can bring about positive results for the local environment besides generating discrete socio-economic welfares associated with tourism.


INTEGRATED MASTER PLAN TO DEVELOP MURREE AS A POLLUTION FREE TOURIST TOWN
Project Planning & Initiation
Desk Studies / Existing MP Review
Baseline Forecasting Analysis
Study Design
Stakeholder Identification
Need Assessment
INITIATION OF MASTER PLAN STUDIES
GROUND STUDIES
PROCUREMENT OF SATELLITE IMAGERIES
COMMUNITY PARTICIPATION
Topography
Land Use
Socio-Economic
Traffic
Environment
Tourism
Infrastructure
BASE MAP DEVELOPMENT
Stakeholder Meetings & Consultation
GIS DEVELOPMENT
Incorporating Objections and Suggestions in the Draft Master Plan
DATA ANALYSIS & PROFILE DEVELOPMENT
Geology
Hydrology
Seismic
Forestry
Environment
Tourism
Housing
Land Use
Social
Economic
Transport
Infrastructure
Sector Policy Development
Draft Master Plan Preparation including Subject Plans & Action Area Plans
Stakeholder Consultation & Review
FINAL MASTER PLAN REPORT
PEPAC & 4th Dimension

CHAPTER 2; ENTOURING MURREE: AN INFOGRAPHIC ACCOUNT

Murree's was founded in 1849 on pastureland of a village known as Masiari, as it was initially known, was selected by British because of its cool climate to serve as recuperation area for British troops and was one of the two such hill stations established in the foothills of Himalayas across the Indian subcontinent, other being Shimla, in present day India. Being located near the important military cantonment of Rawalpindi, Murree developed rapidly and haphazardly over the past three decades. The region became well-known throughout South Asia for its scenic beauty and fascinating greenery. Adjacent to Murree is the Galliat region of KPK which includes Nathia Galli, Ayubia, Khanspur, Dunga Galli, Khairagalli and Changla Galli. Despite having been divided by provincial boundaries, Murree and Galliat are inseparable both geographically, culturally, linguistically as well as from the point of view of the tourists. Murree also serves as a gateway to Galliat and AJK.

2.1 POPULATION DYNAMICS :

According to 1998 Census, Murree Tehsil had a population of 176426 (90780 male, 85646 female) including 155,051 inhabitants of rural areas and 21,371 urban dwellers. The civilian and military component of urban population includes 13462 and 7400 respectively. Murree town comprises of Muree Urban union council and two cantonment areas. The annual growth rate it reflected was 0.68 percent during the 1981-1998. Slow growth rate of population of Murree, can be explained by the fact that the local residents developed an increased trend towards migration towards urban centers and the houses left behind serve as "summer houses". There is influx of different type of workers (hotel staff, shopkeepers, transport etc.) during the tourist season causing a temporary increase in the population of Murree town. In 1981 population of Murree was 157136. The annual growth rate in measured was 0.68 percent during the 1981-1998. Slow growth rate of population is not confined to Murree, the enumeration of Kotli Satian shows reduction of population during the time. The population of the villages now comprising Kotli Sattian Town (tehsil) was 83255 in 1981 while the 1998 census shows the figure at 81,523, an increase of minus 0 .12 percent.

Table 2.1: POPULATION AND SOCIAL INFRASTRUCTURE IN UNION COUNCILS OF MURREE

UC	R/U	Name	pulation	BHU	Primary	Middle	High Schools
62	Rural	Tret	14,184	1	24	1	2
61	Rural	Angori	11,414	2	19	3	2
64	Rural	Ban	6,514	1	19	4	2
63	Rural	Charhan	11,792	1	21	4	3
60	Rural	**Massiari**	9,945	1	11	4	1
59	Rural	**Numbal**	11,547	1	12	1	1
58	Rural	Ghora Gali	14,410	1	11	1	1
49	Urban	**Murree**	13,975	-	7	4	2
54	Rural	Gehl	9,488	1	17	3	1
55	Rural	Rewat	9,172	1	10	2	1
57	Rural	Darya Gali	11,414	1	15	1	3
56	Rural	Sehr Bagian	10,979	1	18	-	2
53	Rural	Potha Sharif	10,190	1	12	2	1
52	Rural	Phagwari	13,060	-	14	1	2
51	Rural	Dewal	11,052	1	11	1	2*

(Source: CDG, Rawalpindi)*One of these is Higher Secondary School

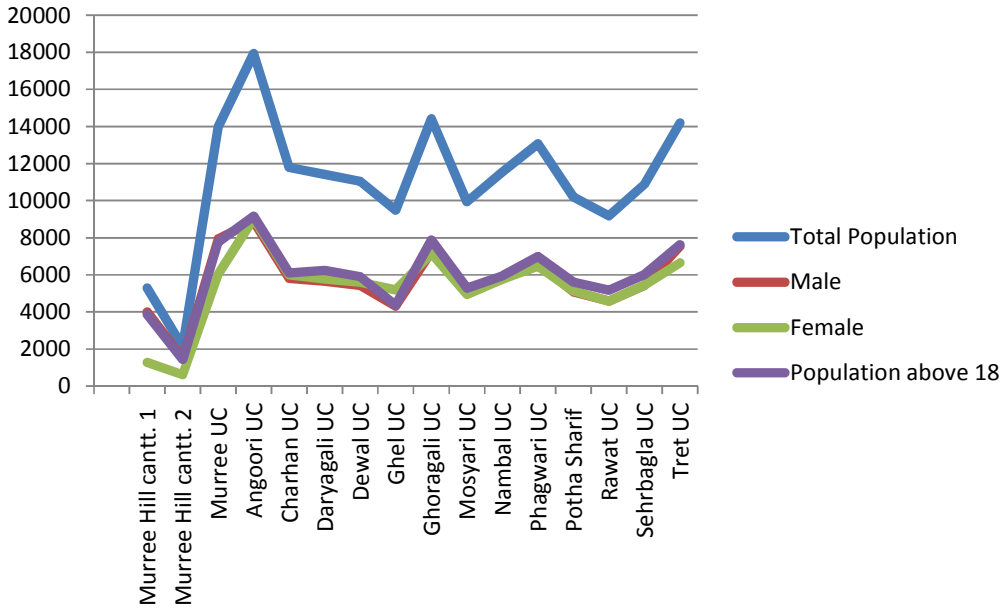


Fig 2.1: DEMOGRAPHIC ANALYSIS OF MURREE

To calculate the population projections, following formula has been used

$$P2011 = P1998 \times (1+R/100)\ ^n$$

Whereas R is Annual Growth Rate & taken as 0.68 % and n is no of years

= 176426 (1+0.68/100)^13
= 176426 (1.0068) 13
= 176426 x 1.092

Population	**1901 = 52,303**	(Census of India)
Population	**1981 = 157136**	(Census of Pakistan)
Population	**1998 =176,426**	(Census of Pakistan)
Population	**2011 = 192,657**	(Projections)
Population	**2011 = 230,935**	(TMA Murree Estimates)
Population	**2015 =197,950**	(Projections made by consultants)
Population	**2030 =219,131**	(Projections made by consultants)

2.2 TRIBES & CASTES IN MURREE:

The Dhond Abbasi is the main tribe of the area. The Kethwal Rajputs is the second largest tribe in the area. Their origins lie in Kerman Persia; they travelled eastwards and settled in the hills. The Kethwals are well established in the Charhan, Ghel and Ban areas of Murree (Tehsil). The Dhanyal is the third largest tribe in area. The Jasgam are the fourth largest tribe.

2.3 LITERACY:

According to the 1998 Census, Murree had a literacy rate of 69.3 percent, among population of age 10 and above. It reflects as oversimplified picture for a region where most part is rural and this higher literacy rate has no relevance with the current livelihood patterns in Murree to date as it is believed that school going generation in 1988 would have grown up to a significant level of educated adults in 2011 but no such relevance found, however the consultants have considered it an authentic baseline source. However, definition of a literate person in 1998 census," The ability of a person to read a newspaper or write a simple letter in any language" justifies the rate shown in table.

Table 2.2 Literacy in Murree

Name of Union Council / Area	Total Population	Male	Female	Population above 18	Literacy rate in %
Murree Hill Cantt. 1	5282	4010	1272	3874	83.6
Murree Hill Cantt. 2	2118	1510	608	1447	84.2
Murree UC	13975	7942	6033	7761	73.6
Angoori UC	17928	8879	9049	9165	68.0
Charhan UC	11792	5795	5997	6095	73.8
Daryagali UC	11414	5650	67.0	6233	67.0
Dewal UC	11042	5431	5611	5907	78.5
Ghel UC	9488	4307	5181	4363	63.9
Ghoragali UC	14410	7254	7156	7883	60.9
Mosyari UC	9945	5004	4941	5281	73.3
Nambal UC	11547	5776	5771	5953	61.8
Phagwari UC	13060	6596	6464	6979	67.5
Potha Sharif	10190	5067	5123	5614	68.4
Rawat UC	9172	4594	4578	5176	74.1
Sehrbagla UC	10879	5430	5449	6015	69.7
Tret UC	14184	7535	6649	7620	63.6
Total	**176426**	**90780**	**85646**	**95366**	**69.3**

Literacy in Murree (Source: Population Census of Pakistan)

With 69.3 percent literacy rate (1998 census) among that age ten and above, which has stated risen up to 89% in Murree urban (Punjab MICS). Murree is among the most literate areas in the country and easily surpasses major cities in this regard. Village Ausia having literacy of 82.7 percent in population of 4450 is among the most literate areas of Pakistan. There is probably no other rural dwelling of same size with such high literacy rate anywhere else in Pakistan. The credit for the same must go to people's love for knowledge as well as dedication of teachers.

Like other parts of Sub-continent modern school system was introduced in Murree after the advent of the British rule in 1850. Initially primary schools for boys were established in Murree, Ausia, Tret, Karor and Kotli Sattian.

Presently there is one degree college each for boys and girls Murree. Another girls college has been constructed at Phagwari. However, the classes have not been started despite the fact that the construction work was completed several years ago. Besides there are two higher secondary schools, at Ausia and Tanda, sixteen secondary schools, twelve middle and 112 primary schools for boys. There are 6 high schools, 15 middle and 109 primary schools for girls. Other than that there are a large number of private schools in every nook and corner of Murree, providing commendable services to the people.

Murree is also known for its elitist educational institutions which have been attracting students from across the country since independence. Lawrence college Ghora Gali, established as Lawrence Memorial Asylum in 1860 for children of serving or retired British soldiers away from tropical climate of sub-continent. It was part of chain of four such schools established across British India. Spread over an area of more than 150 acres at an altitude of 6397 feet (1950 meters) Lawrence College provides education from class one to twelve including A level and O level and is popular among Pakistani upper classes.

Other colleges established during the British period for the children of British colonialist but now serving the Pakistani gentry include Saint Dynes and Convent of Jesus and Marry. Saint Dynese has recently closed it boarding to in order to cater the needs of local population.

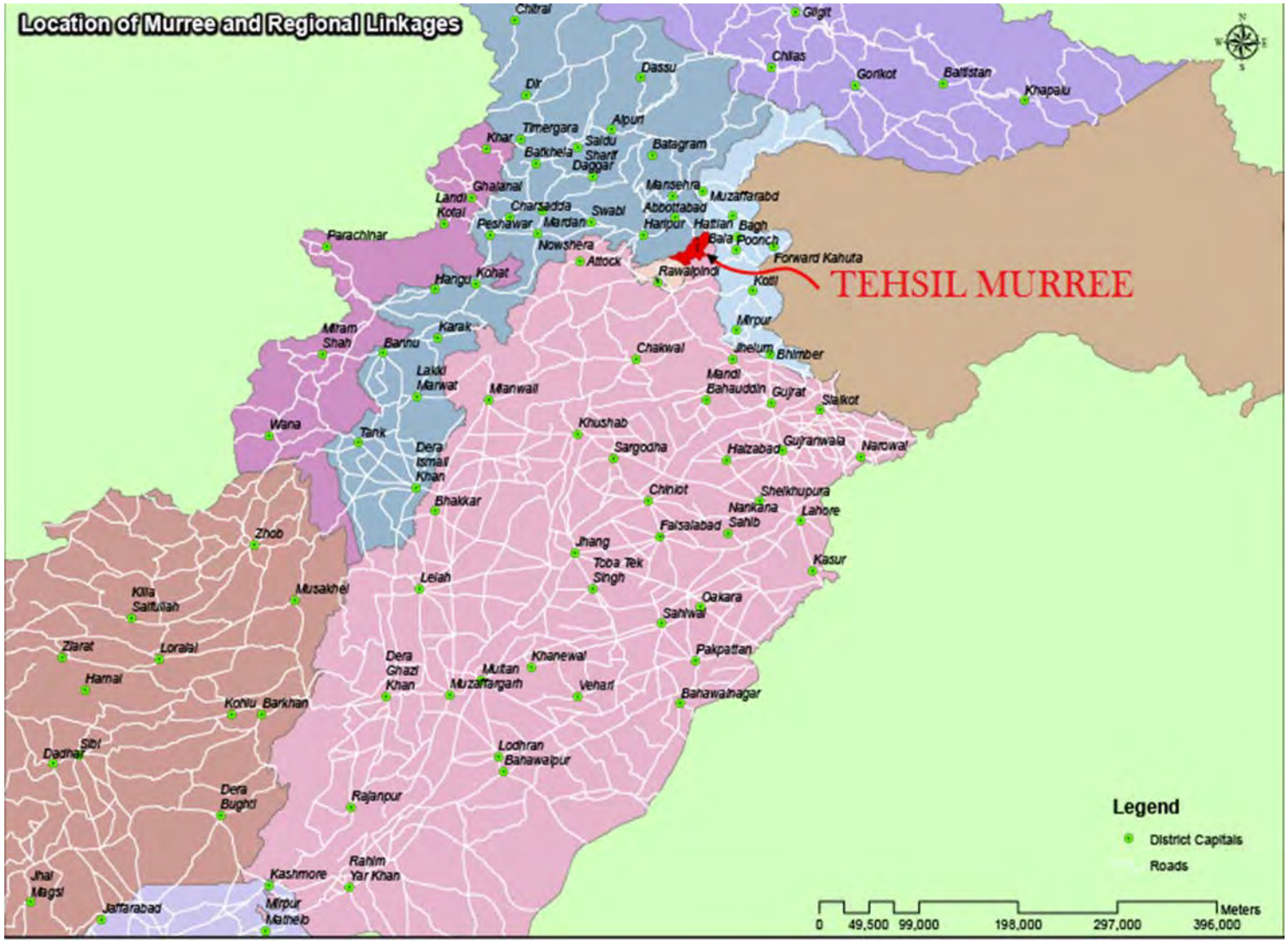
Other schools established after independence include Cadet College Lower Topa, Cadet College Murree Pindi Point and Army Public School.

It would be unfair not to mention Murree Christian School which was unfortunately subjected to terrorist attack in 2002. Situated at Gharial near Jhika Gali Murree Christian School serve educational needs of children of missionaries who serve in Pakistan and neighboring countries. It also accepts admissions from grade four to 12 and is open for children from families with evangelical Christian background even if they serve in other professions.

It is headquarter of Murree Town (previously known as tehsil or sub-division) of Rawalpindi district of Pakistani Punjab.

2.4 CLIMATE:

Murree has a subtropical highland climate and as being situated in the outer Himalayas, retaining high altitude and precipitation. This type of area has cold, snowy winters, relatively cool summer with drastically escalated rain, in relation with lower altitudes, and frequent fog. Precipitation is received year round, with two maximas, first one during winter and second one at summer, July–August. Total mean precipitation annually is 1,789 mm (70.4 in). Observations show maximum rain fall in July and August (130 in. max & 70.4 inch average), temperature even below 0 centigrade minimum in Dec. Jan. and max 25 centigrade in June.



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

MURREE IN REGION

SHEET # -a **SCALE: N.T.S**

2.5 TOPOGRAPHY /TERRAIN:

Geographically, Murree is a mountainous area, forming part of outer Himalayas, situated at 33 • • 52′ 35.706′′ to 33 • • 59′ 57.804′′ degree latitude and 73 • • 24′ 21.156′′ to73 • • 31′ 4.8119′′ degree longitude. It consists of four gradually increasing spurs. On highest among them is situated Murree city itself at height of 7500 feet. Others include Patriata, Kuldana Bhurban and Gharial. It is bounded by River Jhelum in the east, KPK districts of Abbottabad and Haripur to the North and West, Islamabad Capital Territory to the Southwest and Kotli Sattian Tehsil (Town) of Rawalpindi district to the South. About 30% of the total area is composed of steep slopes (>60°), 55% area constitutes moderate slopes (30°-60°) and 15% area is under gentle slopes (<30).

2.6 LAND USE GROWTH:

Murree was originally developed as a low-density town for troops by British in 1851 but it has developed as a prime tourist attraction in an un-planned manner with extensive increase in hotels, restaurants, guest houses, shops and bus stands etc., over the past few decades. The philosophy of the current plan is to retain and restore the original, green, wooded and spacious character of Murree.

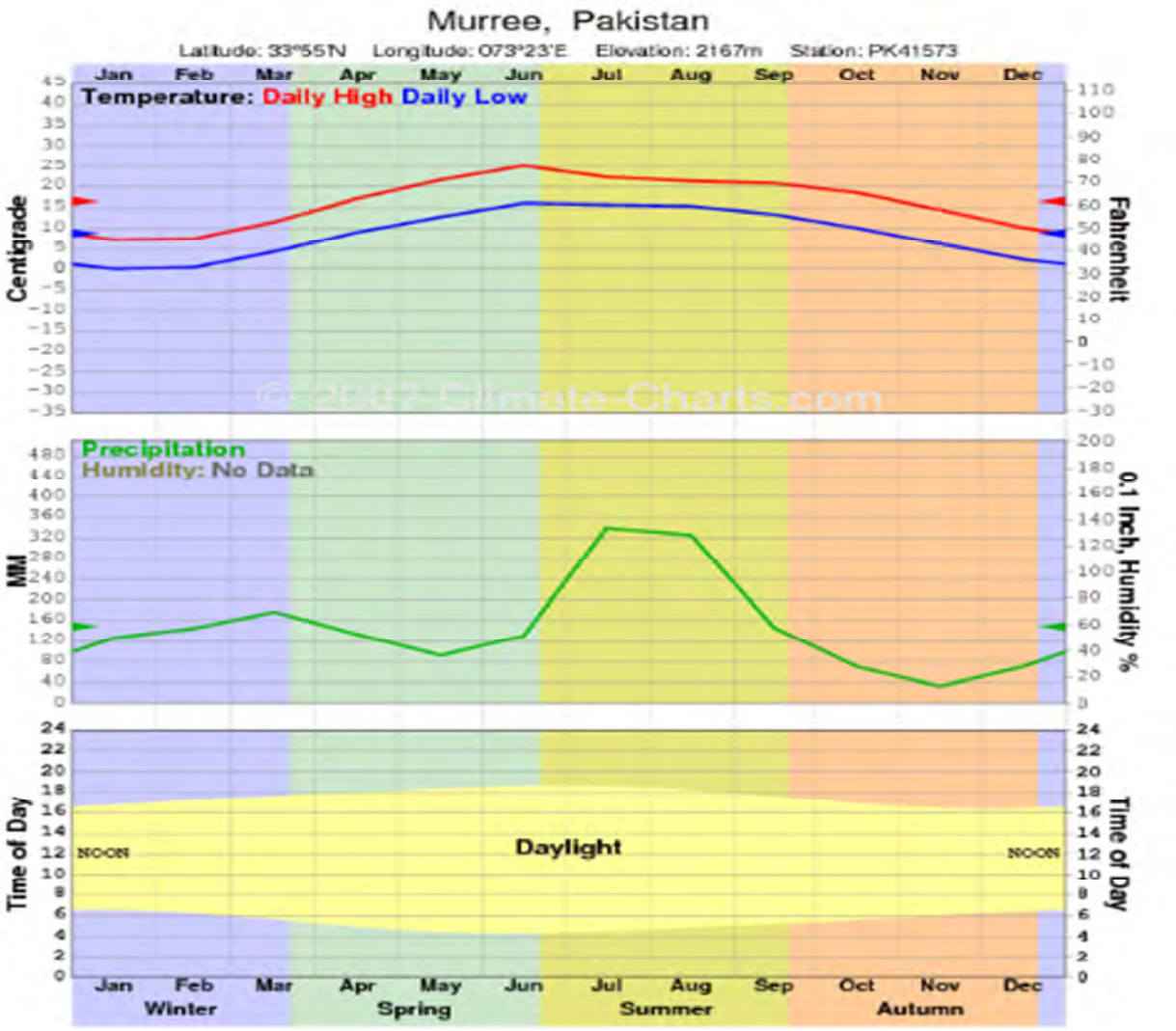
For this purpose, a survey of the present land uses, settlements, forests and open areas has been carried out and results & findings have been put together to get an understandable picture of Happening around in Murree. The tourist amenities, quality residential areas, the forests, parks, the natural landscape and the views are all the items that should be addressed in coming sections as well.

2.7 REGIONAL CONTEXT:

Murree is linked with Federal Capital Islamabad / Rawalpindi by two major roads, one is old Murree Kohala Road (MKL) and other is newly built 41 km long dual carriage way named Murree-Muzaffarabad Expressway (N 75). Upward Murree is linked with Muzaffarabad through Kohala and to KPK by Ayubia Road. Murree is situated on a strategic route to AJK serving GATEWAY and all civil and military movement follows this passage both in peace and war times. Most of tourist influx to Muree is from Punjab (about 34% from Twin Cities/Lahore alone and 44% from rest of Punjab), 11% from KPK and 7% from Sindh as last master plan stated. Below is a pictorial view of transportation movements in and from Murree.



Figure 2.1 Murree in Region-Tourist Influx



Source: http://www.climate-charts.com

Monthly Weather Variation in Murree

Statistic	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Temperature Mean Value	F	38.7	39.2	46.4	55.8	63.1	69.1	66.4	65.1	63	57.7	50.5	43.3	54.9
High Temperature Mean Daily Value	F	45	45.5	52.9	63	71.1	77.2	72.3	70.5	69.6	65.5	58.1	50.4	61.8
Low Temperature Mean Daily Value	F	32.2	32.9	39.7	48.4	55	61	60.3	59.7	56.1	50.2	43.2	36.3	47.9
Precipitation Mean Monthly Value	Inches	5.2	5.9	7.2	5.5	3.8	5.3	13.9	13.4	6	2.9	1.3	2.9	6.1
Temperature Mean Value	C	3.7	4.0	8.0	13.2	17.3	20.6	19.1	18.4	17.2	14.3	10.3	6.3	12.70
High Temperature Mean Daily Value	C	7.2	7.5	11.6	17.2	21.7	25.1	22.4	21.4	20.9	18.6	14.5	10.2	16.53
Low Temperature Mean Daily Value	C	0.1	0.5	4.3	9.1	12.8	16.1	15.7	15.4	13.4	10.1	6.2	2.4	8.84
Precipitation Mean Monthly Value	mm	126.5	145.0	176.8	133.0	91.9	130.3	339.9	326.3	146.5	70.2	32.5	70.3	149.10

Source: http://www.climate-charts.com

2.8 ECOLOGICAL CONTEXT:

The ecology of Murree is both varied and fragile. With an area of 564 sq. km., it encompasses a great range of natural vistas, landscapes, habitats and vegetation types and has pleasant cool, climatic conditions. This variety is reflected in turn in the natural, economic, social and cultural character of the area. Murree can be thus seen as a rich mosaic: a patch work of different landscapes and land types, coniferous forests, crop fields, villages and pastures. It is this diversity which has given Murree much of its character as top tourist attraction; economic strength and shaped its development of infrastructure. Yet this same diversity is also the source of Murree's most pressing environmental conflicts and problems. The very complexity of the landscape means that many of its most attractive habitats and features are small and vulnerable to damage. The very intimacy with which natural areas, urban centres, transport corridors, forests and farmlands lay side-by-side means that no place in the area is immune from human impact.

Murree like many other areas of Pakistan has various issues of poverty, injustice; unemployment and environmental degradation. But due to its peculiar position as a popular tourist hill station, it has another set of environmental problems resulting from tourism-related development activities. Today, this concentration of development in the area has major implications, for it focuses and magnifies many of Murree's environmental conflicts. For example:

- Sewage from hotels and restaurants, for example, more easily finds its way into water channels where it causes water pollution.
- Municipal solid waste from homes and hotels likewise tends to be disposed in the valleys and ditches, exacerbating the problem of municipal solid waste pollution. The fact that much of the local population lives in the same areas increases the risks to health and the impacts on quality of life.
- Unplanned and uncontrolled development, pollution and ever-increasing tourist population are threatening the natural environment, livelihoods of local people, and damaging the character of Murree as a tourist attracting place.

In Murree, the potential effects of commercial land use development are the area of particular concern for planning professionals. Tourism-related development is the most serious threat in this respect, deforestation; transport and loss of habitat are also significant. As a relatively intensely urbanized and developed hilly area, the problems of transport and loss of habitats are clearly to the fore. They can be seen in the evidence of pollution, congestion on roads and in damage to the landscape. There is consequently likely to be continued pressure from the public and other groups for action to tackle these issues over the coming years.

2.9 LIVELIHOOD CONTEXT:

Envisioned broadly, there are two segments of livelihood opportunities in Murree, one is local agro-based economy and the other is tourism based industry and allied domestic commerce. Local inhabitants, seemingly, are not much skilled to serve tourism industry as consultants have learnt through stakeholder consultation in study area during project inception phase. Tourism industry owners opine that local work force is quite incapable and ill trained, so not much work-worthy for them. On the other hand, locals state that they don't get much share out of tourism opportunities; monies keep coming and going out and their life remained unchanged over decades. Their dependence on crops / vegetables produced on small land holdings have also diminished by unavailability of irrigating water. Undulating terrain does not allow them to irrigate their crops without electricity dependent mechanical interventions. State institutions never addressed the issue seriously and they are being deprived of their agriculture productivity day by day. Interventions for the capacity building of local populace are a top demand, thus enabling them to make an efficient part of local economy. Some do suggest having a mechanism by provincial government to impose levy on the tourism fetched income to support local livelihood opportunities.

2.10 TOURISM ATTRACTING ACCOUNT:

Murree attracts visitors each day. According to the 1988 Master Plan, in 1987, 481330 tourist visited Murree out which 68,800 stayed overnight. The rate of growth was determined 5% per annum and estimated this volume to grow around 2.0 million tourists 2010-11, TMA sources also estimate this volume above 2.0 million. Field studies done by the Consultants team revealed that about 98,800 tourist entered Murree in one single day (On Sunday-July 24, 2011 being considered as the peak day of the season before Ramdan) and calculated this volume to be around 2.3 million tourists per annum. Despite this numbers of visitors, the local tourism has remained under-exploited by the visitors and the pro and post benefits that are assumed to be associated with tourism have only slightly trickled down on the local population. As the local population is mainly involved in transport sector or engaged in other unskilled livelihood opportunities, the value-addition of tourism remains a mirage for them. Within urban landscape, there are many locations which are popular amongst tourists like Kashmir Point, Pindi Point and Patriata etc. Once, the local tourism was highly dependent upon natural capital such as wildlife, scenery and culture. Over the years these have deteriorated a lot. The environmental quality has deteriorating and the local culture has been invaded by exotic culture. Murree still has the potential to be a refreshing place for many. The local tourism needs considerably trained and skilled persons to support the local businesses which are currently owned mostly by outsiders. The 'untapped potential' of local tourism needs to be streamlined to utilize the tourism prospects in harmony with nature and local culture.

2.11 GOVERNANCE /INSTITUTIONAL FRAMEWORK:

Murree being one of the eight administrative towns of Rawalpindi district, locally known as 'Pindi' situated in north of province Punjab spread over an area of 5,286 km^2 (2,041 sq. miles). The City-District of Rawalpindi comprises seven autonomous tehsils. It is Headquarters of Pakistan's Armed forces and is home for many industries and factories. City District Government is situated on the Kutchery Road, in the heart of Rawalpindi Cantonment. It has been established since August 14, 2001 under the proposal of National Reconstruction Bureau (NRB).The purpose of this proposal was to increase the access of people to Government Bodies on District level and decentralization of Commissioner System due to its monopolistic approach. In City District the Town Municipal Administration is responsible for those functions assigned to the Tehsil Municipal Administration in the common District. City District Government intends to provide empowerment to politics by improving governance and decentralization of administrative authority. Different departments have been established for working under one platform i.e. CDG. The City District Government strives to provide a supportive framework for women solves the problems of urban and rural areas by providing equal facilities and opportunities and ensures efficient delivery of services in various sectors at grass root level. City District Government is unique in the fact that it works on pre described funds by managing proper cost and transparent utilization of funds and makes apparent decisions through consensus and participation.

1. Rawal Town
2. Potohar Town
3. Gujar Khan Town
4. Kahuta
5. Kallar Syedan
6. Kotli Sattian Town
7. **Murree Town**
8. Taxila Town

In addition to City District Government Rawalpindi's jurisdiction, some other departments are also operative in Murree. Name and function of departments can be seen in the table below;

Table 2.3 Murree: A Glance at Governance / Administrative Spectrum

	Department	Jurisdiction	Functions
1	Government of Punjab	Punjab Province	▪ Overall governance of the province. ▪ Facilitates infrastructure development / planning of Murree. Town as one of the finest tourist resorts in the province. ▪ Holds summer-residential/camp offices facilities for different department. ▪ Overall governance/administration of whole division through its Commissioner Rawalpindi office.
2	City District Government, Rawalpindi	District Rawalpindi	▪ Functions as parent district planning & administration department of whole district Rawalpindi. ▪ Exercises most of its functions through DCO, District Nazim and Tehsil Nazims. ▪ Administration of different segments like Community Development, Finance & planning, Spatial Planning, coordination, Health, Solid Waste Management, Municipal Services, Education, Revenue, Information Technology, Environment, Agriculture etc. by its District Officers. ▪ Budgeting and financial planning.
3	TMA Murree	Tehsil Murree	▪ Enforcement of Municipal Laws ▪ Building Control / Encroachment Control ▪ Financial

			planning/budgeting ▪ Spatial Planning / Development Control ▪ Solid Waste Management ▪ Community Participation through elected representatives. ▪ Parks and Horticulture Development. ▪ Revenue generation through tolls, taxes, levies, fees & fines. ▪ Local Governance. ▪ Municipal Infrastructure maintenance / development. ▪ Maintenance/ development of social infrastructure. ▪ Keeping birth/death records. ▪ Regulating local markets. ▪ Keeping land ownership records. ▪ Keeping municipal records & archives.
4	Murree Cantonment	Cantonment Area Murree	▪ Looks after areas under its jurisdiction, normally not accessible by civil administration.
5	Murree Improvement Trust	MIT Jurisdiction	▪ Murree Improvement Trust operates within its limited boundary of MIT housing scheme.
6	Public Health Engineering Department	Tehsil Murree	▪ Operates and manages water supply & sewage systems and its allied infrastructure like reservoirs, pumping systems, distribution network within tehsil Murree.
7	Punjab Urban Unit	Punjab Province	▪ Devise policies / regulations for urban development/management within the Punjab province. ▪ Extends technical

			assistance to local TMAs / Institutions.
8	Punjab Municipal Development Fund Co.	Punjab Province	▪ Extends technical assistance / grants for implementation and capacity building through local / foreign donor (ADB, World Bank etc.) funding.
9	PHATA	Circle Rawalpindi	▪ Prepare area development schemes, ODPs for small and medium sized town in Punjab. ▪ Exercises building control within its planned areas.
10	C & W	Distt. Rawalpindi	▪ Develops building infrastructure, roads through provincial government direct funding.
11	Provincial Highways Dept.	Punjab Province	▪ Develops, extends and maintains regional / intercity road linkages / highways within the province. ▪ Manages / maintains MKR, Expressway, Bhurban –Patriata Road and Ayubia-Nathia Gali highways.
12	EPD Punjab	Punjab Province	▪ Devising policies / guidelines for environmental conservation/management like air quality, water quality, noise, flora fauna & biodiversity. ▪ Regulates environmental issues in urban areas. ▪ Extends technical assistance to local administration through provincial and international funding. ▪ Operates through EDOs, Dos, support staff, and mobile environmental

			monitoring units having offices with CDGs.
13	Forest/Wild Life	Punjab Province	▪ Regulates forestation and wildlife conservation.
14	Met. Dept.	National / Federal	▪ Monitors / forecasts metrological information.
15	NDMA/PDMA	National/ Province	▪ Devising policies / capacity building to manage/mitigate natural disasters like quakes, fire, landslides etc.
16	PEPA	Federal	▪ Devise policies, regulations, NEQs at national level to address environment issues and translates global environmental sustainability agenda like Protocols, CDM, MDGs, EPIs into local policy framework.
17	TDCP Punjab	Punjab Province	▪ Operates and manages tourist infrastructure in Murree and Patriata in addition to other tourist destinations in Punjab. ▪ Operates tourist information centres in Punjab. ▪ Operates buses to facilitate tourists. ▪ Devise provincial tourism policies to promote tourism in Punjab. ▪ Operates as an autonomous corporation of Punjab Govt. ▪ Arranging tourist attracting fares / jeep rallies.
18	PTDC /Ministry of Tourism	Federal	▪ Projecting Pakistan as a tourist friendly destination. ▪ Marketing of Pakistan's tourist products in tourist generating markets (at home & abroad) ▪ To act as a catalyst in

			encouraging the private sector to play active role in tourism promotion & development. ▪ Development of tourist infrastructure and services within the country ▪ Promotion of tourism. ▪ Maintaining tourist data fact sheets.
19	UN Agencies	Global/National	▪ UN agencies like UNEP, UNDP, and UN-HABITAT working for global environmental sustainability agenda in coordination with local agencies. ▪ Extending knowledge/information and funding.
20	NGOs/CBOs	Global/Local Murree	▪ International NGOs like IUCN & WWF are working for environmental sustainability. Many local community based organizations are working for the improvement of environment by educating local/tourists in Murree.
21	Police	Local Murree	▪ Police regulates the local law and order, providing security and regulating traffic by their highly trained traffic wardens.
22	Rescue / Fire Services	Local Murree	▪ Rescue 1122 emergency service operating with very high efficiency to cope with the emergencies.
23	Others	Local Murree	▪ Welfare & community organization like EDHI etc.

(Source: Extracted and Constructed by the Consultants)

2.12 A GENERALISED PROBLEM ASSERTION:

Physiographical problems involve negative externalities connected with unmanaged urban development such as inequalities and lack of social cohesion, urban sprawl and congestion, environmental problems, housing shortages and distressed areas. The unprecedented urban growth has contributed to a myriad of problems stated by tourists, locals and administration.

Table 2.4 MURREE PHYSICAL ENVIRONMENT: CORE ISSUES TREE

	Core Issue Identified	Apparent Causes
1	Water Shortage	▪ Out dated Community Infrastructure provided by TMA Murree. ▪ High charges of Potable Water supplied through Water Bowsers ▪ Insufficient Municipal Water Supply ▪ Water leakages/poor quality infrastructure
2	Loss of Flora and Fauna	▪ Depletion of Vegetative Cover ▪ Soil Erosion ▪ Land Use Conversion from Forest to Urban ▪ Deforestation ▪ Immature Geological Phenomenon
3	Land Sliding	▪ Deforestation ▪ Immature Geological Phenomenon
4	Lack of Parking Spaces	▪ Improper calculations for Parking Demand & Supply ▪ Frequent Conversion of Parking Lots into other uses
5	Urban Sprawl	▪ Haphazard Growth ▪ Inadequate Urban Planning ▪ Non-Compatibility of Land Uses ▪ High-rate of Commercialization
6	Housing Shortages	▪ High Cost of Living ▪ Gentrification
7	Soil Erosion	▪ Climate Change ▪ Human Activities ▪ Depleting Vegetative Cover
8	Deforestation	▪ Haphazard Land use Growth ▪ Inadequate Urban Planning ▪ Non-Compatibility of Land Uses ▪ Climate Change

		▪ Tree cutting for using it as fuel ▪ Lack of parallel plantation activity ▪ Unchecked Cattle Grazing ▪ Species Natural Extinction ▪ Bush Fire Hazards
9	Livelihood Opportunities	▪ No policies ▪ Drain of local economy ▪ Social Attitudes ▪ Lack of skill ▪ Neglecting Local Craft Industry
10	Escalating Tourist Influx	▪ Insecure conditions in other touristic regions ▪ High Order Road and Urban Infrastructure ▪ No parallel developments
11	Built Heritage Conservation	▪ Need conservation strategies (Cecil Sold Away!!!)
12	Bio-Diversity Loss	▪ Excessive human activities. ▪ Loss of habitat ▪ Increased noise and other pollution. ▪ Warming & Climate Change ▪ Unchecked Caging / Hunting
13	Traffic Congestion	▪ Poor traffic management. ▪ Space availability for parking infrastructure. ▪ Poor performance by traffic wardens. ▪ Non responsive/violating community. ▪ Increased car ownership.
14	Urban Security	▪ Poor policing / governance ▪ General Lawlessness ▪ Terrorism / Crimes
15	Neglected Local Craft Industry	▪ In competition with the international brands, the local products lost their clients.
16	Loss of cultural values and regional uniqueness	▪ Being exposed to commercialization and haphazard developments, the region lost its heavenly ambiance and now showing the effects of globalization.
17	Waste polluted freshwater streams.	▪ The roads are littered with bottles, wrappers, shoppers, leftovers of meals; Garbage piles washes down with each rainfall polluting the water reservoir.

18	Deteriorating buildings of British Era	▪ No conservation actions are implemented in letter and spirit.
19	Construction of buildings alien to the context	▪ Building materials and styles are alien to the surrounding. Concrete and glass destroyed the sense of place.
20	Climate Change and Warming	▪ Global & regional phenomenon effecting local environment as well.
21	Air Pollution	▪ Traffic, burning of timber for energy use, Bar-B-Q smoke at certain places.
22	Decreased Precipitation	▪ Deforestation & exhausted natural resources

Source: Extracted and constructed by the Consultants

CHAPTER 3; EXPLORING EXISTING SCENARIO: STUDY AREA PROFILING

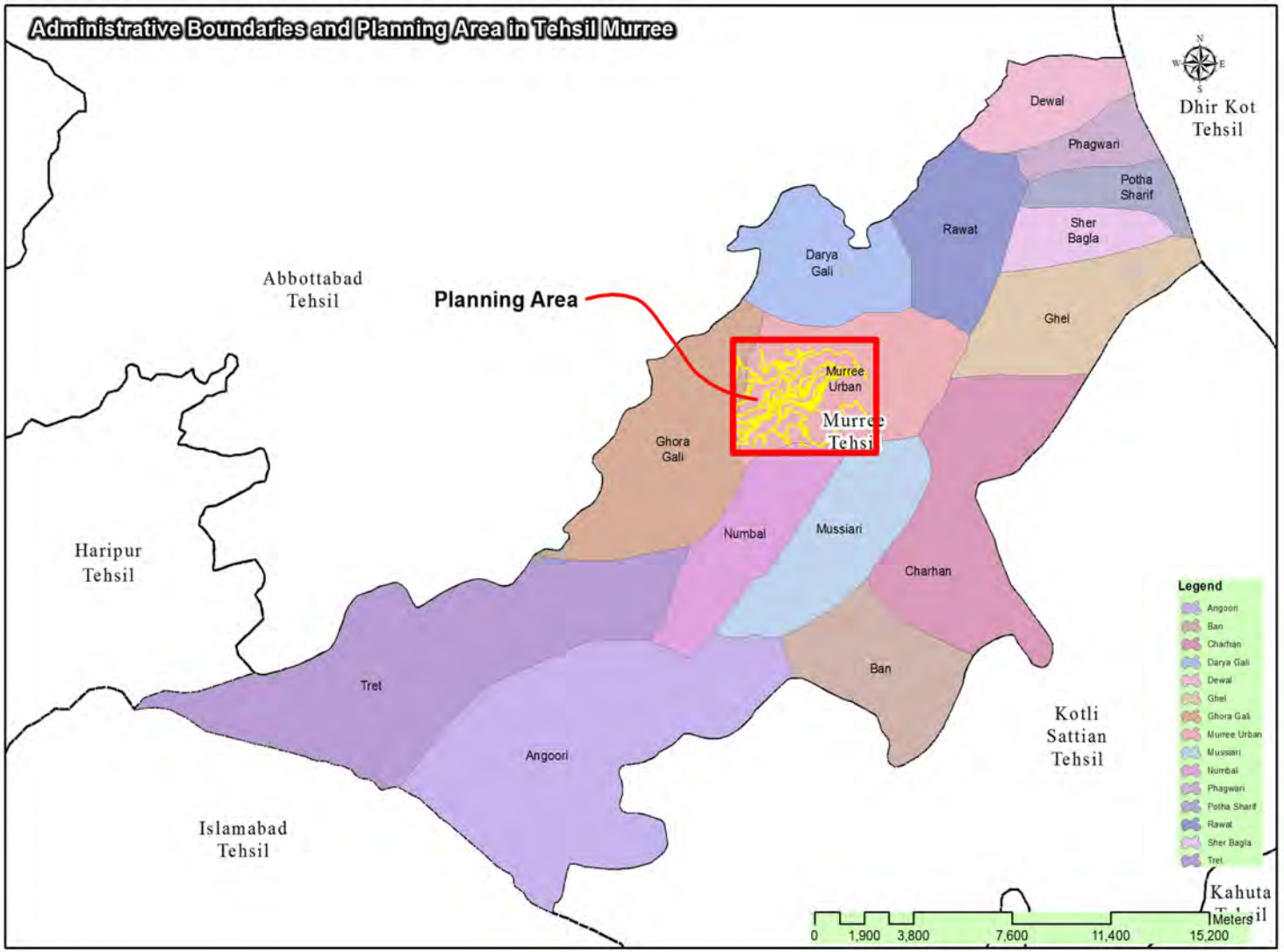
The focus of this segment is to define, explore, study and further developing a comprehensive presentation of existing study area profiles. The consultants engaged a team of field enumerators, supervisors, data compilers, GIS developers and analysts to lay out a more understandable picture of study area through development of GIS thematic maps supported with backend data and the end results are being shared onwards in this segment. Consultants have delineated two boundaries for their study purpose, first is Planning Study Area Urban and other is Planning Study Tehsil which covers whole of tehsil (Urban & Rural Settlements). Consultants did not follow TMA Murree's administrative limits and Urban UC boundary for the reasons:

1- Already notified urban UC area apparently further extends to the neighboring Nambal, Bansra gali and Masiari UC's and their landuse characteristics are turning urban.
2- Murree urban study / planning area reflects a complex mix of urban settlements including not only the traditional urban city core surrounding The Mall but also the Cantonment area, the rapidly growing adjacent urban areas that surround the core (Caurt Road, Pindi Point, Kashmir Point, Jheeka Galli, Kuldana, Sunny Bank) and the outlying peripheral urban settlements (Shawala, MIT Colony, Bansara Galli, Kashmiri Mohala, Nambal, Ihata Noor Khan, Dhobi Ghat) and the interstitial rural areas (Misiari and adjoining Nambal) that are likely to become contiguous through urban layered growth during the proposed next 20 years ahead Master Plan period.

Data sets given in coming segments are gathered primarily from primary source but, wherever, primary collection was not possible or beyond the scope entrusted to the consultants, secondary sources have been explored and results put forward for the analysis. All the data / information referred below are, primarily, gathered and extracted exclusively by the consultants, however, otherwise external sources are referred accordingly, where needed.

3.1 LOCAL CLIMATIC SYSTEMS AND VARIABILITY:

Pakistan lies on the western margin of the monsoon region, while Murree hills lie in the climatic division of sub-Tropical Continental Highlands. Vast variations in climate are caused by the differences in altitude, amount of winter snowfall, and duration and depth of the snow accumulation.



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

ADMINISTRATIVE BOUNDARIES AND PLANNING AREA IN TEHSIL MURREE

SHEET # -a **SCALE:** N.T.S

Generally the climate is cooler at higher altitude and warmer at lower ones. Spring and autumn are short. Murree receives about 1789 mm (approx. 70 inches) of annual precipitation in the form of rain and snowfall is approximately 89 mm in mean rainy days, however, different parts of the area receive varying amount of rainfall. The bulk of precipitation is received during the monsoon in July and August when the rainfall is usually in heavy bursts. The mean monthly rainfall varies between 33mm in November and 351mm in July. In winter snow falls above an altitude of 1200m, and persists above 1800m during January and February, especially on cooler slopes. The humidity varies between 80% in August to 27% in May. Illustrations attached gives out an impression of Murree climate in more detail.

3.2 GEODYNAMICS, SEISMOLOGY & LAND SLIDING:

Murree being the most developed summer resort of the country is subjected to tremendous development activities such construction of new roads / buildings, widening/extension of old ones, such as Rawalpindi-Kashmir road, Bypass road etc. Similarly large housing schemes such as MIT Housing scheme on the eastern slopes of the Murree ridge are focus of large-scale construction activities in the form of multistoried houses and apartment buildings.

Many of the past studies revealed that the major mass wasting process in Murree area is land sliding, triggered mainly due to **combined effects of natural causes such as inherited lithological and structural weaknesses and high precipitation rate, and manmade effects such as deforestation, large scale construction activities and poor drainage**. It is difficult to overcome the natural causes but it is greatly **needed to reduce the contributing effects of human activities** intensifying landslide problem. The area around Murree is extremely fragile but little work has been done so far to evaluate the risks of erosion and mass movement. Major emphasis has so far been on the engineering base remedies, which have been partially successful but have limited scope. **Major engineering work on various landslides has stabilized the movement for the time being but the enormous load added due to large-scale concrete work on the valley side has started showing adverse effects.** Large cracks are developing in the retaining walls and most of the channels constructed for diversion of drainage water, have been broken. New scarps are developing along major tension cracks on the hillside and movement has started along them. Engineering methods added with **bioengineering techniques (seeding, slope planting, vegetative gabion etc)** is considered effective to control soil erosion and mass movement, such as in the Kashmiri Bazar landslide area. Same techniques should be adopted at other landslide prone areas along with an efficient surface drainage and sewerage system.

Murree area occupies part of Himalayan foothills and Himalaya was created by collision of Indian plate with the Eurasian plate during Eocene time along a suture zone known as the Main Mantle Thrust (MMT) (Tahir kheli et al., 1979; Cowardet al., 1986), and is the most rapidly uplifting region on earth (Zeitler, 1958). The deformation progressively migrated southward away from the Early Eocene collision zone at the MMT and reached the Himalayan foothills by Miocene time. The Himalayan foothills also known as sub-Himalayas (Gansser, 1964) are defined as a set of rocks which are bound by major thrust faults such as Main Boundary

Thrust (MBT) and the Main Frontal Thrust (MFT) to the north and south respectively. Murree area lies in a seismically active zone due to its proximity with the active Murree Thurst (local name of MBT). On average earthquakes of intensity 4–5 are recorded on Richter scale.

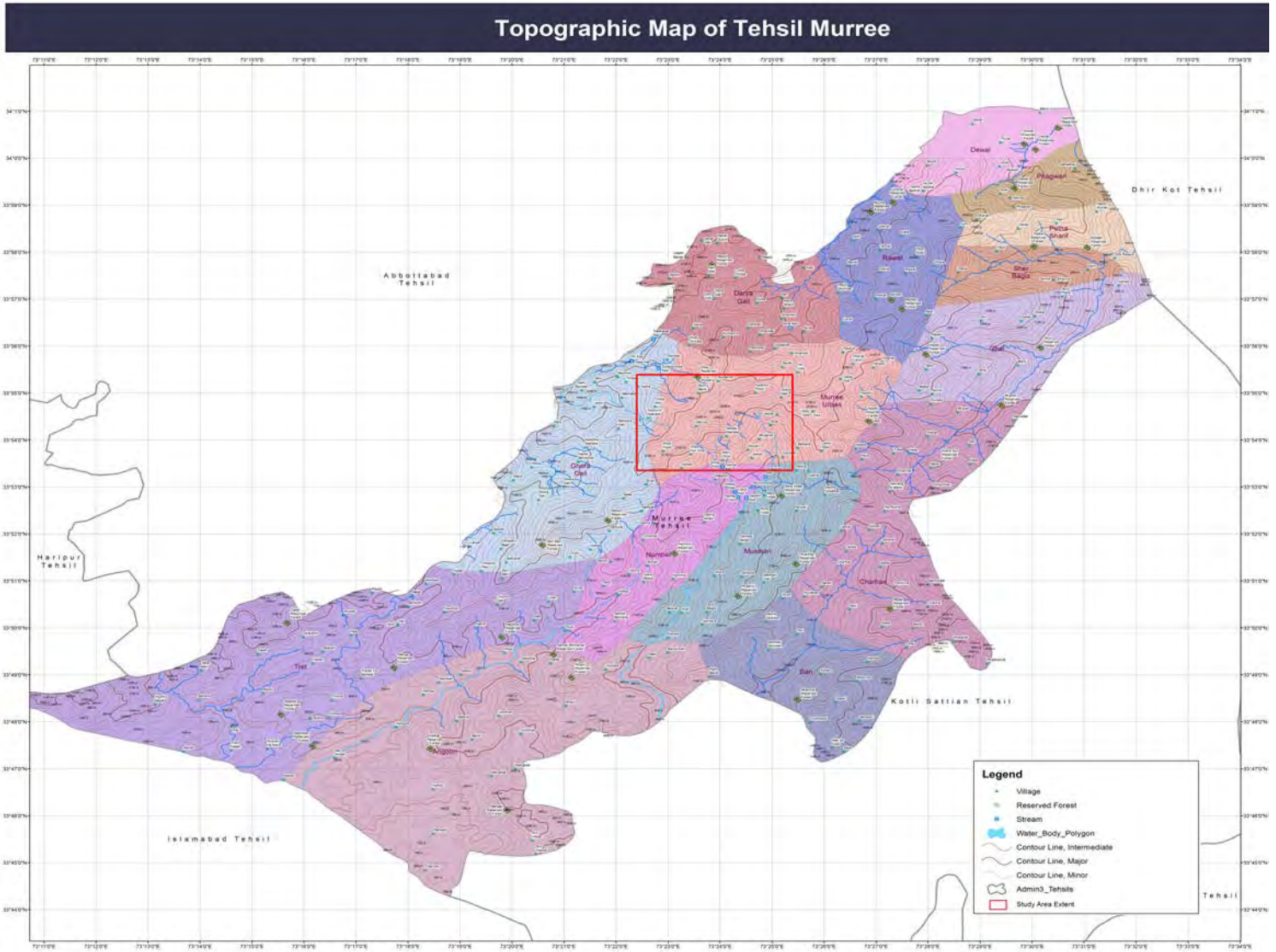
Murree has unique natural geological formation in the mountain region and this unique inherent geological structure in the Murree plays an important role in the slope instability. Landsliding and other mass movement phenomenon are inherited to the area due to weak component lithologies, complicated and intense deformation compounded in recent times by anthropogenic factors. Deformation associated with major faults such as MBT (Main Boundary Thrust) & MFT (Main Frontal Thrust) and its splays develop weak zones in strata, which ultimately lead to slope failure. Studies in the past, conducted of selected major landslides demonstrates that the landslides in the Murree area are primarily triggered by the slope failure along the bedrock-colluvium interface mainly in response to excavation for road construction/widening & other construction activities. Once initiated, the escarpment progressively migrate upslope engulfing steep tension cracks. At this stage the landslides involve both the colluvium as well as the bedrock. Joint planes, both pre-existing as well as those related with the slope failure facilitate rock sliding leaving behind striations and slickensides on planar surfaces of the intact bedrock.

The Nergoli-Aliot-Dewal road section is highly unstable. This is mainly due to a relatively **steeper slope, right from the Kashmiri Bazar Road down to Aliot**. Although, it has a fairly thick vegetation cover but it should be avoided from rehabilitation. One of the crucial observations is about reactivation of apparently stabilized old landslide zones. Excavation in these zones and unmanaged drainage causes these zones to commonly reactivate and trigger major new landslide mass-movement.

The molasses sediments (siltstone and sandstone) of Murree and Kuldana formation (Oligocene- Miocene) constitute most part of the Murree Hills. The sandstone of the Murree Formation is red to reddish gray in color, multistoried, fine to medium grained, cross-bedded, hard and compact constitutes 4-6m thick sequences that occasionally attain thickness of over 10m. The sandstone sequences are inter-bedded with red color, 10's of meter thick siltstone and shale. These fine-grained faces constitute more part of the formation and provide a weak zone for most of the faults to propagate through it.

The Murree Thrust trending NE-SW, is an emergent fault passing close to most of the landslides in the study area. Most part of the central ridge on which the Murree Town is located is a SW plunging syncline with the Murree Formation lying in the core of the syncline, and the beds dipping inward towards the core of the ridge. This structure provides a degree of structural stability to the ridge.

At the same time, combined with a lithological setup of alternating sandstone-siltstone-clay stone layers, **this structure makes the Murree ridge a major reservoir of water**. This is evident from the presence of many springs and seepages at the toes of major sandstone horizons (Rafiq et al., 1989). This seepage often facilitates slippage of rock and soil bodies at slopes and thus contributes to mass movement.



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

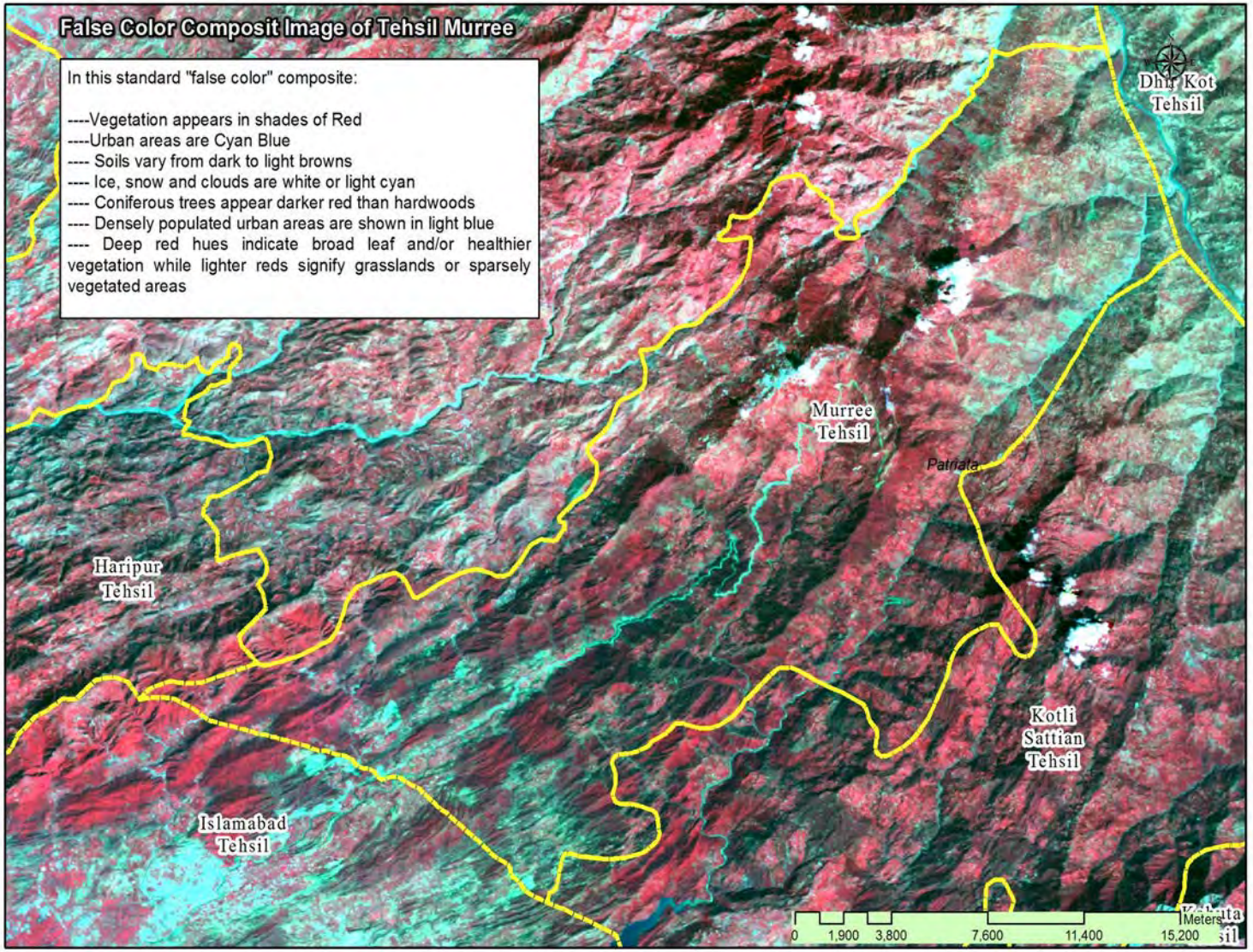
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

TOPOGRAPHIC MAP OF TEHSIL MURREE

SHEET # -a **SCALE: N.T.S**



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

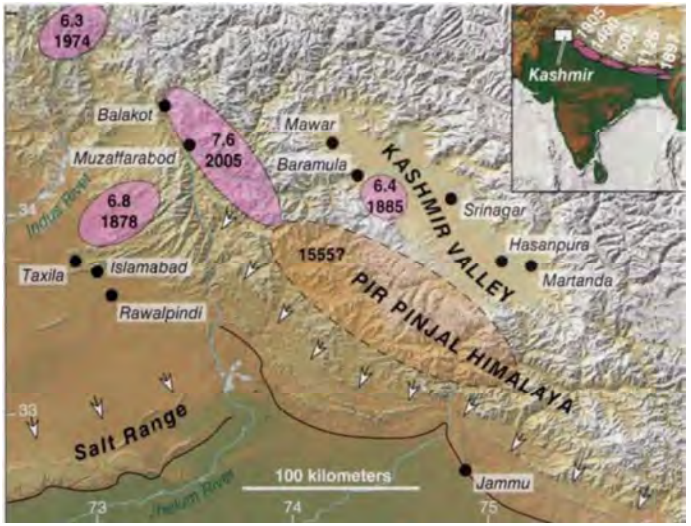
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

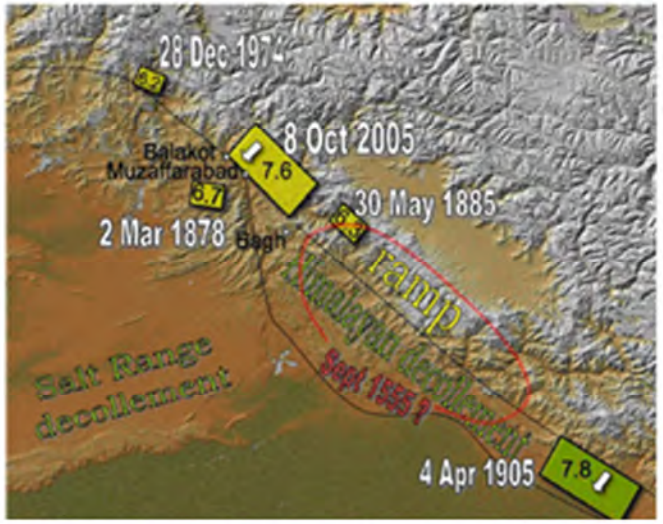
PROJECT:

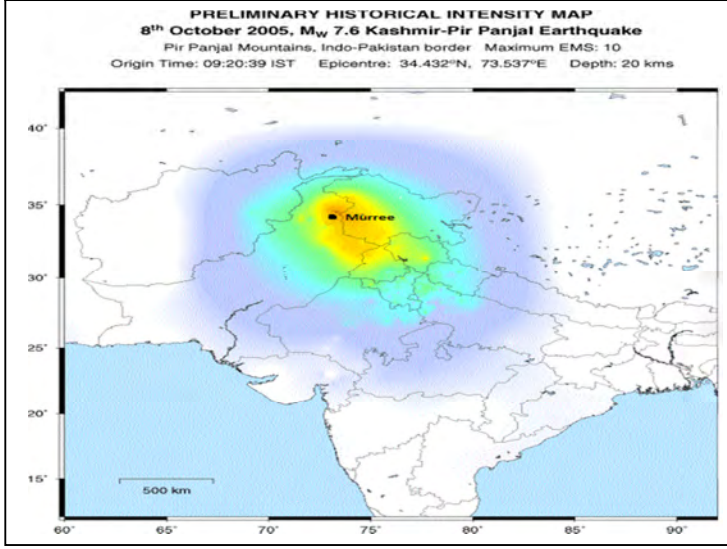
MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

FALSE COLOR COMPOSITE IMAGE OF TEHSIL MURREE

SHEET # -a **SCALE: N.T.S**









Note: These plans represent themes to be refinedin further planning. Land uses, streetpatterns, and exact alignments in all areas areconceptual / Indicative, and to be subjected to any kind of detailed evaluationand confirmation. Under no circumstancesshould these plans / illustrations be construed as final representations /directivesfor specific sites or areas.

Source:
http://cires.colorado.edu./bilham/kashmir%202005.htm

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

MAPS SHOWING EARTHQUAKE EVENTS & INTENSITY IN REGION

SHEET # **SCALE:**

Energy in the form of seismic waves is released when an earthquake occurs. These seismic waves while traveling through the ground accelerate the movement of the ground and **produce dynamic loads, increasing pore-water pressure and shear stresses in the slope** (Malik and Farooq, 1996). The Murree area lies in a seismically active zone (proximity to Pir Panjal Fault Line) due to its proximity with the active Murree Thrust along which magnitude 4.5 to 5.0 earthquakes on the Richter scale have been recorded as recently as 1977, nevertheless, earthquakes of magnitude 6 or even 7 can be expected along this zone

Studies show that the area with highest risk is located along the Aliot Kas and along parts of the Jhika Gali-Aliot road sections. The very high hazard areas constitute about 15% of the total area. About 40% of the area is vulnerable to moderate risks mostly in the Aliot Kas catchment. Most of area in the Kaner Kas catchment and along the Jhikka Gali-Bhurban road section is under moderate to low hazard.

Every year government spends a lot of money to stabilize affective area. These areas acquire some degree of natural stability and thus host vegetation cover similar to the stable areas underlain by intact bedrock. **During development works particularly during excavation at the foot of the slopes, these areas due to their high mean porosity and high water content are vulnerable to reactivation when the slopes are disturbed at their toes.**

Apart from a number of small landslides, the Nergoli-Aliot-Dewal Road Section is affected by a number of major landslides such as Aliot, Sehr Hadot, Kaseri, Dehla and Nergoli landslides. Major apparent causes for these landslides is improper drainage system, road under cutting, improper excavation, sudden change in slope angle and the complex geology of the area. Sehr Hadot and Dewal, which are the largest landslides in the area, have been triggered due to inadequate waste and rainwater disposal from the Jhika Gali-Kashmiri Bazar ridge in the landslide area for a long period of time.

References

Abbasi, I. A. 2001, et al. Slope failure and Landslide Mechanism, Murree area, north Pakistan, Geological Bulletin University of Peshawar Vol.35, 2003.

Gansser, A. 1964.Geology of the Himalayas.Wiley, New York, 273p.

Master Plan Murree Town, 1988 prepared by the office of Deputy Director, Regional Physical Planning Rawalpindi, Director of Physical Planning, Housing and Physical Planning Department, Government of Punjab.

Tahirkheli, R.A.K., Mattauer, M., Proust, F. and Tapponnier, P., 1979. The India-Eurasia suture zone in north Pakistan: Synthesis and interpretation of recent data at plate scale, in:
"Geodynamics of Pakistan" (edit, A. Farah and K.A. DeJong). Gest.Surv. Pakistan,
Quetta, Pakistan, 125-130.

Zeitler, P. K. 1958. Cooling history of N.W.Himalaya, Pakistan. Tectonics, 4 127-151

3.3 TOPOGRAPHY / TERRAIN:

The hill slopes in the Murree area are moderately steep. The slope angle varies from 40º - 50º in the upper reaches and 30-35º in the middle and lower reaches. An increase in steepness or slope gradient leads to an increase in shear stress on the potential failure plane and a decrease in normal stress. In the lower most reaches on the northeastern side of the Murree ridge along the Aliot kas, the slopes are exceptionally steep on both sides of the stream due to rapid down cutting of the stream bed, and large landslides are located along the stream banks. Geographically, Murree is a mountainous area, forming part of outer Himalayas,situated at 33 • • 52′ 35.706′′ to 33 • • 59′ 57.804′′ degree latitude and 73 • • 24′21.156′′ to 73 • • 31′ 4.8119′′ degree longitude. It consists of four gradually increasing spurs. On highest among them is situated Murree city itself at height of 7500 feet. Others include Patriata, Kuldana and Gharial. It is bounded by River Jhelum in the east, KPK districts of Abbottabad and Haripur to the North and West, Islamabad Capital Territory to the Southwest and Kotli Sattian Tehsil (Town) of Rawalpindi district to the South.

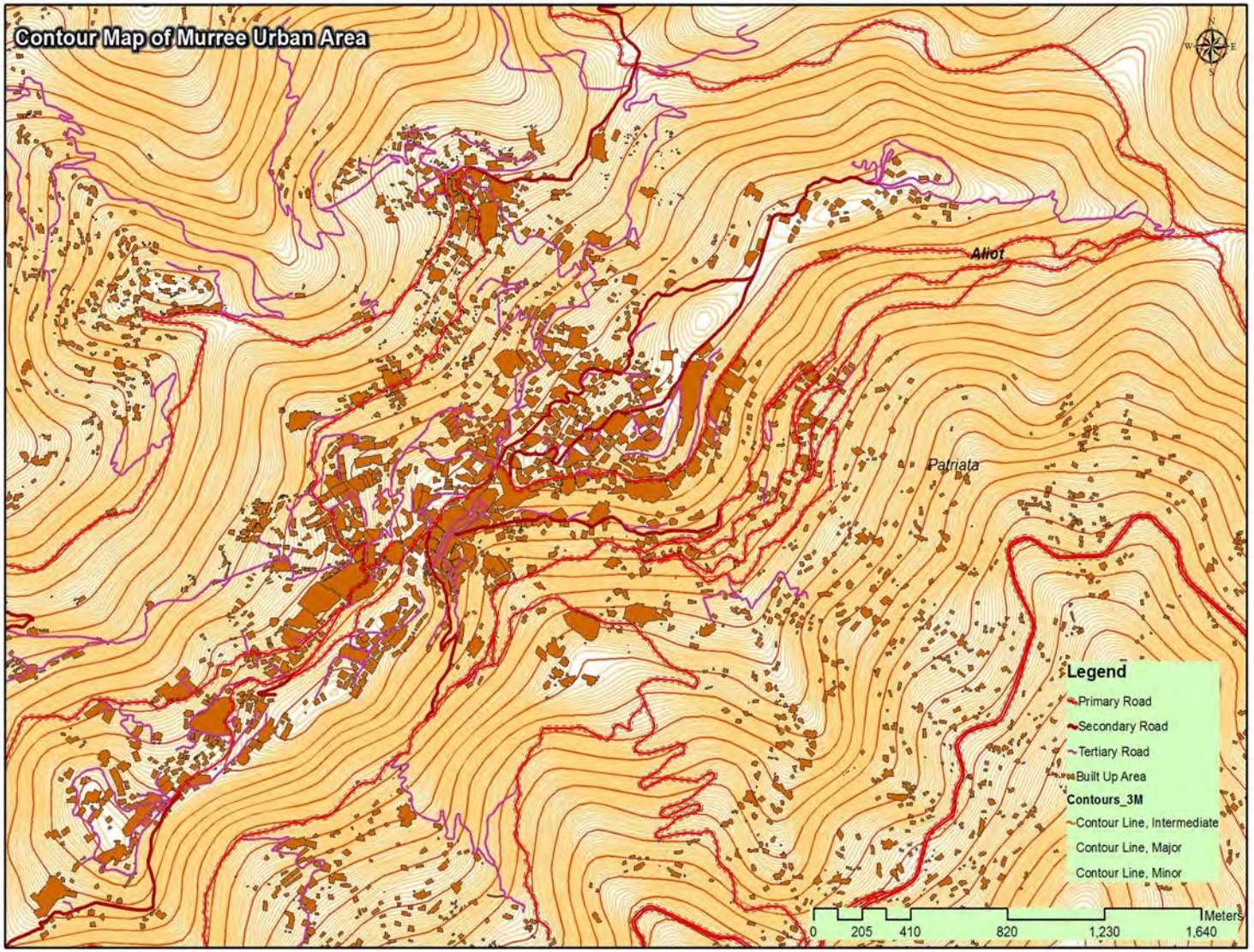
3.4 HYDROLOGY:

Hydrology is the study of the movement, distribution, and quality of water in any area under consideration and essentially includes the hydrologic cycle, water resources and environmental watershed sustainability.

Domains of hydrology includeshydrometeorology, surface hydrology, hydrogeology, drainage basin management and water quality, where water plays the central role. Oceanography and meteorology are not included because water is only one of many important aspects.Hydrological assessment for Murree has been done to:

- Determine the water balance of a region.
- Determine the agricultural water balance.
- Design riparian restoration projects.
- Mitigate and predicting flood, landslide and drought risk.
- Design irrigation schemes and managing agricultural productivity.
- Part of the hazard module in catastrophe modeling.
- Plan for provision of drinking water.
- Design sewers and urban drainage system.
- Analyze the impacts of antecedent moisture on sanitary sewer systems.
- Predict geomorphological changes, such as erosion or sedimentation.
- Assess the impacts of natural and anthropogenic environmental change on water resources.
- Assess the impacts of warming and climate change on water cycle.

Measurement is fundamental for assessing water resources and understanding the processes involved in the hydrologic cycle. Because the hydrologic cycle is so diverse, hydrologic measurement methods span many disciplines: including soils, oceanography, atmospheric science, geology, geophysics,



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

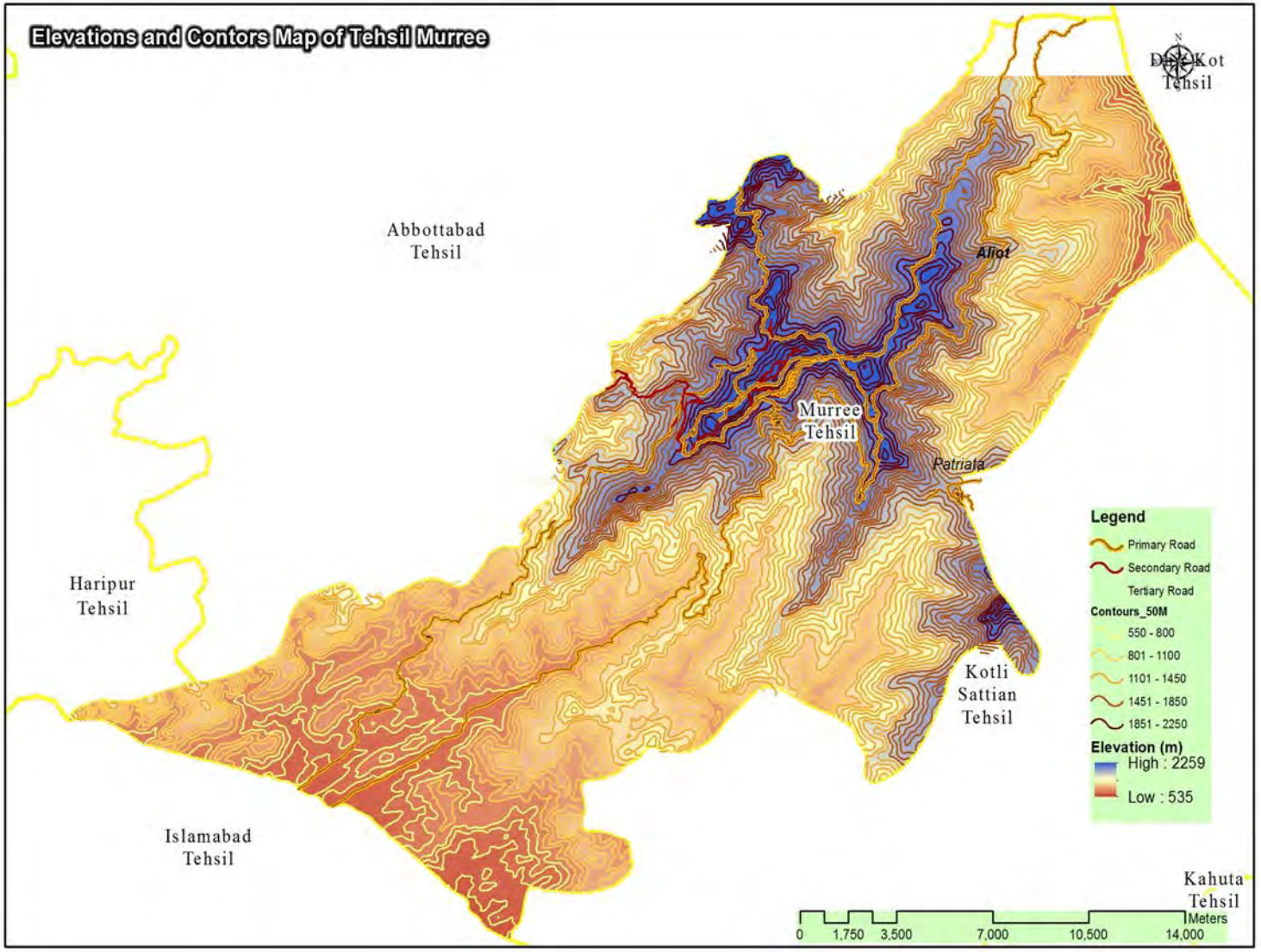
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

CONTOUR MAP OF MURREE URBAN AREA

SHEET # -a **SCALE: N.T.S**



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

ELEVATIONS AND CONTORS MAP OF TEHSIL MURREE

SHEET # -a **SCALE: N.T.S**

and limnology, to name a few. Here, hydrologic measurement methods are organized by hydrologic sub-disciplines. Each of these sub disciplines is addressed briefly with a practical discussion of the methods used to date and a bibliography of background information.

3.4.1 Water: Sources, Storage & Delivery:

The major source of water in Murree is streams / springs. Adequate precipitation (789 mm per annum) recharges the geology supported aquifers present alternating sandstone-siltstone-clay stone layers and thus feeding streams. The major source of municipal water supply is again streams near Donga Galli (2 Tanks, One built in 1890 other in 1986, capacity 3.2 million gallons & 3.0 million gallons respectively), Khani Tak (built in 1972, 100,00 gallons storage) and Masoot (built in 1986, 60-80,000 gallons capacity), Dhar Jawa (built in 1993, 1.3 million gallons peak capacity), Kashmir Point Tanks (Storage capacity 840000 Gallons) Water is pumped up to the reservoirs located at Kashmir Point, Pindi Point and further supplied to inhabitants through piped infrastructure and water bowsers.

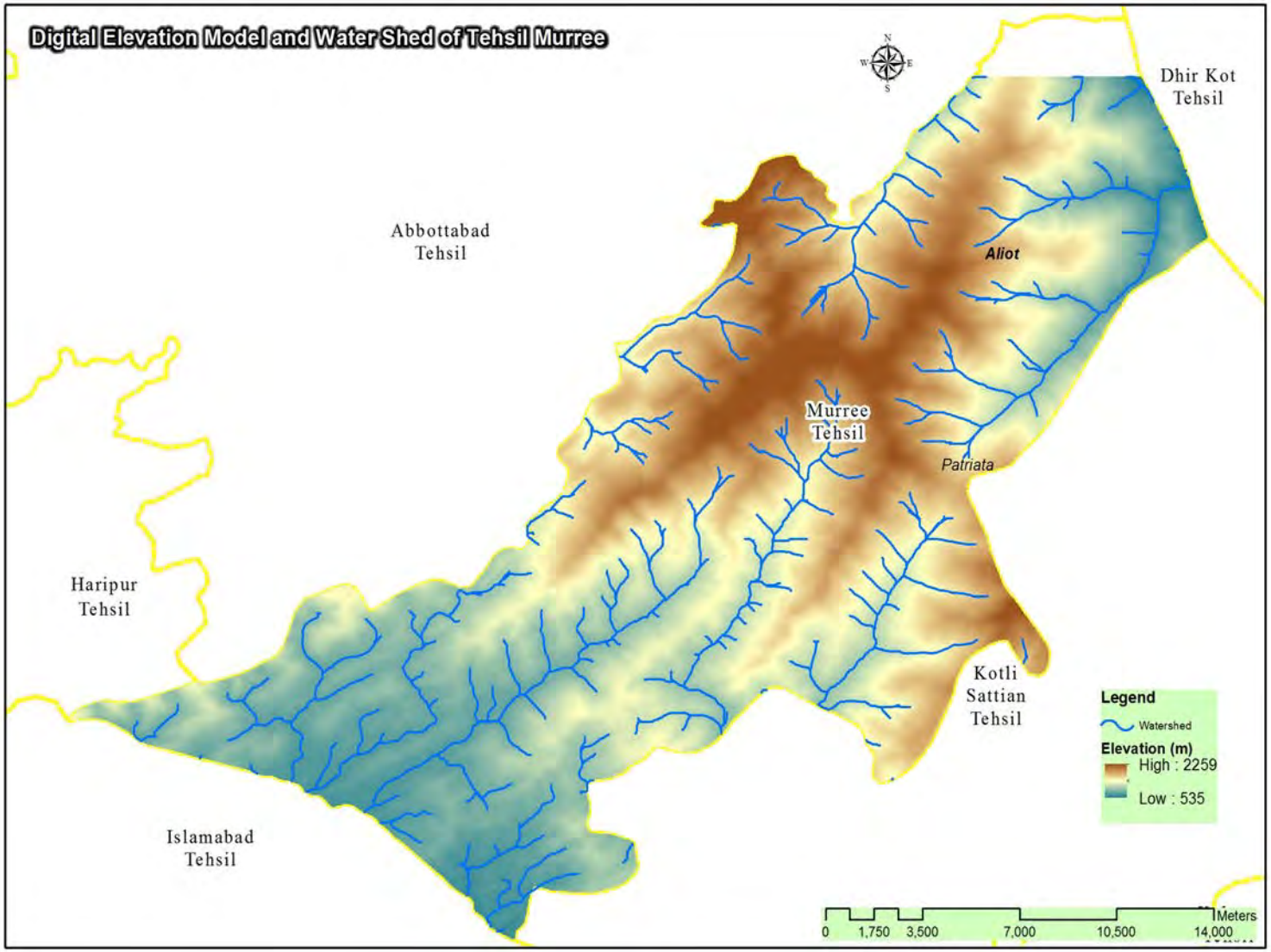
Following water supply schemes are in operation

- Harrow River Scheme-Connected at Pindi Point (working)
- Donga Galli Spring Scheme-Connected at Pindi Point (working)
- Khani Tank Spring Scheme- (working)
- Shawala Spring Scheme-Connected at Pindi Point (working)
- Masoot Spring Scheme-Connected at Pindi Point (Working)
- Jhelum River Scheme (Under Consideration)

Three departments in Murree are responsible to deliver water to inhabitants through dilapidated quality infrastructure mainly laid above surface in approximately 80% of urban area. These departments are TMA, PHE (Public Health Engineering) and Joint Water Board. TMA and PHE are responsible for civilian population whereas Joint Water Board is responsible for serving the cantonment.

3.4.2 CONSUMPTION:

As per TMA sources, peak water volume supplied in Murree is about 1.2 Million Gallons per day whereas the consultants have estimated that about 75000 inhabitants reside in Muree during peaks (30,000+ locals & 45,000 transient population), considering WHO and PHE water supply standard of 30 gallons per capita per day as a basic parameter, it is calculated that peak demand must be around 2.25 million gallons per day during summer peaks. However, authorities claim to provide about 1.2 million gallons per day during peaks and the state that the gap is only 20% but tourists and local inhabitants see this situation other way round. As consultants estimated, this gap is actually about 47%. The main component of water consumption in Murree can



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

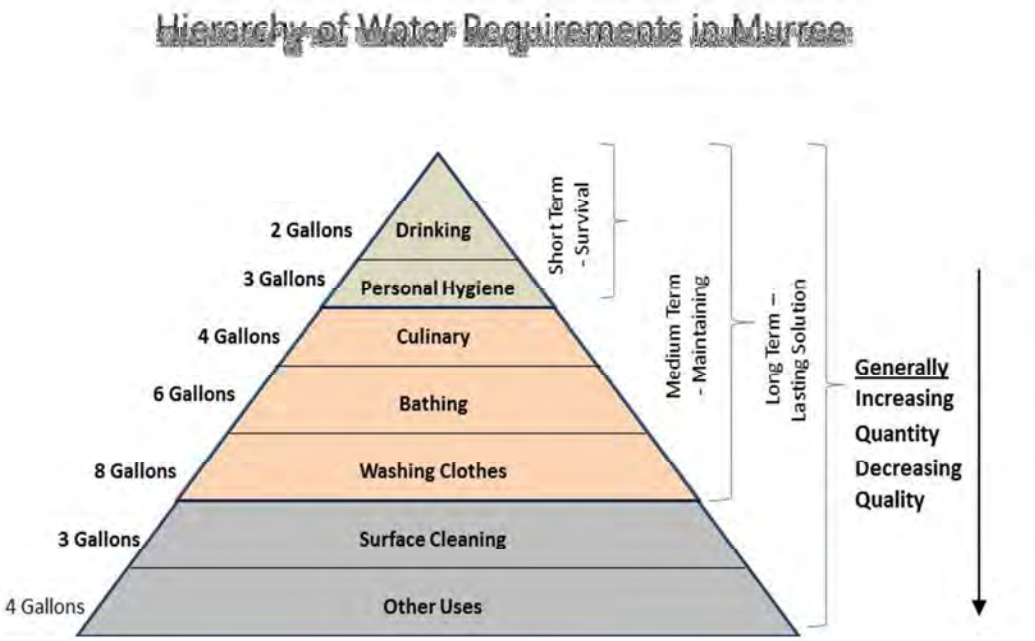
PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

DIGITAL ELEVATION MODEL AND WATER SHED OF TEHSIL MURREE

SHEET # -a **SCALE: N.T.S**

be divided into Urban and Rural. Rural inhabitants are totally dependent on springs / streams. Some attempts have been made to explore the subsoil availability but most subsoil reserves in the valley contain brackish reserves of water, even not suitable for washing / bathing. Urban consumers, largely, can be further classified in to residential (local & transient population) and commercial consumers (restaurants, lodgers, day trippers, internal floor washing etc.). During studies, it has also been revealed that a major part of tourists used bottled water (generally called Mineral Water) for drinking purposes and they often complained that shop keeper sell un-registered (unfamiliar locally filled) brands of bottled water that is equally bad for their health. To support their argument an independent study is needed.



3.4.3 WATER TARIFFS:

Major portion of water is supplied through piped network and bowsers. Bowsers having a normal capacity of 10,000 gallons can cost as much as Rs. 1300 per supply. TMA levies water supply tariff as Rs. 2.00 per 100 liter for residential use and Rs. 9.0 for commercial usage. Municipal water supply is metered in urban areas. With apparent supply inefficiency, bowsers do intensify traffic congestion on roads during peaks. Rural inhabitants do not have any piped supply network at all; their water requirements are being met by streams and springs.

3.4.4 WATER QUALITY:

In addition to water shortage, quality of supplied water is another common complaint lodged by both locals and tourists which shall be discussed in detail later in environmental profiling section. Laboratory analysis revealed that overall quality of water received from municipal sources is good for human usage but some results do indicate pathogens contamination. Apparently, biological quality of water at some point has been affected by mixing of open sewage into supply streams. Most parts of rural inhabitants even suffer more by mixing of open sewage water into the streams down the slopes.

3.4.5 WATERSHED:

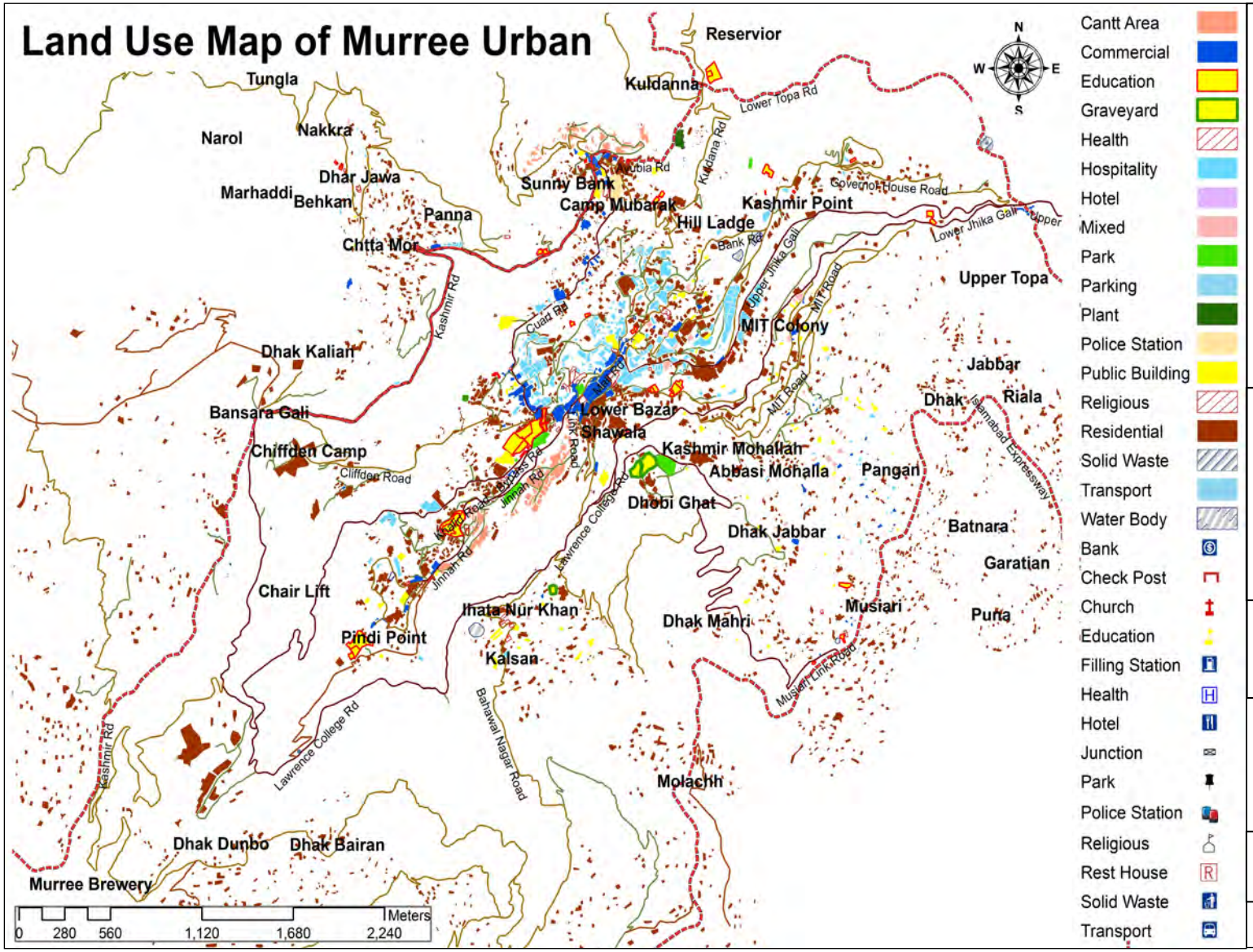
Murree hills watershed / catchment area serves The Swaan River, the most important stream of the Potohar region of Pakistan and a major hydrological feature of the Murree region. It drains much of the water of Potohar. It starts near a small village Bun in the foothills of Patriata and Murree. It provides water to Simlbee Dam, which is reservoir of water for Islamabad. Near Pharwala Fort it cuts through a high mountain range and that is a wonderful phenomenon of nature. The place is called Swan Cut. No stream can cut such a high mountain. It proves that, the Swaan was there before the formation of this range. And when the mountain rose through millions of years, the stream continued its path by cutting the rising mountain. Ling stream, following a relatively long course though Lehtrar and Kahuta falls in the Swaan near Sihala.

3.5 LANDUSE / URBAN DEVELOPMENT PROFILE:

Landuse is generally concerned with the sizes, proportion and distribution of different prevailing land uses in an urban setting and it constitute an information base for devising policy regarding landuse development permissions / restrictions, growth corridors, opportunities and constraints as well. Its purpose is to state existing situation which have emerged as a result of past development taken place in the area. This information base translates proportions of various land uses at different scales and the usual relative locations of commerce, tourism industry, housing, etc. into statistical attributes to help planners devise growth strategies in a more precise way. Eventually these proportions and forms of urban structure are reflected as past and present physical growth trends and gives out an overall impression of development propulsive forces such as socio-economic trends, to the decision makers involved.

3.5.1 LANDUSE CLASSIFICATION:

Land is considered as one of most important asset of our eco-systems and being utilized to cater for human activities like shelter, food production, commuting



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

LAND USE MAP OF MURREE URBAN

SHEET #

and all these consume this scarce urban reserve both positively & negatively. An analysis of the present land use pattern in a town is one of the first steps in the formulation of a Master Plan. Since the type and intensity of existing land uses have a strong influence on future development patterns, it is crucial to understand how land and other resources are used within a given area before recommendations can be developed relative to future land uses.

Murree was originally developed as a low-density summer residency for British troops and gradually turned up as an all season commercial tourist resort. In recent years, however, it has developed in an un-planned manner with extensive increase in hotels, restaurants, guest houses, shops and kiosks etc. The philosophy of the current plan is to retain and restore the original, green, wooded and spacious character of Murree.

For this purpose, a comprehensive study survey of the present settlements, forests and open areas will be carried out. The tourist amenities, quality residential areas, forests, parks, natural landscape and the views are all the items that should be maintained and developed.

With the growing resident / transient population of any town, the need for dwelling unit / shelter, commercial spaces, hospitality, road infrastructure is also increased and while planning more emphasis is given on this growth because it not only consumes maximum spatial area but also has significant social and environmental impacts thus attributed as basic human need.

So information and statistics relevant to land uses in profiling an area provides crucial information for policy and plan making. Housing means built structures or dwelling units built with the purpose of sheltering human beings (both local and visiting) while performing various functions as protection to human, ensuring privacy to residents and is also a symbol of social status. Shops and commercial buildings sustain trade and businesses, roads facilitate commuting from one point to the other, hospitality naturally serves transient/tourist population. There are various policies prevailing in Murree that affect the land use development which involve provision of Infrastructure, regulation of Land and Housing Development, organization of the Construction and Materials Industry, involvement of Public Sector and role of Informal Housing Units in order to satisfy the housing need. In land use classification, housing, commerce, public buildings, roads, infrastructure is considered to be some important sectors to be studied as it deals not only with physical aspects like number, condition of building, type and age of the structures but its scope also covers the social and economic aspects for instance affordability, house hold size and urban structure.

Following could be defined as main foci of a land use classification study:

-It must designate distribution, extent, spread and volume of each use like housing, commercial, industry, public infrastructure, social infrastructure, forest cover, green spaces etc.

-It must define standards for density and intensity for each use.









Note: These plans represent themes to be refinedin further planning. Land uses, streetpatterns, and exact alignments in all areas areconceptual / Indicative, and to be subjected to any kind of detailed evaluationand confirmation. Under no circumstancesshould these plans / illustrations be construed as final representations /directivesfor specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies 4th DIMENSION CONSULTING www. 4thdimensionpk.com

CLIENT:

TDCP TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

INCOMPATIBALE MULTI STOREY STRUCTURES

SHEET # **SCALE:**

-It must identify constraints and opportunities to the physical land use development.

Table 3.1: LANDUSE STATISTICS (PLANNING STUDY AREA URBAN)

Land Use	Area (Acres)	% age
Thick Forest	1816.75	42.08
Open Grazing Land	605.58	14.02
Built Up	778.61	18.03
Roads	259.54	6.01
Thin Vegetation	856.12	19.83
Total	4316.6	100

Source: Extracted by the Consultants on the basis Field Studies

Table 3.2: LAND USE CLASSIFICATION (PLANNING STUDY AREA URBAN)

CLASS	Cantt, Area	Residential	Commercial	Hospitality	Public	Mixed	*Total*
%age	4.8	74.0	4.1	8.9	6.1	1.8	100

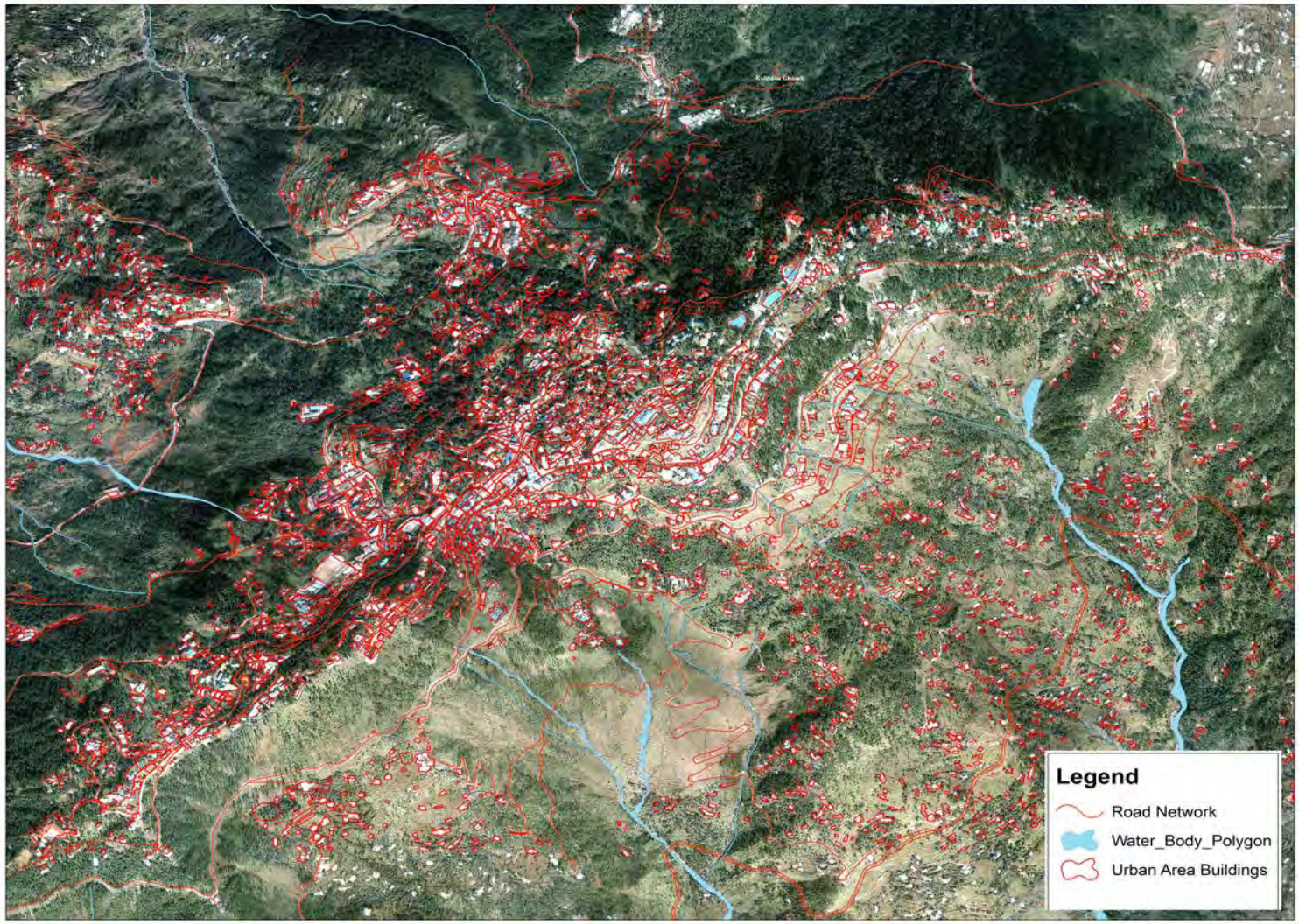
Source: Source: Extracted by the Consultants on the basis Field Studies

Table 3.3: ROOF TOP AREAS (URBAN BUILT UP)

LandUse Type	Number of Parcels	Area Square Meters	Area (Acres)	%
Cantt Area	144	69012	17.04	4.79
Commercial	123	55971	13.82	4.11
Education	36	76367	18.86	1.20
Graveyard	3	14425	3.56	0.10
Health	8	3234	0.79	0.26
Hospitality	266	237525	58.66	8.80
Mixed	56	26861	6.63	1.87
Parks	6	22508	5.55	0.20
Parking	2	1857	0.45	0.06
Plantain	1	4834	1.19	0.03
Public Building	110	74225	18.33	3.67
Religious	27	23857	5.89	0.90
Residential	2206	604897	149.40	73.76
Solid Waste	1	4940	1.22	0.03
Transport Linkages	2	839	0.20	0.06
Water Body	5	7330	1.81051	0.16
Total	2996	1228682	303.484454	100

Source: Extracted by the Consultants on the basis Field Studies

Building Parcels in Murree Urban Area



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies 4th DIMENSION CONSULTING www.4thdimensionpk.com

CLIENT:

TDCP TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

BUILDING PARCELS IN MURREE URBAN AREA

SHEET # -a **SCALE: N.T.S**

Housing is considered as an important component of urban structure. Housing provides a very basic need "Quality Shelter" to the inhabitants. Considering Murree, there are broadly two types of housing needs 1) for local population 2) for transient / tourist population. As per TMA's estimates local urban population of Murree has been estimated about 30,000 inhabitants as employing projections from 1998 census, urban inhabitants were only and since 1998 no census studies have been done. Considering 6 persons as an average household unit size, it has been estimated that there should be 5000 units. Land use study reveals that built up area covers 778.61 acres out of total 4316.6 acres of our Planning Study Area (considering most densely knit and problem rich urban core as our priority study area) within Murree Urban UC (source: GIS developed by the consultants as an outcome of land use classification field studies). Out of this area residential component is about 74% (567.94 Acres) and comprises about 6295 residential units, out of which 4400 are occupied by local residents, 144 for classified area residents, 472 summer house owned by people permanently residing outside Murree and occupied for 2-3 months period in summer. Rest 1273 units are available for transient / tourist population having 6-8 rooms accommodation on an average and thus providing about 16000 bed spaces for transient / tourist population. Summer houses / lodges provide another 4000 plus bed spaces for tourist owners in summer. Most of the residential structures in Murree are single, double and three storeyed (23.6%, 36.6% & 25.1 % respectively), rest are more than three storeyed apartment structures. Other land uses can be summerised as;

- Commercial / shops are another important component Murree Urban Built up. Shops / commercial constitutes 4.1 % of built up cover.
- Hospitality comes as third major component of Murree Urban Structure 8.9% of built up area. Hotels, rental rooms, lodges, apartments and restaurants come under hospitality structure.
- Mixed use structure found rarely in Murree, however, these are 1.8% of total built up cover.
- Public building constitutes 6.1% of built up area of Town.
- Roads network spreads on 259.5 acre i.e. about 6%.
- Open area can be be sub divided into following sub-components:
- Thick forest is 42% i.e. 1816 acres. (a part of natural open space)
- Thin vegetative cover is about 856 acre constituting 19.8% of urban cover. (a part of natural open space)
- Other open area/grazing land are about 605 acres, accounting 14% of total urban. (A part of natural open space).

Land use distribution in Tehsil area is given below. All mentioned statistics are populated from GIS based landuse mapping developed by the consultants after

field study & verifications. Murree Tehsil contains 259 rural residential settlements with few exceptions of being commercialized along major arteries.

Table 3.4: LANDUSE STATISTICS FOR TEHSIL

Land Use	Area (sq.km)	% age
Thick Forest	204.6	53.79
Open Grazing Land	39.9	10.49
Built Up	19.9	5.23
Roads	12.66	3.32
Thin Vegetation	103.26	27.15
Total	380.32	100

Source: Extracted by the Consultants on the basis Field Studies

3.5.2 COMPOSITION:

The landuse composition in Planning Study Area (Murree Urban) is as, primarily a thick forest, thin forest, open grazing/thin vegetation area, residential / housing, hospitality, commercial / shops, public/ utility and roads /streets as per distribution given below.

Table 3.5: RESIDENTIAL (TYPE)

	Single	Duplex	Multiplex	Rental Rooms	***Total***
%age	23.07	32.86	36.76	7.30	100

Source: Extracted by the Consultants on the basis Field Studies

Table 3.6: COMMERCIAL LANDUSE (COMPOSITION)

	Single Shops	Strip of Shops	Shopping Mall	Shop/ Restaurant	***Total***
%age	26.83	39.02	4.07	30.08	100.00

Source: Extracted by the Consultants on the basis Field Studies

Table 3.7: MERCHANDIZE TYPE

	Food Grain	Grocery	General Store	Fashion Store	Souvenir Store	***Total***
%age	13.82	26.02	34.96	9.76	15.45	100.00

Source: Extracted by the Consultants on the basis Field Studies

Table 3.8: USE OF GROUND FLOOR (MIXED USE BUILDING)

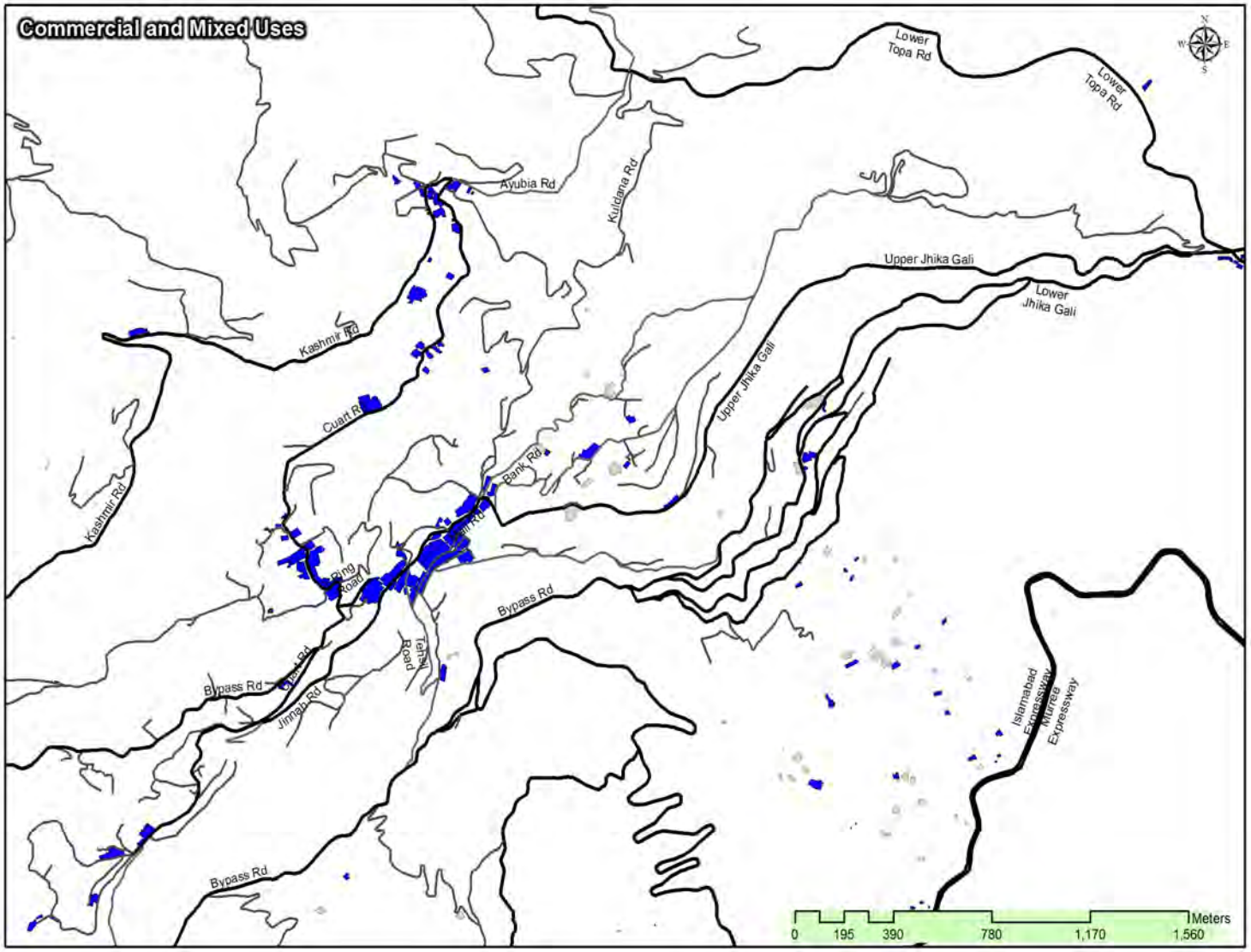
	Commercial	Offices	Parking	Residential	Restaurant	***Total***
%age	51.79	7.14	16.07	19.64	5.36	100.00

Source: Extracted by the Consultants on the basis Field Studies

Table 3.9: USE OF FIRST FLOOR (MIXED USE BUILDING)

	Commercial	Offices	Parking	Residential	Restaurant	***Total***
%age	28.57	12.50	5.36	44.64	8.93	100.00

Source: Extracted by the Consultants on the basis Field Studies



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

COMMERCIAL & MIXED USE LANDUSE MAP OF MURREE

SHEET # -a

Table 3.10: USE OF UPPER FLOORS (MIXED USE BUILDING)

	Commercial	Offices	Residential	Mixed	***Total***
%age	19.64	10.71	62.50	7.14	100.00

Source: Extracted by the Consultants on the basis Field Studies

Table 3.11: HOSPITALITY USE TYPE

	Hotel	Rental Apartments	Lodge/ Guest House	Rest House	***Total***
%age	78.01	15.84	2.64	3.52	100.00

Source: Extracted by the Consultants on the basis Field Studies

Table 3.12: PUBLIC BUILDINGS COMPOSITION

	Public Buildings	Health	Education	Religious	Communication	***Total***
%age	60.11	4.37	19.67	14.75	1.09	100.00

Source: Extracted by the Consultants on the basis Field Studies

3.5.3 AGE OF BUILDINGS:

Age of a building depends upon the material used for construction, topography of the area and use of building as well. Statistics relevant to age of the houses provides significant information about the existing physical condition of the area and also helps in tracing back the time of development of the area. It is more essential for the areas falling under seismic regions as they provide guidance for height regulations and regeneration strategies. As below table shows that most of the 60% of existing buildings in Murree urban is as old as about 30 years. In Murree, age characteristics are envisaged as;

Table 3.13: AGE OF BUILDING

	After 2005	1995-2005	1985-1995	1975-1985	Before 1975	***Total***
%age	8.50	30.20	21.81	11.38	28.11	100.00

Source: Extracted by the Consultants on the basis Field Studies

3.5.4 CONDITION:

The overall exquisiteness of an area primarily depends on the condition of the built environment. This Condition also reflects the economic situation prevailing and helps estimating the social status and setup of the people residing in the area. It means the knowledge about the condition of houses in the area can reveal about the physical as well as economic situation of the areas. Condition of the house is mainly relevant to the outer physical look or the external state of the building. General structural condition of buildings in Murree does not comply with engineering standards that's how 40% of these got affected during 2005

earthquake and most were PUBLIC BUILDINGS (Schools, BHU's etc.) which were totally collapsed to the ground and this obviously reflects poor construction standard of public sector buildings.

Table 3.14: CONDITION OF BUILDING

	Very Good	Good	Fair	Dilapidated	Temporary	***Total***
%age	10.61	56.45	24.92	6.41	1.61	100.00

Source: Extracted by the Consultants on the basis Field Studies

3.5.5 NUMBER OF STORIES / HEIGHT:

Determining / registration of height of buildings in a geologically disaster prone area like Murree is exceptionally important. Studies revealed that Murree's fragile natural geological setting (already discussed at length in Geodynamics part above) does not permit construction vertically as well as horizontally. Height zoning helps up keeping these geological limits imposed by the nature. Punjab Urban Unit has taken this into consideration while framing New Building Bye-Laws for Murree and imposed a height limit to a max of 30 feet from natural ground level. Some taller structures in Murree have been observed lengthening up to 9-10 floors even along The Mall. Below is a preview of prevalent building height scenario in Murree;

Table 3.15: NUMBER OF FLOORS (HOSPITALITY)

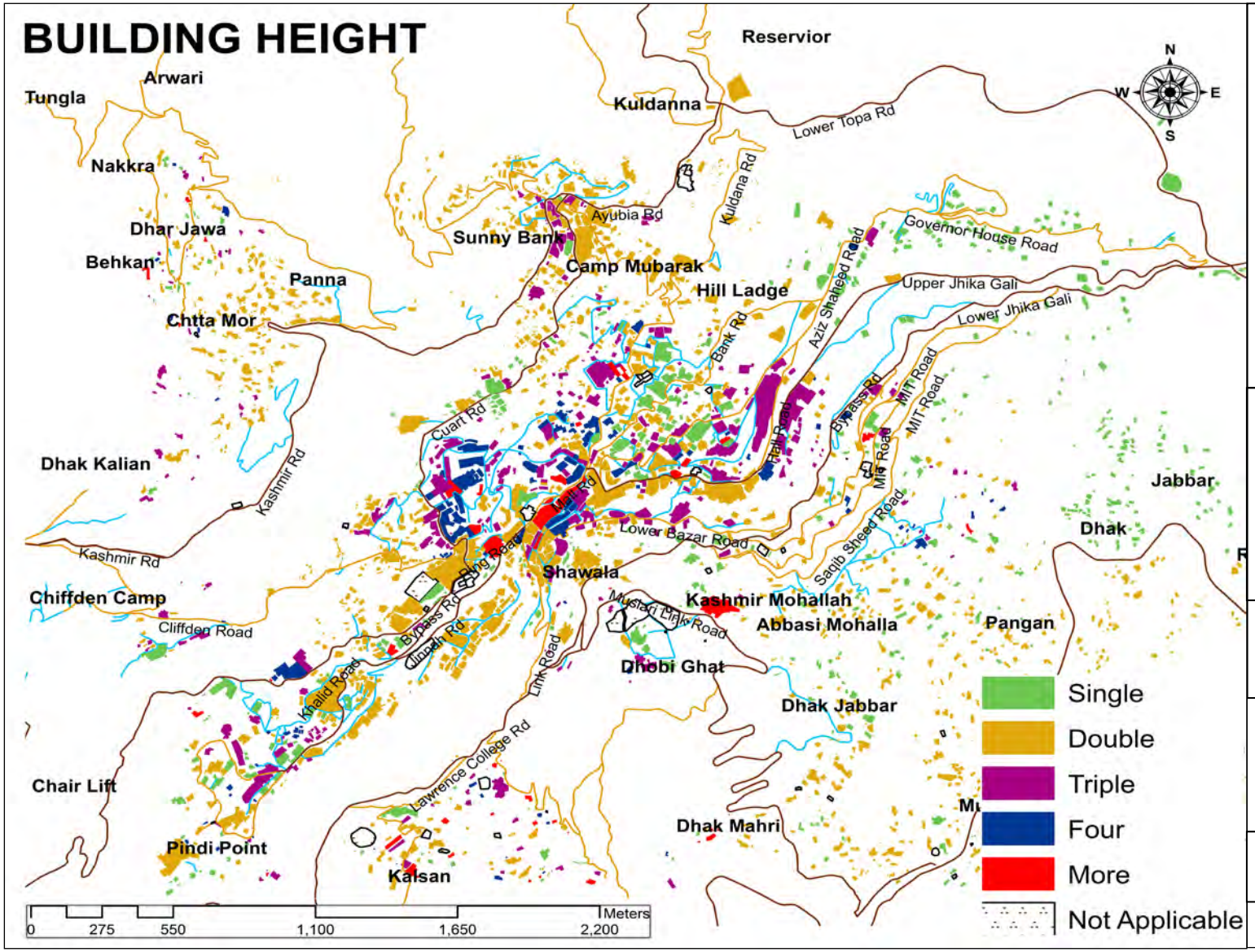
	SINGLE	Two	Three	Four	Five & Above	***Total***
%age	7.5	29.3	41.4	10.9	10.9	100

Source: Extracted by the Consultants on the basis Field Studies

Table 3.16: NUMBER OF FLOORS (OVERALL)

	Single	Two	Three	Four	Five & Above	***Total***
%age	24.68	42.48	28.54	3.59	0.71	100.00

Source: Extracted by the Consultants on the basis Field Studies



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www.4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

BUILDING HEIGHT

3.5.6 OWNERSHIP:

Master Plan 1988-2013 stated that in Murree 2% land is owned by Federal government, 3.26% by Provincial Govt., 1.66% by TMA, 6.17% by Cantonment, 29.80% privately and rest 57% is under forest cover and owned by Provincial Forest Department. As consultants studied in the field, private ownership is further subdivided as;

Table 3.17: OWNERSHIP (Built up Area)

	Local Owner	Out Station	Institution	On Lease	***Total***
%age	71.80	24.39	2.72	1.09	100.00

Source: Extracted by the Consultants on the basis Field Studies

Table 3.18: COMMERCIAL-OWNED BY

	Local Owner	Out Station	Defense	Institution	On Lease	***Total***
%age	55.28	13.82	0.81	14.63	15.46	100.00

Source: Extracted by the Consultants on the basis Field Studies

Table 3.19: OCCUPIED IN SEASON BY (RESIDENTIAL)

	Owner	Daily Rental	Weekly Rental	Employees	***Total***
%age	55.28	4.07	8.94	31.71	100.0

Source: Extracted by the Consultants on the basis Field Studies

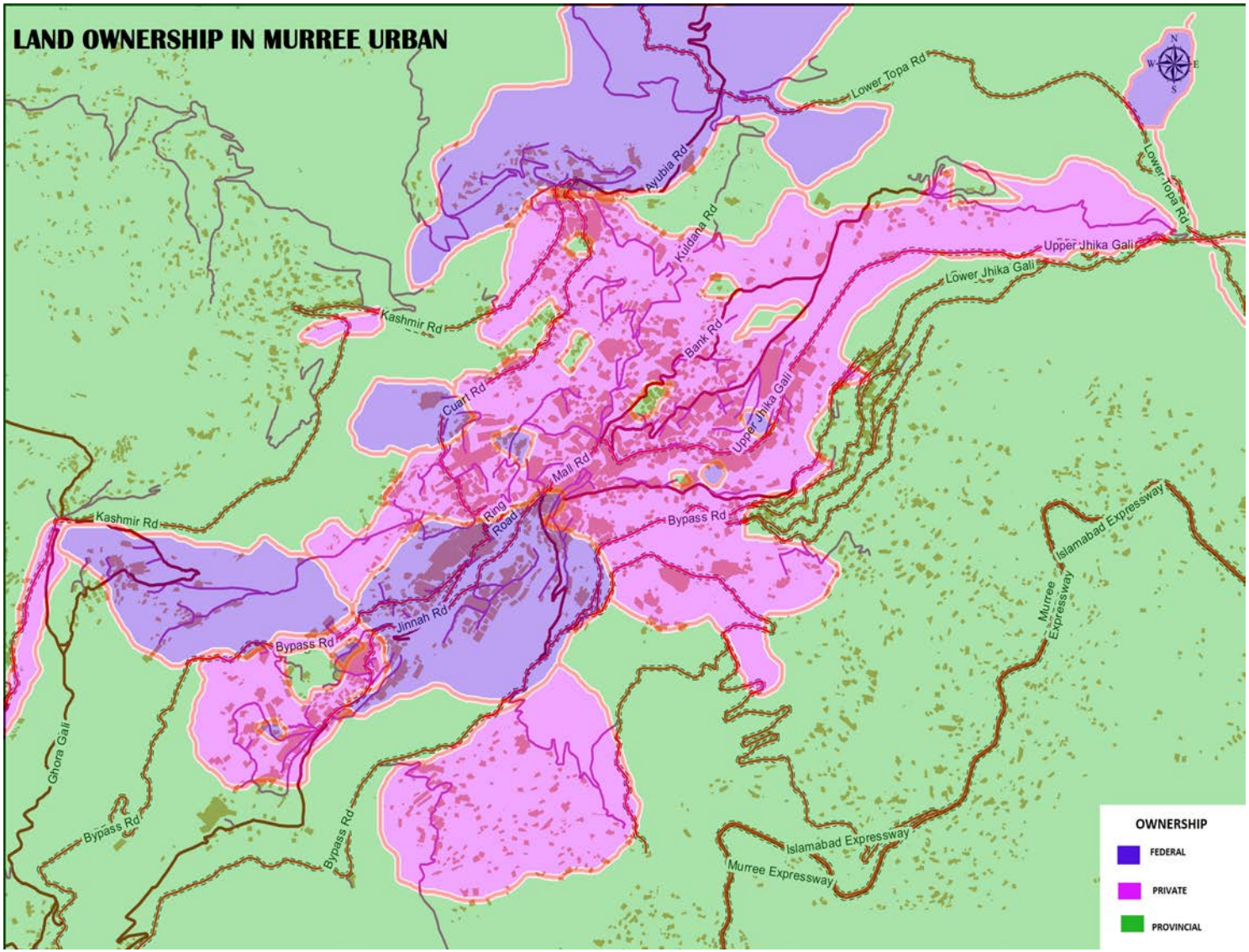
Table 3.20: OCCUPIED IN OFF SEASON BY

	Owner	Lease/ Rental	Servants	***Total***
%age	57.72	23.58	18.70	100.00

Source: Extracted by the Consultants on the basis Field Studies

3.5.7 QUALITY OF INTERIOR FINISHES:

Interior finishes includes the living spaces within residential buildings with a range of both natural and synthetic materials. The materials which are used to cover the interior like finishes of columns, fixed or movable walls, fixed or movable partitions or the materials of walls and ceilings of a building are included in the interior finishes. Interior of the house plays a very vital role in increasing its aesthetical sense. The quality of interior finishes thus gives life to the structure. The quality of interior finishes should ensure the durability. In general, quality of interiors both in hospitality and residential buildings is below average as compared to the other urban



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

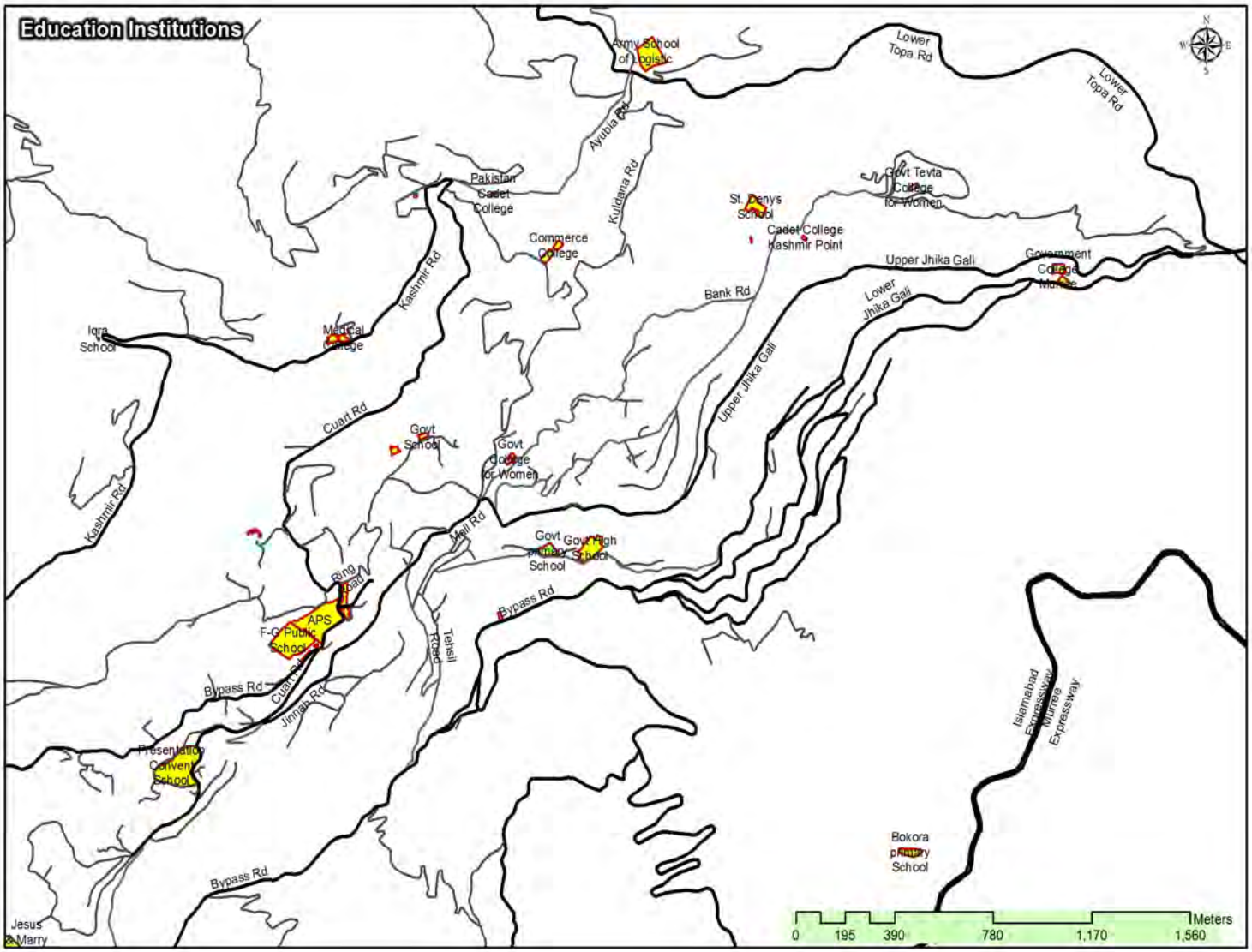
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

LAND OWNERSHIP IN MURREE

0 0.5 1 2 Km



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

EDUCATION FACILITIES MAP OF MURREE

SHEET # -a **SCALE: N.T.S**

areas of Pakistan. Architecture is poor, buildings apparently reflect non engagement of Architects / Interior designers during construction phase.

3.5.8 ACCESSIBILITY:

Accessibility means unobstructed, unhindered and direct access to every building parcel so as to provide maximum facilitation to the residents. Accessibility is a general term used to describe the degree to which services are available to as many people as possible. Accessibility can be viewed as the ability to access the desired land use. In physical planning, accessibility is considered as a basic component of landuse planning which clearly describes that all the residential neighborhoods must be surrounded by the arterial road providing uninterrupted and easy access to the residential area from the other parts of the city.

Table 3.21: WIDTH OF ACCESS ROAD

	0-10 Feet	11-20 Feet	21-30 Feet	31-40 Feet	41 Feet and Above	***Total***
%age	17.29	38.89	26.80	15.82	1.20	100.00

Source: Extracted by the Consultants on the basis Field Studies

3.5.9 FAÇADE' / URBAN DESIGN VALUE:

Urban design deals with the arrangement, appearance and functionality of towns and cities; it also includes the shaping, façade' and arranging the uses in urban public spaces by designing and management techniques. Urban design of any area plays a vital role in providing public environment so the people may feel comfortable. The urban public spaces are the areas which are used by the residents on day to day basis such as streets, parks and other public infrastructure. It is important to design the public spaces in the way they are experienced and used by the general public so that it will create sense of ownership in the people and they will then protect their surroundings. The urban design has a large value in the residential areas as some aspects of privately owned spaces like building façade and domestic gardens which also contribute as public space are considered in urban design of an area. Murree, predominantly lacks Urban Design value. Street furniture, public infrastructure, kiosks, building facades does not match with the indigenous characteristic of the area and lack architectural / urban design sagacity at large.

3.5.10 UTILITIES INSTALLED:

All kind of utilities of modern day life are installed in Murree buildings. These are mainly electricity, water supply, telephone (Landlines & mobile communication), internet (wireless & wired) and Sui gas (lately installed in 2009 in 65% of Murree urban). Rest of the proportions in both Murree urban & rural can be grasped from tables below;

Table 3.22: ENERGY SOURCE (COOKING/ HEATING) URBAN

	Firewood	LPG	Sui Gas	Electricity	***Total***
%age	12.45	19.99	65.08	2.48	100

Source: Extracted by the Consultants on the basis Field Studies

Table 3.23: ENERGY SOURCE (COOKING/ HEATING) Tehsil

	Firewood	LPG	Other	***Total***
%age	36.74	58.87	4.39	100

Source: Extracted by the Consultants on the basis Field Studies

Table 3.24: SOURCE OF WATER SUPPLY (Tehsil)

	Springs	Municipal Supply	Bowsers	Total
%age	79.5	14.5	6	100

Source: Extracted by the Consultants on the basis Field Studies

Table 3.25: EFFLUENT DISPOSAL

	Municipal Sewer	Private Sewer	Open Drain	Septic Tank	***Total***
%age	23.10	16.08	40.93	19.87	100

Source: Extracted by the Consultants on the basis Field Studies

Table 3.26: SOLID WASTE COLLECTION/ DISPOSAL

	Self	Scavenging	Municipal	Open Dumping	***Total***
%age	13.83	1.91	28.00	56.24	100

Source: Extracted by the Consultants on the basis Field Studies

3.5.11 PLOT AREA COVERAGE:

Plot coverage in Murree urban is about 95% as observed by the consultants during field work. Most of the commercial / hospitality buildings have been built on almost 100% of the plot area. However, some privately owned residences / lodges show a little eccentricity.

3.5.12 HEALTH / SAFETY ASPECTS:

Maintaining physical health and safety of inhabitants is considered a prime concern of urban planning practices. The areas should be designed so that the Historical, natural and manmade features show compatibility and are in harmony with each other and should provide a living and healthy disease / disaster resilient environment to the residents. For healthy environment building orientation plays a vital role in this aspect as the houses should be oriented so that maximum sunlight will be available during the day time and they should remain cold in summer and warm in winter. Similarly, for the rooms ventilation is a very important factor. House design should incorporate the fact that windows and ventilators should be properly placed for meeting the fresh air requirement. The

safety of houses is also very important consideration for example the house should be made with the fire resistance material to ensure safety in case of emergency. The design of the neighborhood and house building should be such that it will maintain the privacy of the residents. Traffic conditions on residential streets can greatly affect neighborhood livability, interaction, social/ economic mobility and therefore, is an important aspect to be equally well-thought-out for the safety of area.

In Murree, health and safety condition of habitable structures is generally poor, except some privately owned summer houses and A-Class hotels. In summer, climate is virtuous but dampness stink internal environment of habitable places. Streets are foul in general, apparent cause is open disposal of sewage, however, rain, most of the time, washes away such odds. Heating in extreme winters is another issue. Structures are generally not climate resistant / thermally insulated in wind chills, so places energy efficiency on stress. More heating required to make internal environments livable. Before introduction of Sui Gas in 2009, major source of heating was timber wood, however abusive use of Sui Gas for heating is not appreciable. Murree as being in earthquake prone area demands disaster resilient structures but unfortunately they are not (recently an attempt has been made by Punjab Urban Unit to make current building bye laws disaster resilient). In 2005 an earthquake of magnitude 7.6 hit Pakistan and as an aftermath, more than 40% of the structures (UNDP Studied 1500 buildings for damage assessment) in Murree got affected ranging from mild to severe damages and even loss of some human lives also envisaged.

3.5.13 OWNERSHIP TYPE:

Land ownership in Murree is broadly divided into two classes, private ownership and public sector ownership. Most of the open land in Tehsil is owned by Punjab Forest Department and tenancy rights are given to the inhabitants. Constructed buildings in Murree Urban area are mostly owned by private sector. Hospitality and commercial buildings are owned by both locals and non-locals equally, however, figures given below give an idea of ownership in town. Statistics gathered from field show 71.8% ownership is local among privately owned lands.

Table 3.27: OWNER

	Local Owner	Out Station	Institution	On Lease	***Total***
%age	71.8	24.4	2.7	1.1	100

Source: Extracted by the Consultants on the basis Field Studies

3.5.14 RENT RANGE (HOSPITALITY):

Rent of hospitality equally affects tourists visit duration and stay planning. Rent of hotels and rooms keep varying over the year and reaches to the

maximum in summer. As the demand rises, higher rents are obvious. Peak tourist season spans over only three months during summer (June-August). Hotel owners reasoned that they have to make their all years overheads from this peak season, on the other hand visitors complain higher rental values and sometime they have to come back due to this unexpected rise but this can simply be explained as higher demand and profit making phenomenon and it has no relationship with availability of rental spaces as hotel owners association of Murree states that maximum occupancy is observed up to 85% in peak season.

Table 3.28: RENT RANGE (HOSPITALITY)

	Less than Rs. 500	Rs. 501-Rs. 1000	Rs. 1001-Rs. 1500	Rs. 1501-Rs. 2000	Rs. 2001-Rs. 2500	Rs. 2500-Above	*Total*
%age	7.14	10.53	21.80	15.41	13.53	31.58	100.00

Source: Extracted by the Consultants on the basis Field Studies

Table 3.29: OCCUPANCY LEVEL IN THE SUMMER (OWNERS STATEMENT)

	Up to 50%	51-60	61-70	71-80	81-90	91-100	*Total*
%age	14.7	13.9	8.6	12.8	15.0	35.0	100

Source: Extracted by the Consultants on the basis Field Studies

3.5.15 QUALITY OF SERVICE (HOSPITALITY):

Most of the tourist does not seem satisfied with the quality of service being provided by the Hospitality Industry. This is an apparent result of over-crowding in peak season. This privation has also been observed in even some high end stared hotels in the region as well. Tourists complain that they don't get real value for their money. (QUALITEST studies conducted by the consultants)

3.5.16 LEISURE / RECREATIONAL/ OPEN SPACES:

In any urban structure, there are two type of open spaces; natural open spaces and planned open spaces. Murree Town is extravagantly surrounded by a whole vista of natural open spaces covering almost 75% of landscape. Planned open / recreational sites are a rare element of Murree Urban Structure, a brief account of such settings is as;

TDCP Sky ride Project – Patriata:

Patriata is 25 Km from Murree and has become a new tourist place. TDCP has set up a chairlift and cable car system, which takes visitors up to Patriata Ridge in two stages from Gulehria Galli. The first stage is by chair lift up to Patriata Bazaar. From here visitors transfer to cable car gondolas for the ride to Patriata Ridge. A restaurant has also been established. Further plans include development of wildlife-park at the mid-station.

Chair Lift: Pindi Point to Bansara Galli

- A beautiful site for tourist attraction, 1.5 km long.

- Offers scenic setting of Murree Hills.
- Chair lift crosses through Jungle which shows a pure natural serenity.

Hiking Tracks from Pindi Point to Bye Pass Road

- Steep with little steps.
- To some extent slippery.
- In Good Condition.

View Point at Kashmir Point Murree

Japan Pakistan Friendship an agreement is made in June 2009. Build at the road of Kashmir Point to Governor House Murree.

Soft Wheel Train Station at Kashmir Point, Bank Road

- Inaugurated in 2011, an exclusive project of TDCP
- Rs.100/- fare for passenger.
- 15 kiosks are available here for tourists.
- These all are situated at Kashmir Point near TRAIN STATION on Bank Road.
- 15 filtrations plants are also available for tourist pure water is available.

Kashmir Point, Bagh-e-Shaheedan and PIA Park

- Train from Kashmir Point to Government House take round visit and shows beautiful scenery of Murree and also Kashmir Hills.
- Water tank which supplies the drinking water throughout the Murree Town.
- Top hill point which shows both the sides. One side changle Hills other Kashmir Hills.
- Natural view attracts the people to visit this place.
- In May and June we can see the Ice Glacier from this point.
- In July and August this point almost seen covered with full fog. This scene attacks the poets and they feel it as a paradise.
- One dragon and few park activities are present for children.
- Many refreshment points are available for tourists.
- Both Baghe-Shaheedan and PIA Park are located around scenic Kashmir Point; renovation of both planned spaces is underway.

Two Hiking Tracks from Kuldana Chowk To Kashmir Point Murree

- Track is partly damaged from start.
- Partly damaged from middle
- Steep & slippery,this is very harmful for pedestrians.

Hiking Track from Dairy Farm to President House

- This is also partly damaged.
- Steep and slippery.

Horse/Pony Ridding

- Another exclusive entertainment for tourists specially children.

- Beautiful horses are available for a ride at Kashmir point as well as Pindi Point.

Bansara Galli Water Falls

- Beautiful scenic points which attracts the tourist.
- Two little water falls closely set by the nature.
- Water is not pure which flows in this point.
- Because of open dumping many polythene shopping bags come along water to this point

Wild Life Park Basra Galli Murree

- Having ample car parking
- 5 YAKs are also present in this park
- Hiran is also there.
- Hiking tracks with natural stones.
- Pure natural view.
- Siberian tiger is also there.
- Silver Pheasant is also there in park.
- Park is not properly maintained.
- Approach road is very steep and badly damaged.
- Road is not suitable for cars.
- All the animals are not being fed properly and not in perfect health.

Amphi theatre at bank Road

3.5.17 TOURIST ATTRACTING HERITAGE:

Mandir

It is situated in Sadique Chowk near Jamia Masjid Hanfi.

- This Building is now used as a hotel, and mixed use.
- The access road of this Building is about 20 feet.
- After the independence of Pakistan, this Building is under the ownership of Auqaf (Evacuee Trust property Board).
- The Building is used for daily routine work.
- The left side of the Building has been reconstructed.
- The Auqaf has provided this Building to the people.

Government High School, Murree

- It is an old building situated in Murree town.
- It is still used for educational purpose.
- On third part of this historical institution is dilapidated.
- Now the Government is paying attention and has reconstructed some parts.
- Many famous people have studied from this institution.

Jaima Masjid Hanfia, Mochi Mandi Murree

- It is situated in Mochi Mandi Murree near Tehsil Office.
- It was established before the independence of Pakistan.
- It is under the supervision of Government.

- The Masjid is still used for religious purpose.

Assistant Commissioner Office Building

- It is situated near GPO Chowk Murree.
- It was established in 1945.
- The Building is preserved.
- It is under the occupancy of Government.
- It is still used for its real purpose.

G.P.O. Building: The Legendary Landmark

- This Building is situated on Main Mall Road.
- It was reconstructed in 1955. Its façade has been completely altered.
- It is still used for its real purpose.
- The Building is in good condition,

HBL Jinnah Road

- This Building is situated in GPO Chowk.
- This Building is very historical and it was established in 1935.
- It is used for its real purpose.
- It is preserved.

Red Onion

- It is situated on Mall Road.
- It was established in the era of 1930s.
- It is used as a restaurant and mixed used.
- It is preserved
- Its ownership/ occupancy is with a local person.

The Holy Trinity Church

- It was established in the era of 1860s.
- It is under the supervision of Christian Community.
- It is still used for religious purposes.

Al-Saud Hotel

- It is situated on Mall Road.
- It is established in 1870.
- It is used for hoteling purposes and mixed used.

Presentation Convent School Murree

- It is situated near CMH.
- It was established in 1917.
- It is still used for educational purpose.
- It is preserved.

Lintott Cafe

- It is situated on Main Mall Road.
- It was established in the era of 1930s.
- It is used as a restaurant.

- It is preserved.
- Its owner is out of station.

Thana Police Station

- It is situated in Mochi Mandi near Jaima Masjid Hanfia.
- It is preserved.
- It is still used for its real purpose.

Cecil Hotel: Sold / Destroyed Heritage

- It was established in the era of 1920s.
- It is located near Bus Station.
- It was demolished and then reconstructed.
- It is now preserved.
- It is used for Hoteling purpose and as a Guest House.

Jesus N Marry

- It was established in the era of 1890s.
- It is located in Pindi Point.
- It is preserved.
- It is still used for educational purpose.

Bright Land Hotel & the Chambers Hotel near Bus Stand

- Established before the independence of Pakistan.
- Still in use.
- It is preserved.

Catholic Church

- It was established in the era of 1930s.
- It is preserved.
- It is used for religious purpose.
- It is located near Convent School.

Sindh House

- It is located near Pindi Point.
- It is used by the Government.
- It is preserved.
- It was established in 1960s.

St. Deny High School

- It was established in 1890s.
- It is located in Kashmir Point and used for educational purpose
- It was burnt and reconstruction is going on.

Lawrence College, Ghora Galli

The Lawrence College, Ghora Galli, Murree is situated at the beautiful foothills of the Himalayas at a height of about 1950 meters (6397 feet) above the sea level, on a pine-covered spur. The estate covers an area of about 150 acres and lies at a distance of about 2 km to the Rawalpindi-Murree Road, some 4 km from Murree and 57 km from Rawalpindi. The climate is excellent. In summers, the temperature seldom reaches 35 C. Monsoon rains of July and August

areintermittent. During the cold weather, when the estate is usually snow-bound, the college is closed for three months, from December to February.

St Denys High School Church

- It was established in 1932.
- It is located in Kashmir Point.
- It is used for religious purpose.
- It is preserved.

Murree Brewery

- It is situated on Main bye- Pass Road towards Rawalpindi.
- It was established in 1870.
- Its condition is very bad.
- Now the company has shifted from Murree.

Lady Roberts Guest House

- The Lady Roberts was established in 1885.
- It is located in Upper Jhika Galli Road.
- First it was Lady Robert Home but 1947 it was changed into Guest House.
- Now it is preserved.

3.6 INFRASTRUCTURE PROFILE:

3.6.1 PHYSICAL INFRASTRUCTURE:

Water Supply System:

Water in Urban area is being supplied by jointly by TMA, PHE & joint Water Board. In urban area most part is being fed through piped infrastructure (mostly open and has been wear out over time and most sections need replacement) and water bowsers. In Tehsil rural area, major source is springs / streams. Quality and supply issues have already been discussed at length in HYDROLOGY section as well,

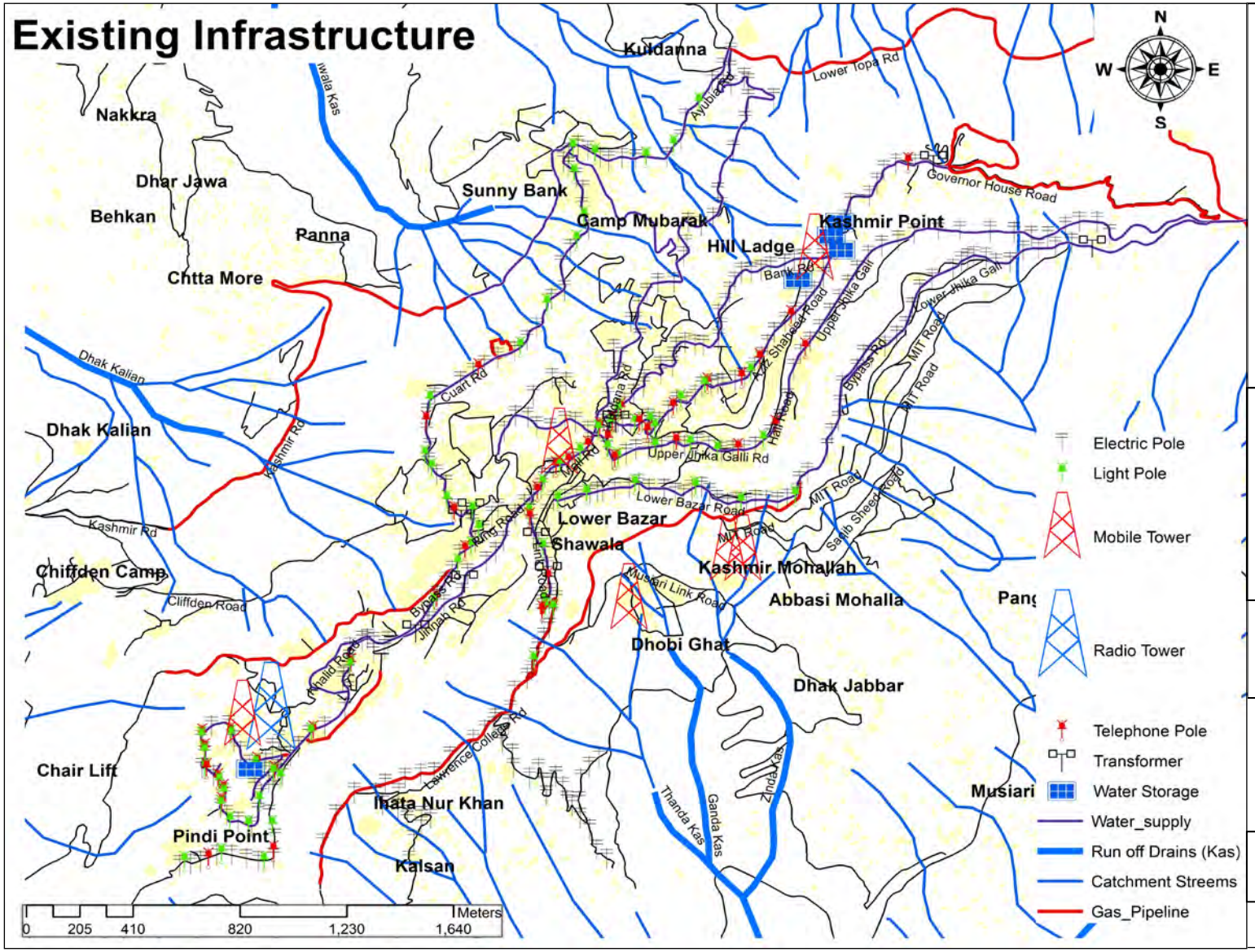
Table 3.30: SOURCE OF FRESH WATER

	Municipal	Bowsers	Spring/ Stream	Tube Well	Other	***Total***
%age	35.05	12.69	26.99	0.50	24.74	100

Source: Extracted by the Consultants on the basis Field Studies

Tele-Communication:

Most of the Telecom infrastructure in Murree is PTCL landline network laid both under and over the ground. Above ground poles do add a visual nuisance to the surrounding environment and buried infrastructure often offers challenges both to user and service providers during rainy days and lead to excessive faults. Landline phone connections are installed in 90% parcels in Murree urban but usage has been declined in recent years due to the introduction of personal hand held



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Desigr
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

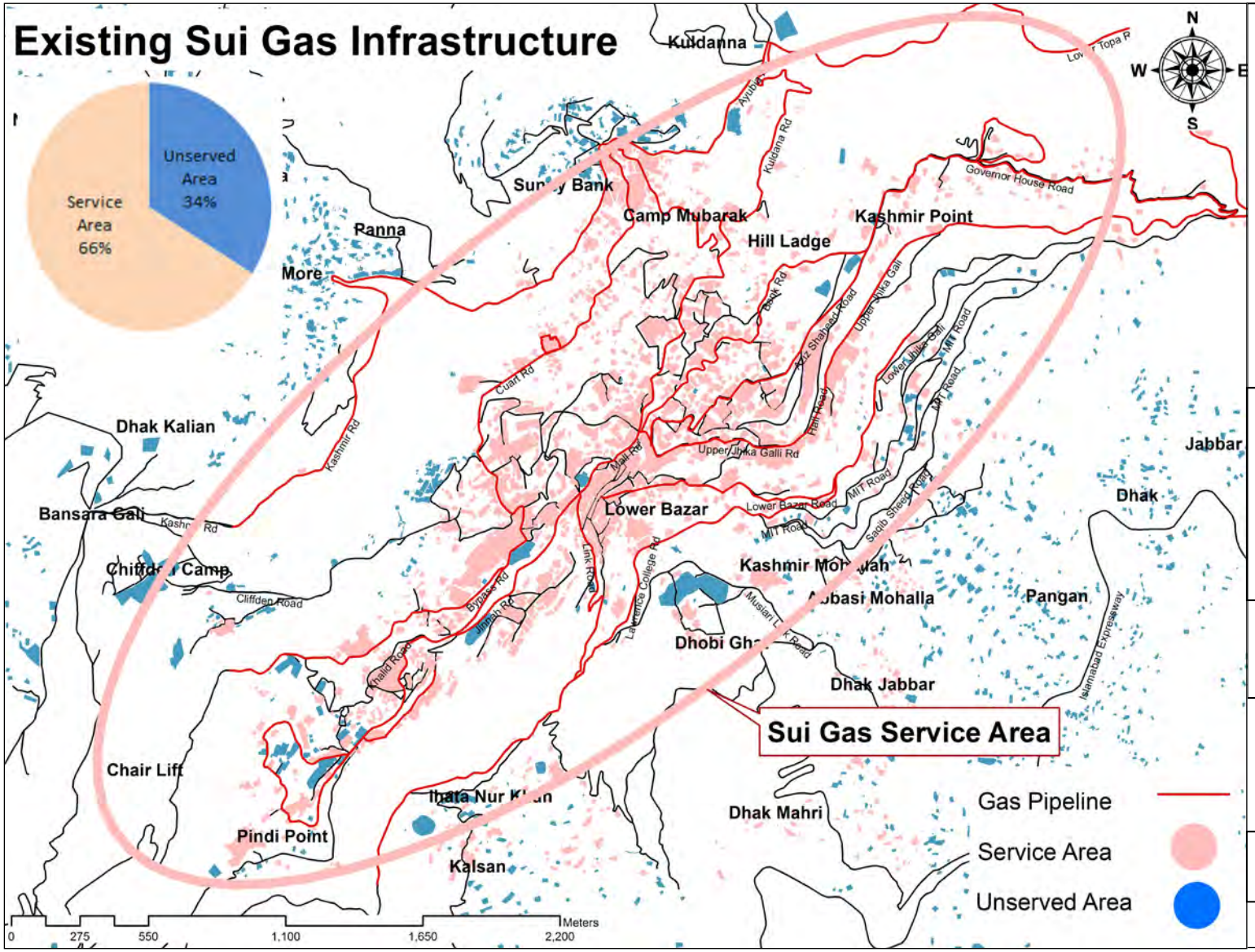
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

EXISTING INFRASTRUCTURE

SHEET #



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Desigr
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

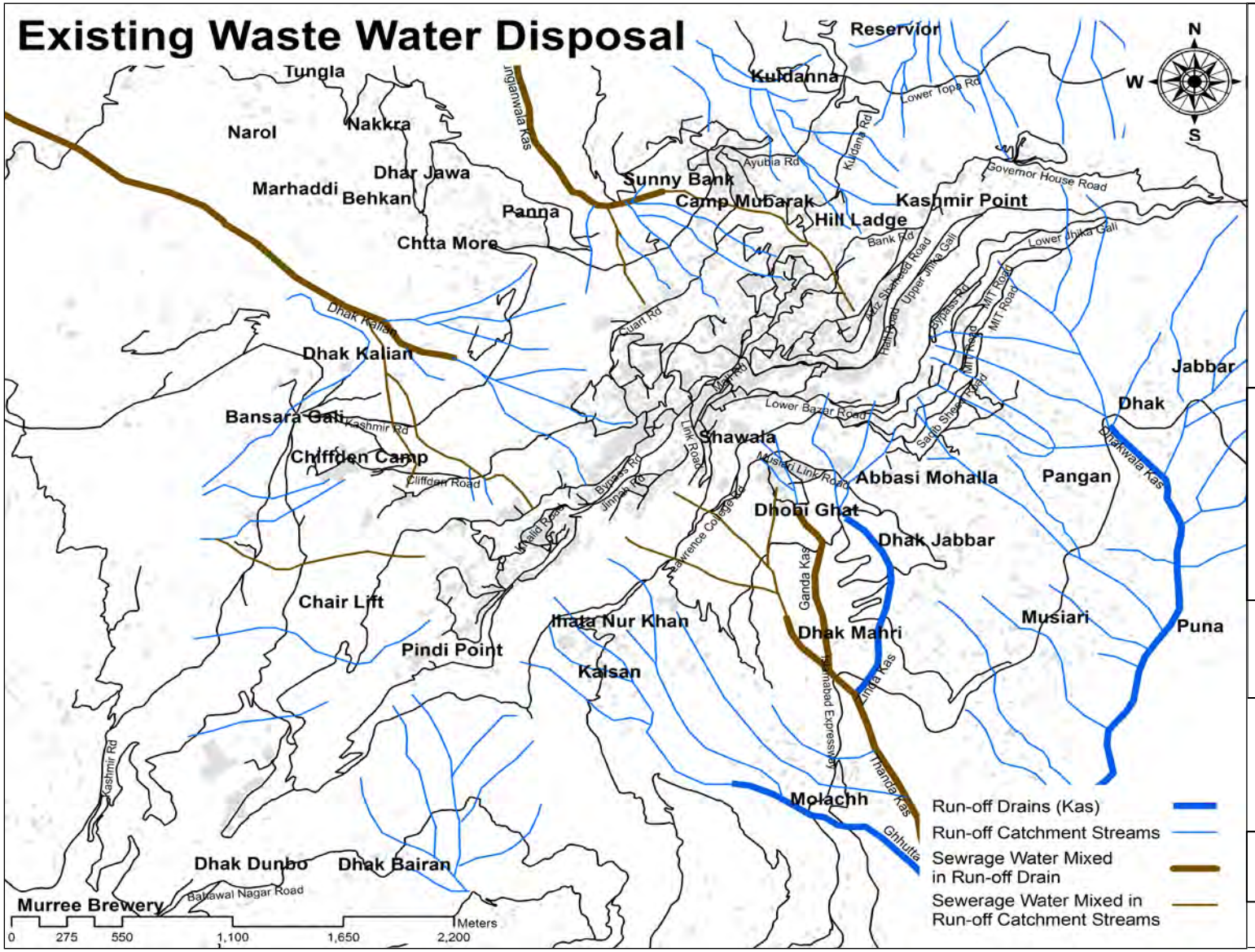
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

EXISTING SUI GAS INFRASTRUCTURE

SHEET # **SCALE:**



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Desigr
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

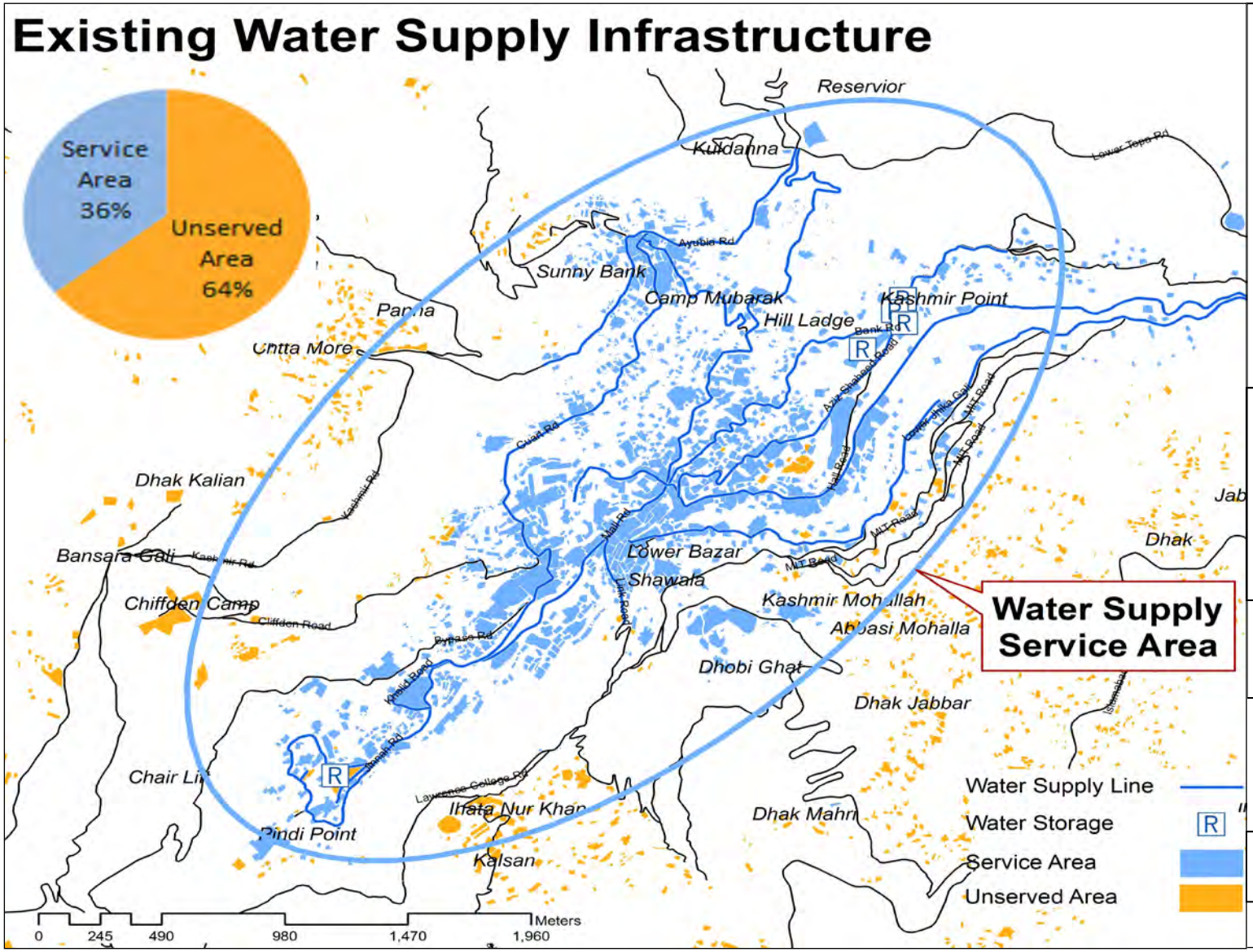
PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

EXISTING WASTE WATER MANAGEMENT

SHEET #

Existing Water Supply Infrastructure



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Desigr Environmental Studies 4th DIMENSION CONSULTING www. 4thdimensionpk.com

CLIENT:

TDCP TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

EXISTING WATER SUPPLY INFRASTRUCTURE

SHEET # **SCALE:**

mobile devices. In settlement of Murree Tehsil these services are at limited availability and infrastructure is present along major communication routes. Mobile communication infrastructure is generally localized to the VISIBLE GIGANTIC TOWERS extended above ground levels and give out an alien existence among the indigenous tree filled natural skyline. Efficiency of mobile communication is described well, otherwise, having occasional chocks in peak season. Mobile communication towers of various service providers are visible at GPO, Kashmir Point, Abbasi Mohala, Dhobi Ghat and Pindi Point. Data services are being provided through both wired and wireless infrastructure already available and quality described is generally in satisfactory range.

- Mobile Communication Towers (Location)
- Abbasi Mohallah 2 Mobile Towers
- Dhobi Ghat 1 Mobile Tower
- GPO 2 Mobile Towers
- Pindi Point 1 Mobile + 1 Radio Pakistan Tower
- Kashmir Point 1 PTCL Tower

Sui Gas:

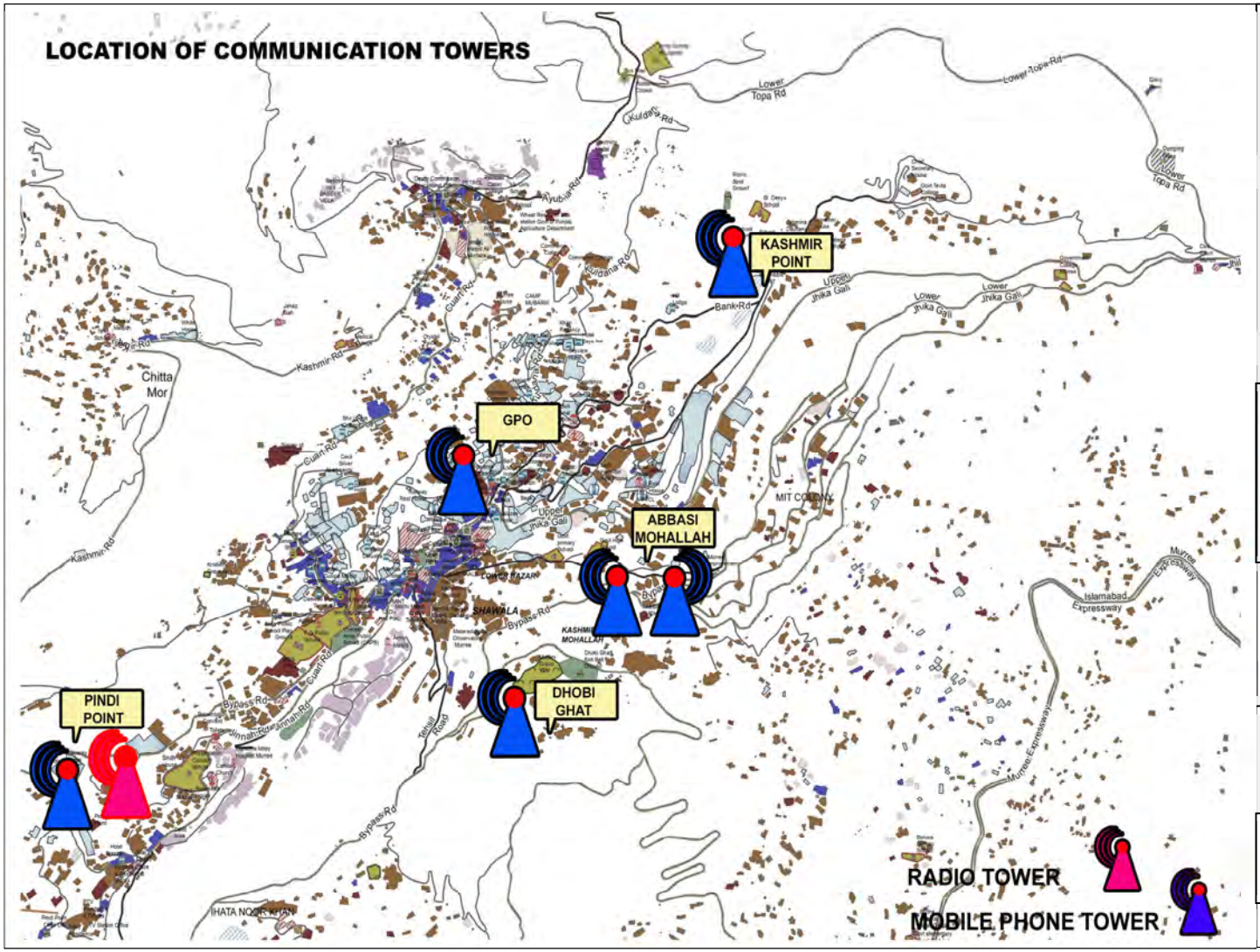
Gas infrastructure was installed in Murree in 2009 and extended up to 65% urban residents so far. Introduction of natural Gas has reduced stress on forests and air quality to a considerable extent. Before installation of Sui Gas most of heating / culinary use dependence was on firewood and LPG, but LPG being expensive and in short supply in not a preferred choice of users.

Electricity:

Electricity is available to about 100% residents of urban area and to 80% in rural area. Electricity infrastructure is installed above ground and worn out as well. Adding to visual pollution, its efficiency is also under debate by the consumers at large. Its most parts need immediate replacement due to higher fault ratios.

Sewerage / Drainage:

Sewage disposal is being observed as a major problem of Murree urban. Municipal connected sewerage facility practicall has only been extended to very few residents. Municipal sewer is further disposed in open Nullahs which ultimately seek their way through natural channels and ultimately become a part of natural watershed / catchment area down the slopes. Rest of the unconnected population dispose their waste water off in open and leaving it to be mixed in streams / springs thus affecting their quality to harmful extents and further making it less worthy to the population in downstream areas. Run-off / rain water



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

LOCATION OF COMMUNICATION TOWERS

0 0.5 1 2 Km

is being drained over surfaces (both manmade and natural) and ultimately leads to the natural routes and again mixed up with sewage water. However, a few segments of roads like Mall Road, Bank Road, Hall Road, and Partly Upper Jheeka Galli have partly covered runoff drain which finally terminates into a nullah behind TMA office.

Table 3.31: EFFLUENT DISPOSAL

	Municipal Sewer/Nullahs	Private Sewer	Open Drain	Septic Tank	***Total***
%age	23.10	16.08	40.93	19.87	100

Source: Extracted by the Consultants on the basis Field Studies

Table 3.32: SOLID WASTE COLLECTION/ DISPOSAL

	Self-Disposal	Scavenging	Municipal	Open Dumping	***Total***
%age	13.83	1.91	28.00	56.24	100

Source: Extracted by the Consultants on the basis Field Studies

Filling / Fuel Stations:

In Murree there are two filling stations near Sunny Bank on Kashmir road and Ayubia Road & one newly built CNG station on Caurt Road is in operation while other is sealed /under construction due to court order.

3.6.2 SOCIAL INFRASTRUCTURE

Public Offices:

Following Government offices have been identified & listed

- D.D.O.-Revenue (A.C)
- Judicial Magistrate Murree (R.M)
- S.D.P.O. (DSP)
- S.H.O
- S.D.O Wapda No.1
- S.D.O Wapda No.2
- Deputy District Director Health (D.D.H)
- D.F.O
- S.D.O Phones
- D.E.Telegraph
- Tahseldar
- Tahsel Municipal Administration Murree
- Nazim Tahsel Murree
- City Nazim
- Niab Nazim Tahsel
- Niab Nazim City
- Tahsil Municipal Officer (T.M.O)
- Protocol Officer (T.M.A)
- Office T.D.C.P
- Office Cantonment Board
- Telegraph Office

- Art Council, Bank Road
- Agriculture Office
- Food Office
- Office Improvement Trust
- Office fire Brigade (16)
- General Post Office (GPO)
- Pakistan Handicraft Shop and Punjab Small Industries
- Excise and Taxation
- Social Welfare Organization Punjab Government
- Weather Information Department (Muhkama-e-Musamiyaat)
- Iqbal Public Library
- T.C.S Chinnar Market
- Fire Brigade, Upper Jheeka Galli Road
- Intelligence Bureau (IB)
- Punjab Environmental Protection Department

Policing:

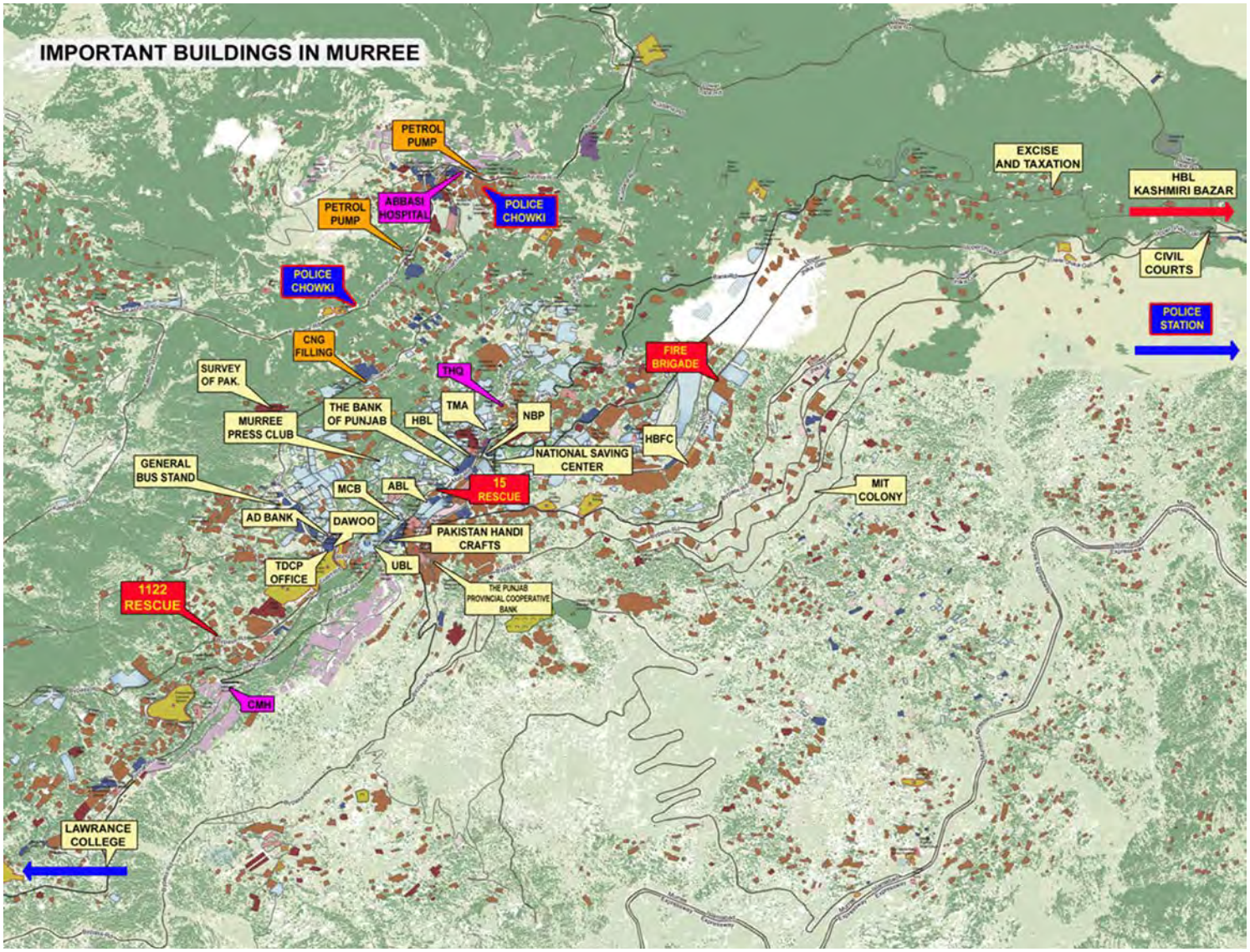
- Special Branch Police Murree
- Police Station Murree
- Police Chowki Sunny Bank
- Treet
- Ghora Gali
- Phagwari
- Gulhrra Gali
- Lorah Police Station
- Rescue 1122, Bye Pass Road
- Police 15 Emergency Center, Mall Road
- Traffic Police / Wardens Office, Sunny Bank

Banks, ATMs & Financial Institutions

- National Bank of Pakistan; Bank Road Murree
- Muslim Commercial Bank; Near Marhaba Hotel Jinnah Road
- A.T.M; 24 hours banking facility
- Muslim Commercial Bank; Alioet
- Muslim Commercial Bank Osiah
- Habib Bank Limited; GPO Chowk
- Habib Bank Limited; Sehr Bagla
- Habib Bank Limited; Kashmiri Bazar
- Habib Bank Limited Devil
- Habib Bank Limited; Kali Matti
- United Bank Limited; Jinnah Road Usmania Resturant
- United Bank Limited; Treet
- Allied Bank Limited; Jinnah Road near Book Gallery
- Bank of Punjab; near Iqbal Public Library Jinnah Road
- Agriculture Development Bank Murree
- The Punjab Provincial Cooperative Bank Limited Murree, Branch near Lantat Café
- National Saving Centre; Sear Rose Gali, GPO
- House Building Finance Corporation, Upper Jhika galli Road

Hospitals / Clinics and Pharmacies

- Tehsil Headquarter Hospital, Kuldana Road, Murree
- A. Rauf & Sons Medical & General Store Jinnah Road
- Manzoor Medical Hall
- Manzor Medical Centre Near Lintott Restaurant Mall Road
- Hassan Medicine and General Store Chinnar Chowk Jinnah Road
- Dr. Muhammad Arshad Clinic, View Forth Road, Shah Rukh Flates
- Homeo Doctor Yousaf Mirza, Saddique Chowk, 105 Lower Bazar
- Dr, Khawar Hussain, Dr. Samana Khawar Homeo, Mochi Mandi Lower Bazar
- Dr.Sajid Hameed –Al-Shafa Lower Bazar Sabzi Mandi
- Family Clinic Dr. Naveed Iqbal, Dr. Saadia Naeem, Near Lintott Resturant
- Dehli Dawa Khana, Hakeem Israr Ul Haq, Lower Bazar Murree
- Hakeem Abdul Khaliq, Dehli dawa Khana, Lower Bazar
- Zafar Dental Clinic, Lower Bazar
- Noor Dental Clinic, Lower Bazar
- Afsar Dental Clinic, Lower Bazar
- Bukhari Dental Clinic, Lower Bazar
- Civil Hospital Murree
- CMH, Jinnah Road, Murree Cantt
- Saamli Sanitarium
- Rashid Clinic Murree
- Edhi Welfare
- Jamal Medical Store, Jheeka Galli
- Abbasi Hospital, Sunny Bank
- Deval Medical Complex
- Madni Memorial Hospital, Treet
- Sadaqat Clinic, Tark-e-munshiyat Clinic
- British Sliming and diabetic Clinic near Al-Hassan Hotel and Flates, Larri Adda
- Murree Homeo Clinic, Dr. Muhammad Aamir Butt, near Lantat Resturant
- Arif Younani Dawakhana,near Lintott Restaurant



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

IMPORTANT BUILDINGS IN MURREE

SHEET # -a **SCALE: N.T.S**

Educational Institutes

Tehsil Murree has 221 Primary Schools, 32 Middle Schools & 26 High Schools whereas Muree Urban has following 36 educational institutions both in Public and Private sector.

- Lawrance College, Ghora Gali
- PAF School & College, Lower Topa
- Government Postgraduate College, Lower Jheeka Galli Road
- Government Girls College, Bank Road Kashmir Point
- Government Commerce Institute, Sunny Bank (Commercial College)
- Government High School, Lower Jheeka gali Road
- Pakistan International Public School, Cuart Road
- Chinnar Army Public School, Motor Agency
- Pakistan Cadet School, Sunny Bank
- Technical Education and Vocational Training Authority (Abad Technical College), Jhekagali
- Heaven Coulds Campus, Kashmir Point near Bagh-e-Shaheedan
- Saint Deens High School for Girls, Kashmir Point
- Forest College Ghora Gali, Built in 1889
- Murree Christian School, Jheka gali Ghariyal
- Dukhtaran-e-Islam Acadmey, Bansra Gali
- Convent Jesus & Merry School and College
- Presentation Convent School
- F.G Public School
- Jamia Tafhem-e-Al-Quran, Oosiah
- Sirat-ul-jannat Acadmey, Company Bagh
- Madrasa-e-Usmania, Darya Gali
- Green Land Public School, Rawat
- Syed Ahmed Shaheed Acadmey, Deval
- Malik Suraj Acadmey, Potha
- Muaawia Acadmey, Aaliot
- Government High School, Sahili Tajal, Chera Pani (Boys)
- Government High School, Rawat
- Government Girls High School, Murree
- Hira School, Shera Bagla
- School of Military Intelligence
- Iqra Islamic Model Acadmey
- Pakistan Children Acadmey
- Murree Grammer School and College International Language Centre, Pakistan Centre of the International University Maseori U.S.A, Sunny Bank
- Government Technical Training Centre for Ladies, Cuart Road
- Cadet College Murree, near Water Tank Kashmir Point
- Government Naval Survival Training Centre, Pindi Point Murree

Government Rest Houses

- State Guest House, Kashmir Point
- Punjab House, Lawrance College Road
- Sindh House, Khalid Road
- Chinnar Lodge, Khaqan e Abbasi Road (Ghariyal Road)
- Judges Rest House, Pine Cottage Bank Road Kashmir Point

- Punjab Building Department Rest House and Office, Bank Road Kashmir Point
- Office S.D.O Highway Rest House, Bank Road Kashmir Point
- Forest View Rest House, Bank Road Kashmir Point
- Railway Rest House, Bank Road Kashmir Point
- Police Rest House, Near Army Public School Agency, Cuart Road
- Judicial Lodges, Pine Cottage Bank Road, Kashmir Point
- G.P.O Rest House, GPO Chowk
- Lady Roberts Home, Army Rest House
- Agriculture Rest House, Kashmir Point
- P.W.D Rest House, Murree Bypass Road

3.7 TRAFFIC, CIRCULATION AND PARKING:

3.7.1 ROAD NETWORK:

Hierarchy / Classes

Roads infrastructure in Murree can be classified as primary, secondary roads and tertiary streets ranging from pathways of 10 feet to 50 feet wide main feeders. Major roads in Murree are Bye-Pass Road, Lower Jheeka Galli Road, Upper Jheeka Galli Road, Kuldana Road, Lower Topa Road (Patriata Road), Bhurban Road, Ayubia Road, Hall Road, Cuart Road, Hall Road, Bank Road, Mall Road, Jinnah Road, Imitiaz Shaheed Road. Murree is linked with other parts of country by Rawalpindi Kuhala Roa, N-75 Expressway, Galliat Road (To Galliat, Abbotabad KPH) and Kuhala Road (to Kuhala & Muzaffarabad AJK)

Table 3.33: ROADS IN PLANNING STUDY AREA (URBAN)

Category	Numbers	Total Length (km)	Length % age
Primary	27	387.47	47.33
Secondary	9	78.19	9.55
Tertiary	117	352.85	43.10
Total	153	818.51	100

Source: Extracted by the Consultants on the basis Field Studies

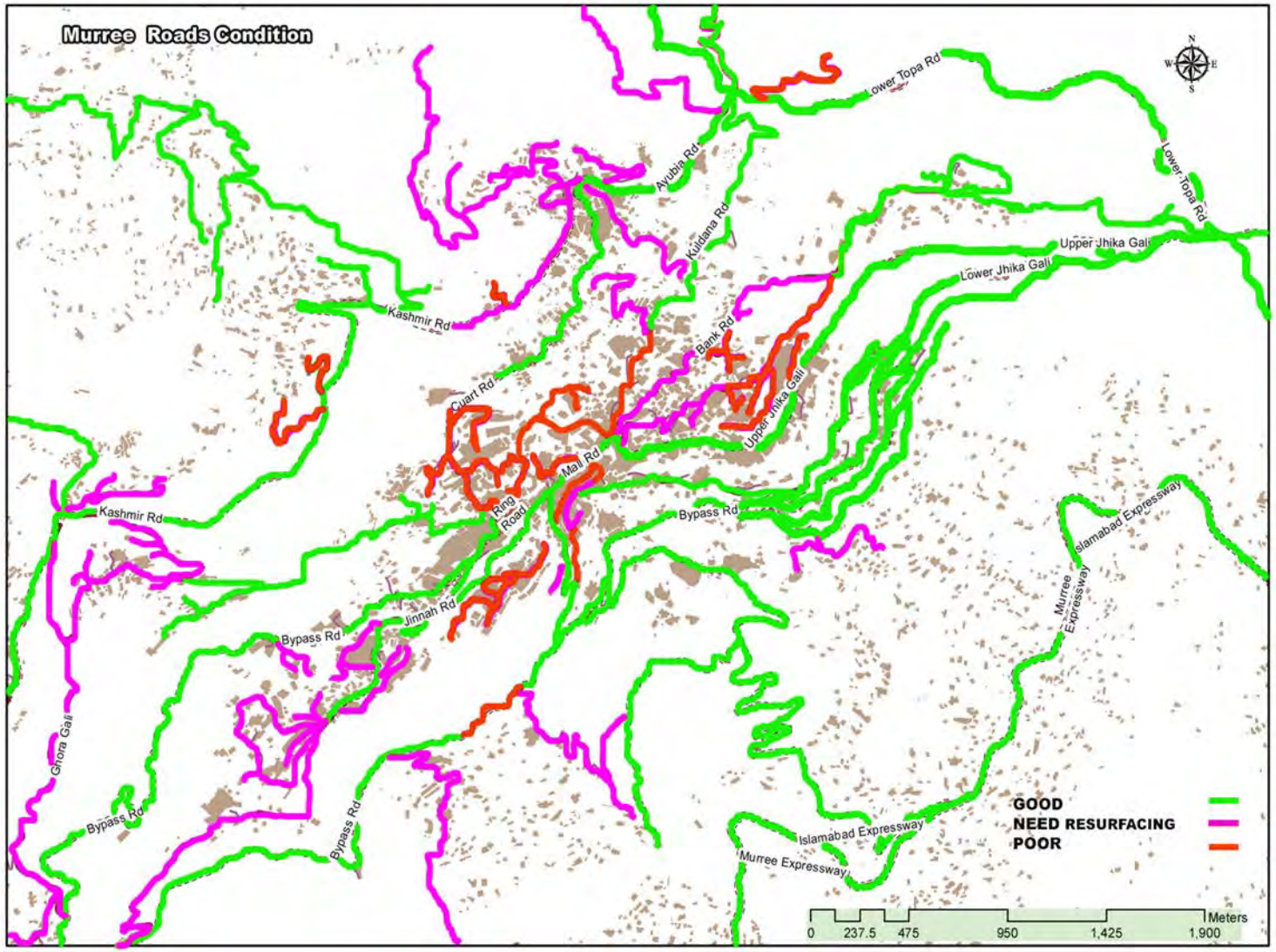
Widths:

Roads / streets in Murree have varying widths at different sections due to difficult terrain / geology. Following table throws some light of different proportions of right of ways in Murree Urban area.

Table 3.34: WIDTH OF ACCESS ROAD (URBAN)

S.no/values	0-10 Feet	11-20 Feet	21-30 Feet	31-50 Feet	51 Feet and Above	***Total***
%age	17.3	23.10	9.55	47.33	2.72	100

Source: Extracted by the Consultants on the basis Field Studies



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

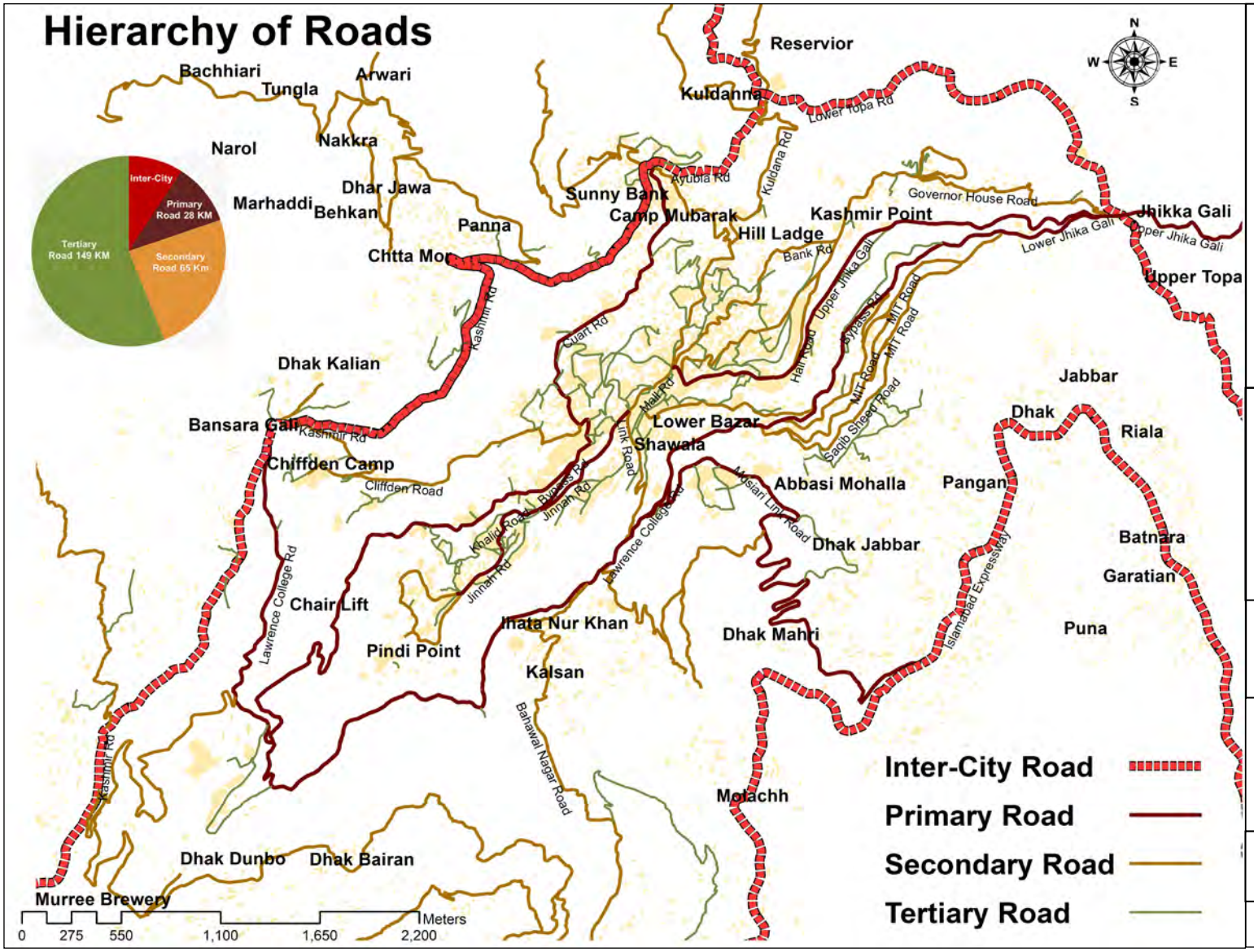
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

MURREE ROAD CONDITION

SHEET # -a



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental & Planning Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

HIERARCHY OF ROADS

SHEET #









Note: These plans represent themes to be refinedin further planning. Land uses, streetpatterns, and exact alignments in all areas areconceptual / Indicative, and to be subjected to any kind of detailed evaluationand confirmation. Under no circumstancesshould these plans / illustrations be construed as final representations /directivesfor specific sites or areas.

CONSUTANTS:

Pakistan Environmental & Planning Architectural Consultants

Planning Architecture Engineering Design Environmental Studies 4th DIMENSION CONSULTING www. 4thdimensionpk.com

CLIENT:

TDCP TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

ROADS CONDITION

SHEET #

Geometry / Surface:

Geometry of road network in Murree is generally aligned with the physical terrain. Roads are aligned with slopes and rising elevations. Gradient is variable throughout the Murree, so no uniform pattern can be identified. Road network is looped having unique characteristics of giving commuters surprise vistas on each turn and this phenomenon is another attraction for the tourists. This pattern offer pleasure as well as an exotic setting to the drivers. Road surface quality is very good at most of the sections, however, small arteries / streets are not being maintained properly.

Major Road Intersections:

Major intersections in Murree are Bansra Galli, Kuldana Chowk, Sunny Bank, Jheeka Gali and GPO Chowk. Geometry and shape of these intersections are primarily derived from terrain not by engineering design.

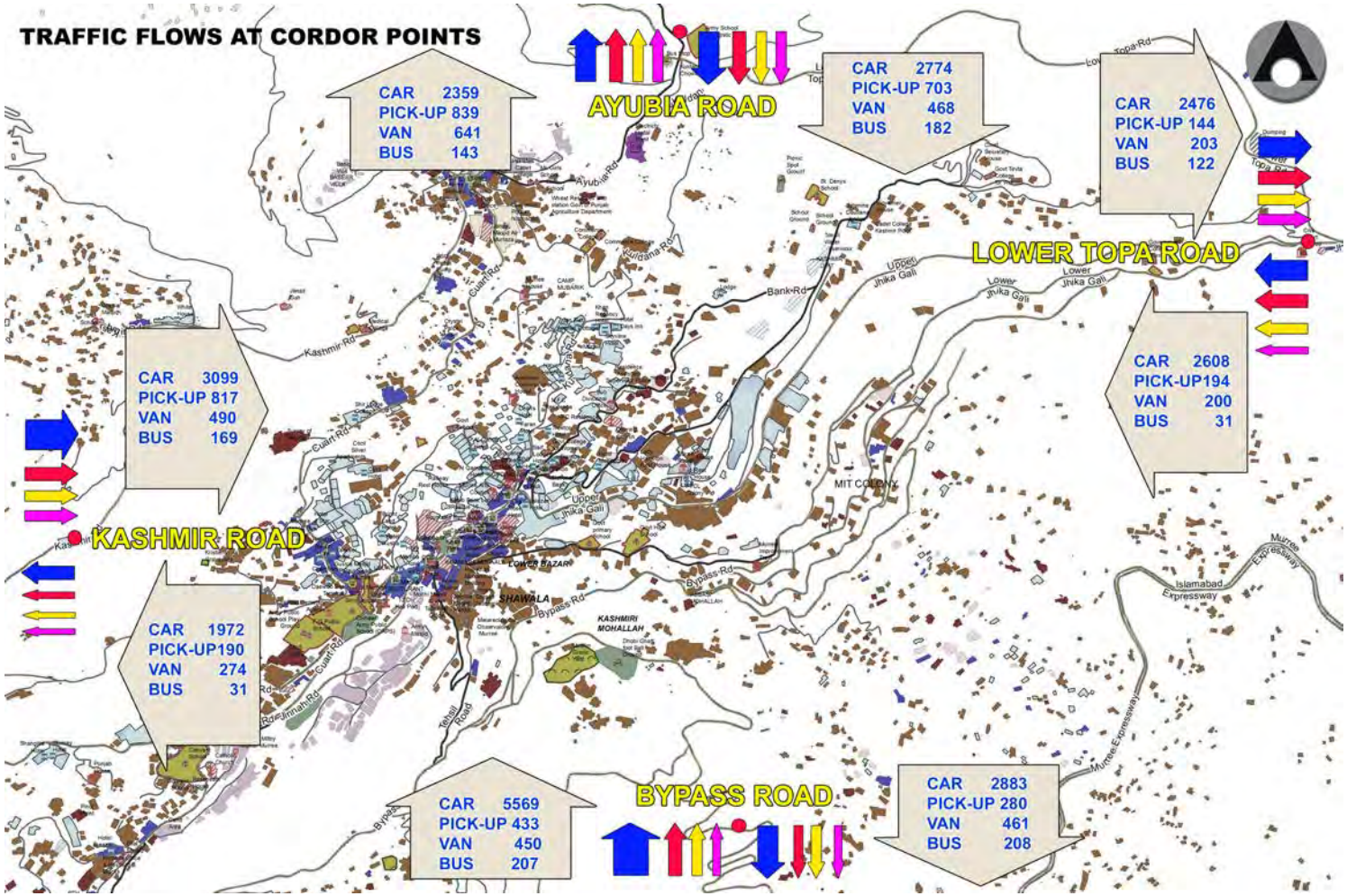
Walkways:

Due to limited available space / ROWs in Murree, a very few roads (Mall Road, Cuart Road) have walkways / footpaths. Tourists are forced to use motor vehicle maneuvering area thus cause more congestion.

3.7.2 TRAFFIC:

Volume:

The Consultants carried out a detailed traffic count survey on July 24, 2011 to assess the peak traffic volumes in 12 hrs. These cordon points were established at Lawrance College (RKR), Ayubia Road, Lower Topa (From N-75) and Massairi (N-75 Bypass). The study day was considered having peak tourist volumes as Ramdan approached very next week. Studies revealed that 18417 vehicles entered Murree that day out of which 13226 left town same day, leaving behind 5191 inside Murree presumably for an overnight stay. Out of these incoming vehicles 14,050 were cars and out of which 9690 left same day, difference was 4360. So figures show that 5191 vehicles stayed Murree that day, out of which **4360 were cars** i.e. 84 % of total overnight stayed volume. Figures also reveal that 98,042 tourists entered Murree that day out of which 78424 left same day, so volume which stayed in Murree that night come out to be 19, 618 (almost 20% of the entered volume). Car to persons stayed ratio comes out to be 1:4. This leaving volume may contain traffic going to AJK and Galliat, however, it was difficult to segregate this volume and in addition, this volume does not contribute significantly to the traffic problems of Murree town as such.



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

TRAFFIC FLOW AT CORDON POINTS

SHEET # -a

Table 3.35: Incoming Traffic to Murree at Cordon Points, 08:00 am to 08:00 pm

Type/ Point	Lawrence College	Ayubia Road	Lower Topa	Massiari	Total	PCU,s	Avg. Passenger per Vehicle
Car	5569	2774	2608	3099	14050	2.6	3
Pick-up	433	703	194	817	2147	14	4
Van	450	468	200	490	1608	14	18
Bus	207	182	54	169	612	40	30
Total (PCUs)	35121.4	30886	14456	33115	113580		
Total Passengers	32749	25018	13820	26455	98042		
Total Vehicles	**6659**	**4127**	**3056**	**4575**	**18417**		

Source: Extracted by the Consultants on the basis Field Studies

Table 3.36: Traffic Outgoing from Murree, 08:00 am to 08:00 pm

Type/Point	Lawrence College	Ayubia	Lower Topa	Massiari	Total	PCUs	Avg.Passengers per Vehicle
Car	2883	2359	2476	1972	9690	2.6	3
Pick-up	280	839	144	190	1453	14	4
Hi-ace	461	641	203	274	1579	14	18
Bus	208	143	122	31	504	40	30
Total (PCUs)	26189.8	32573.4	16175.6	12863.2	87802		
Total Passengers	24307	26261	15318	12538	**78424**		
Total Vehicles	3832	3982	2945	2467	**13226**		

Source: Extracted by the Consultants on the basis Field Studies

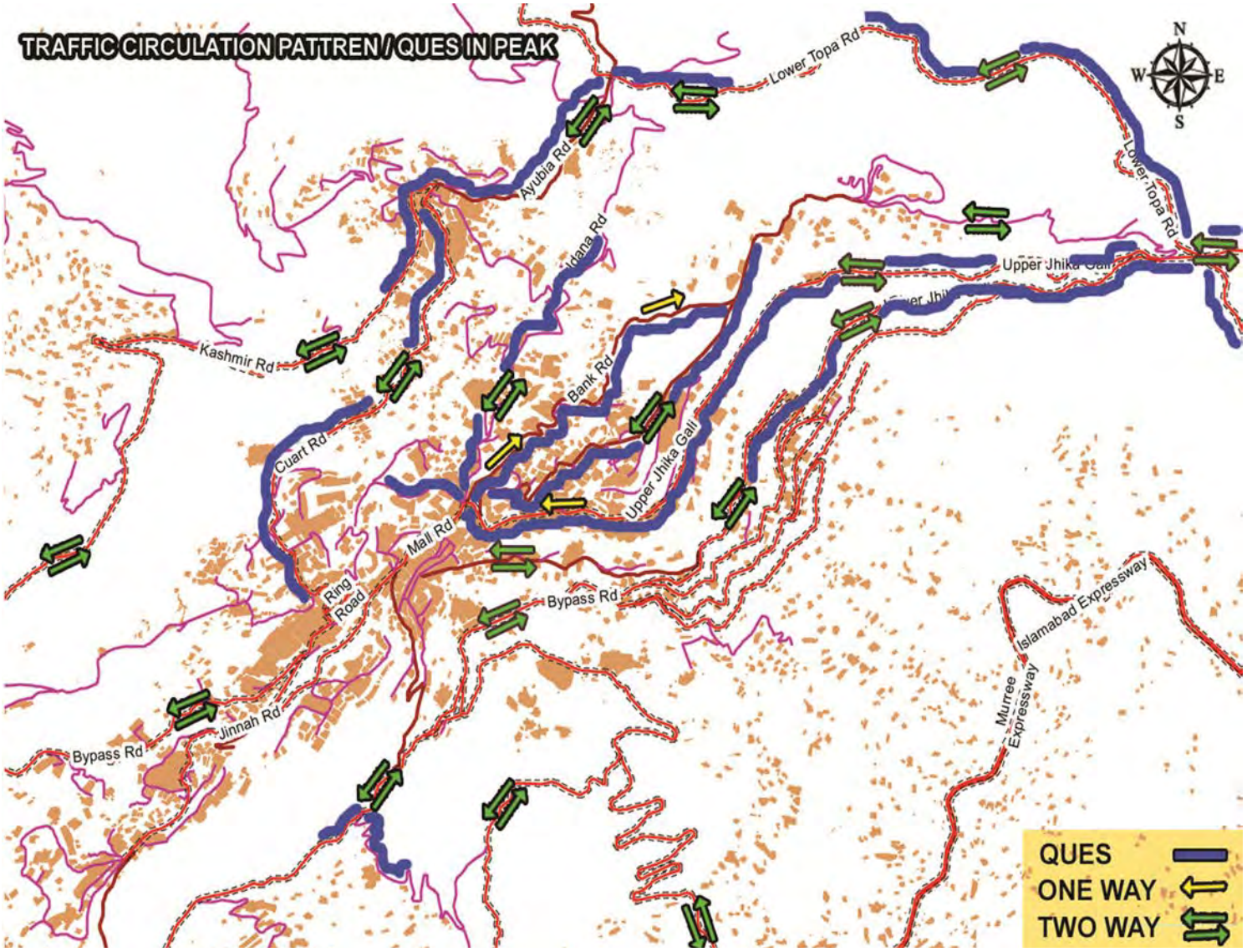
Composition:

Traffic volume study shows that entering volumes predominantly contain Car, Pickups, Vans and Buses. Percentages are as CARS 76.3%, Pickups 11.6%, Vans 8.7% and Buses are 3.4%.

Table 3.37: Traffic Composition

	Cars	Pick ups	Vans	Buses	***Total***
%age	76.3%	11.6%	8.7%	3.4%	100

Source: Extracted by the Consultants on the basis Field Studies



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

TRAFFIC CIRCULATION PATTREN/TRAFFIC QUES IN PEAK

SHEET # -a **SCALE: N.T.S**

Transport Modes (Public &Private):

Major transportation modes identified are Cars/ Jeeps, Vans, Pick-ups and Buses. Public modes of transportation identified are Vans, Pickups and Buses. Cars and luxury jeeps are a major component of traffic volume in MUREE and carry fewer passengers as compared to the public modes. Most of the urban inhabitants and around 80% of the transient population use personal cars as basic mode of mobility. While rest both transient, local urban and local rural people use Suzuki Vans (12 persons). Hi-Ace Vans for intra-city commuting and medium sized (25 seater) Mazada buses for intercity travel like from Murree to Rawalpindi, Galliat & Muzzafarabad. Poor locals often walk through the Urban Arteries (though not pedestrian friendly) on foot to make their daily trips to work and other social destinations.

Fuel Use:

As studies show that traffic bulk primarily contains CARS (76.3%), it has also been observed that 95% cars are fitted with CNG but people are forced to use GASOLINE while traversing steep gradients of Muree. Vans, Pickups and Buses jointly sum 23% share, and definitely operate on DIESEL fuel thus contributing to higher air pollution levels at Sunny Bank and Jheeka Galli intersections.

Pedestrian Support:

Murree infrastructure generally does not support pedestrian movement. Walkways, footpaths, walk able precincts are a neglected phenomenon. Tourists are forced to commute by vehicles; pedestrian safety on roads is not insured at all. Only Mall Road is being pedestrianized from GPO to Pindi Point Mosque during peak season.

Traffic Management:

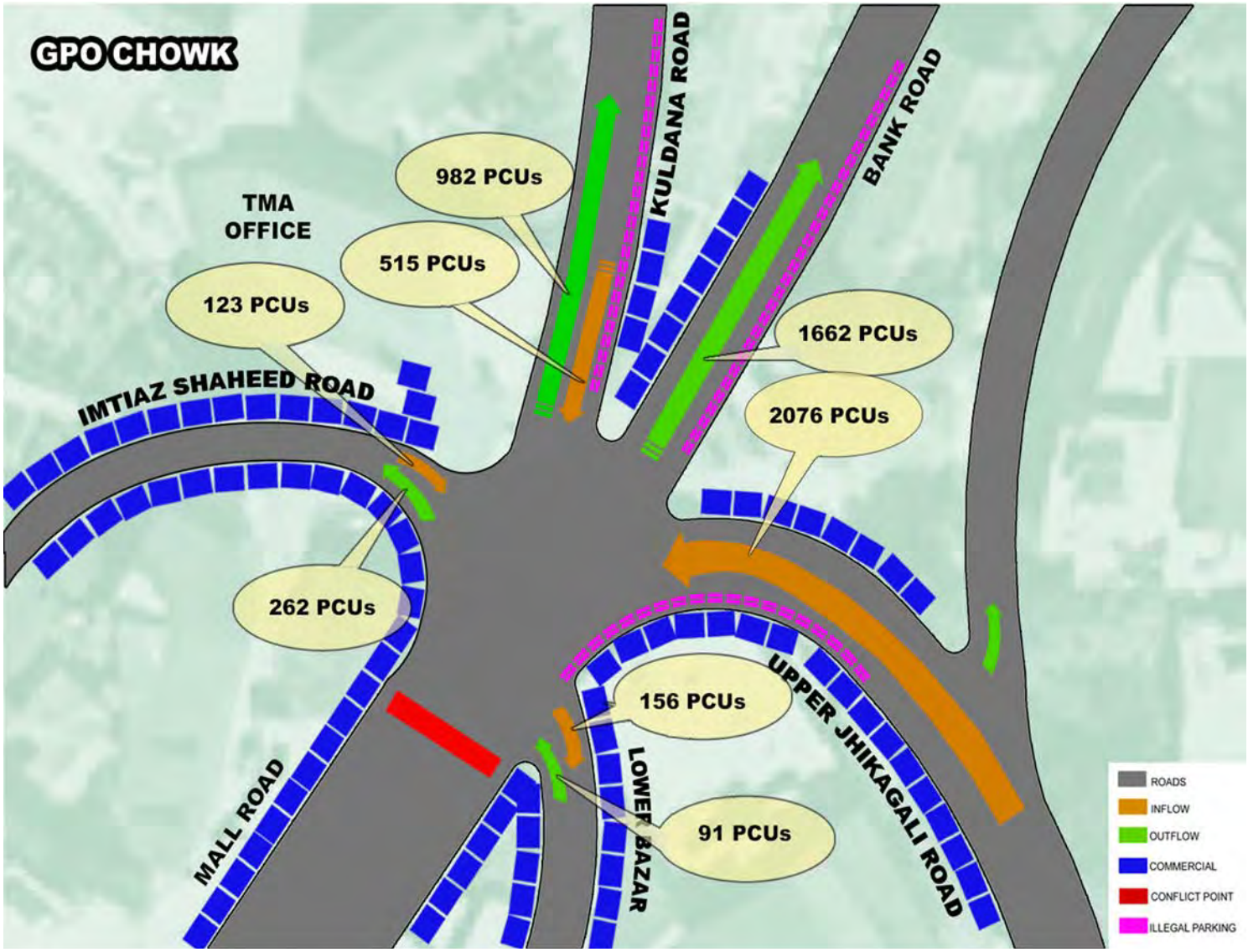
On any Urban Transportation Network, infrastructure alone cannot assure smooth operation. Following are seemed as essential to the smooth functioning are integral part of traffic management;

Signals / Signage:

Some intersections in Murree do have traffic signals installed but not functioning. Traffic signs are frequently installed but does not seem much supportive to the road user. Signs are improperly installed, not legible at some place, quite irrelevant at some places, worn out and vandalized.

Management through Policing / Wardens:

Traffic police wardens work extremely hard to regulate traffic round the clock in Murree. Road users seem fairly satisfied with wardens performance.



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

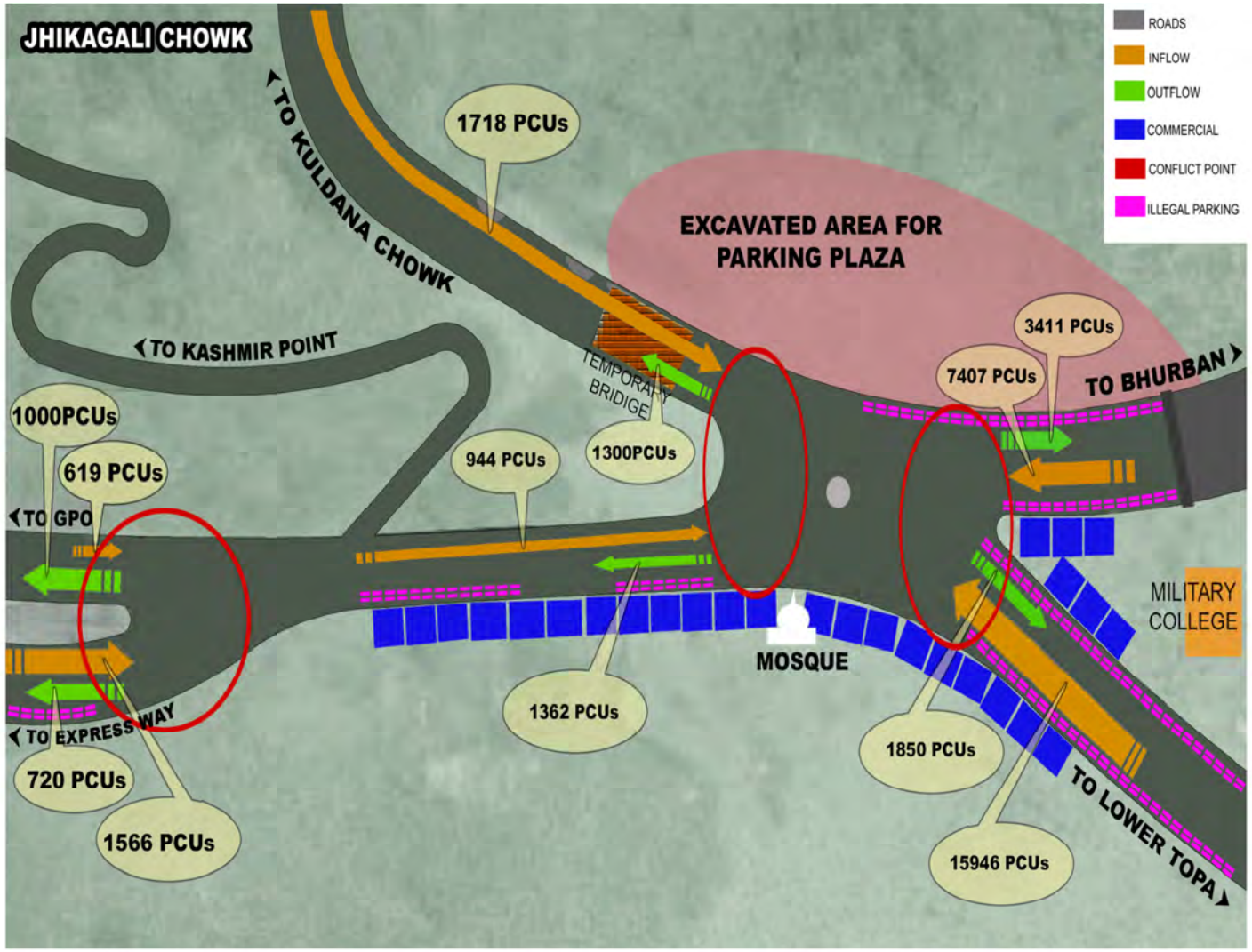
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

TRAFFIC VOLUME AT GPO CHOWK

SHEET # -a **SCALE: N.T.S**



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies 4th DIMENSION CONSULTING www. 4thdimensionpk.com

CLIENT:

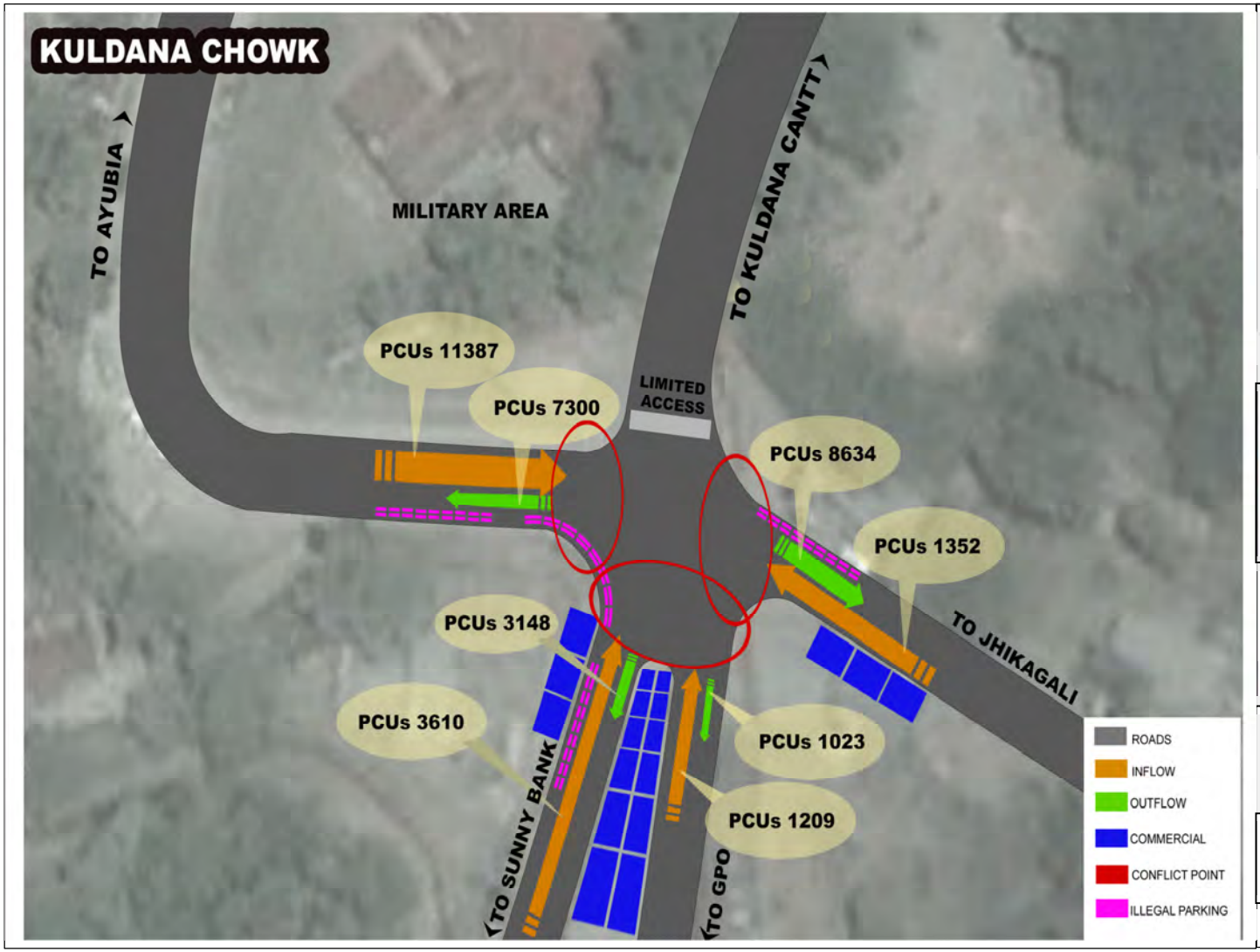
TDCP TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

TRAFFIC FLOW AT JHIKAGALI CHOWK

SHEET # -a **SCALE: N.T.S**



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

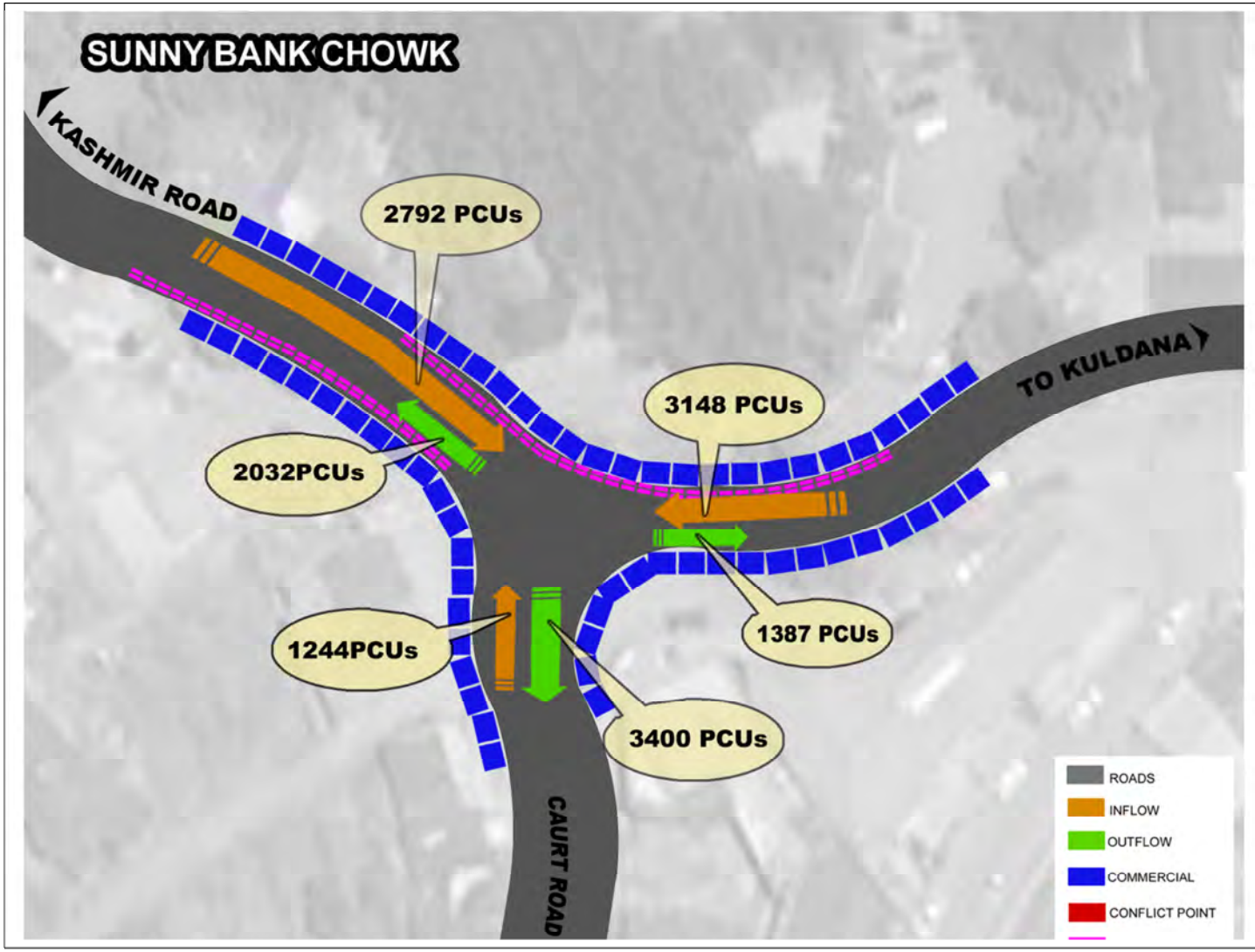
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

TRAFFIC FLOW AT KULDANA CHOWK

SHEET # -a **SCALE: N.T.S**



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

TRAFFIC VOLUME AT SUNNY BANK CHOWK

SHEET # -a **SCALE: N.T.S**

Regulations:

Regulatory support is with traffic police but sometimes they are unable to exercise them at ease because commuter request them not to issue tickets as traffic police does not have mobile collection units to collect for violations and in absence of such facility they have to let violators go without fined.

Bus / Van Terminals:

Murree has one General Bus Stand located on Cuart Road near Sunny Bank to cater for all type of public vehicle services. Daewoo's terminal is also present in the same vicinity. Small sized public vans are generally parked at Sunny Bank and Jheeka Galli intersections to facilitate local commuters.

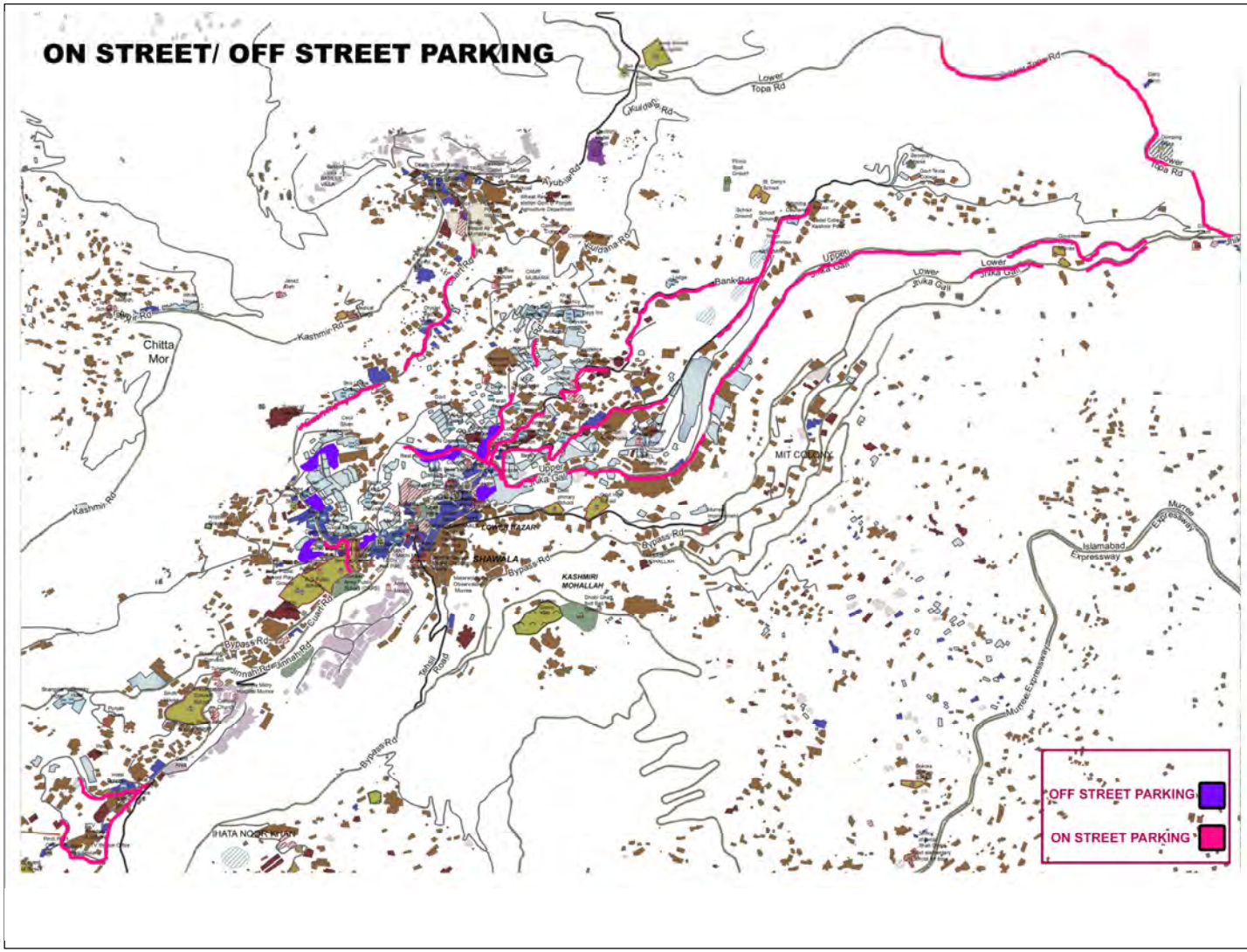
Parking:

Parking in Murree has been the most concerned issue over the years with growing number of vehicles. Public parking facility is again a rare opportunity one could seek. Out of 266 hotels in Murree, only 69 have their own in-house parking of only 1471 spaces, while studies show that in a single peak day 4360 cars parked overnight, where they have been parked? Obviously on / along roads. Most parking in Murree Town is done ON STREET these days (Map shows a grasp of on-street parking in Murree).

Table 3.38: On-Street Parking In Murree during Normal Days

Road	From	To
	Lair Adda	APS
Imtiaz Shaheed Road	Mall Road	Dilkusha Hotel
Bye Pass Road	In front of APS	
Bank Road	In front of Railway Point	
Bank Road	GPO	Women College
Kuldana Road	GPO	Tehsil Headquarter Hospital
Tehsil Road	GPO	Jinnah Hall
Upper Jhika Gali road	GPO	Himaliya Hotel
Kashmir Road	Kuldana Chowk	

Source: Extracted by the Consultants on the basis Field Studies



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

ON STREET/OFF STREET PARKING

SHEET # -a **SCALE: N.T.S**

Table 3.39: Parking Practices On Peak Days

Sr.No	Status(Illegal / legal)	Road		Remarks
		From	**To**	
1	Illegal	Lari Adda	APS	**Full practice no charges.**
2	Illegal	Mall Road	Dilkusha	**Not allowed**
3	Legal	APS	Station Head Quarter	**Full practice on both sides**
3	Illegal	GPO	Women College Murree	
4	Illegal	GPO	Civil Hospital Murree	
5	Legal	Near GPO Jinnah Hall		**Partly charges Rs.100.**
6	Illegal	GPO	Hammalia Hotel Murree	**Not practice**
7	Illegal	Ayoubia Road	Kuldan House	**Full Rush**
8	Illegal	Kashmir Road	Lower Topa Road.	**Full Practice on both sides**
9	Illegal	Jhika Gali	PC Road	**Full Practice on both sides**
10	Illegal	Civll Court	By pass Road	**Full Practice on both sides**
11	Illegal	Pakistan Cadet College	High way Office	**Full Practice on both sides**
12	Illegal	Sumy Bank Chowk	Mosque	**Full Practice on both sides**
13	Illegal	Crystal Palace	Ferry land hotel	**Full Practice on both sides**
14	**Illegal**	**Cecil Gate**	**Bus Stand Murree**	**Full Practice on both sides**

Source: Extracted by the Consultants on the basis Field Studies

Table 3.40: Off Street Paid Parking Available To Public

Location	Road	Area	Parking Capacity	Charges (Full day / Per trip)
In Front of Lari Adda	Caurt Road	40'X60'	25 +	**100 to 300 full day**
In front of Summer Palace Hotel, Niazi Express	Near Cart Road	40,X50'	25 +	**100 to 300 full day**
On sky office	Cart Road	20'X30'	10 +	**100 to 300 full day night**
Millennium Mall	Along with Cart Road.	Three Floors	150	**100 per trip in season 200 off season**
Dilkusha Hotel Road	Cart Road		1000	**200 per day**
Imtiaz Shaheed	Imtiaz Shaheed	10'X80'	10	**100 per day**
Sabtaini Hotel	Imtiaz Shaheed	100'X15'	15 +	**100 per day**
TOTAL			1085	

Source: Extracted by the Consultants on the basis Field Studies

Table 3.41: Paid Hotel Car Parking

Hotel Name	Guest	Non-Resident	Resident	Charges	Features
Chamber Hotel Cart Road	Y	Y	Y	100 to 300	**In front of hotel and also additional affiliation**
Pakistan International Hotel Cart Road	Y	Y	Y	100 per trip	**In the basement of the hotel**
Mall view Hotel Imtiaz Shaheed Road	Y	Y	Y	In season 150 Off season 100	**In front of Hotel**
Dilkusha Hotel	Y	Y	Y	200 for day & night	**In front of hotel and also additional affiliation**
Al Sabtaini Hotel	Y	Y	Y	100 per day	**At first floor**

Status	**Road**		Practice	
	From	**To**	**Normal days**	Season days
Illegal	Tehsil Road	Police Thana Murree	Not full	**Full on one side**
Illegal	Siddique Chowk	Lower Mall Murree	Not full	**Full on both sides**
Legal	**GPO**	**Lower Mall Muree (Charges Rs.100)**	**Not full**	**Full**

Source: Extracted by the Consultants on the basis Field Studies

Traffic Jams / Queues:

Traffic jams / queues on Murree roads are a recurrently observed phenomenon during peak tourist season. Most of the jams occur due to irresponsible behavior of drivers, on street parking / encroachments (which reduce right of ways) and sometimes public vehicles stopped to drop off passengers right in the middle of road as geometry / terrain does not allow lay-byes / bays along the roads.

Table 3.42: TRAFFIC JAMS / QUEUES / ENCROACHMENT

Road	From	To	Duration
Kuldanna Road	GPO	Kuldanna Road	30 Minutes
Upper Jhika Gali	GPO	PTCL Office	1 hour
Bank Road	GPO	Women College Murree	30 Minutes
By Pass Road	Jhika Gali	Degree College for Boys	35 Minutes
Upper Jhika Gali	Jhika Gali	Degree College for Boys	40 Minutes
Kashmir Road	Jhika Gali	Dairy Farm	1 Hour

PC Road	Jhika Gali	Gharyal Camp	30 Minutes.
Lower Topa Road	Jhika Gali	Lower Topa	30 Minutes
Kashmir Road	Kuldanna Chowk	Mora Road	30 Minutes
Ayubia Road	Kuldanna Chowk	Sundhian	1 Hour
Kashmir Road	Kuldanna Chowk	Sunny Bank	1 Hour
Kashmir Road	Sunny Bank	High Way Office	20 Minutes
Caurt Road	Sunny Bank	CNG Point	1 Hour
Caurt Road	CNG Point	Lari Adda Murree	1 Hour
Caurt Road	Lari Adda	APS Murree	30 Minutes.

Source: Extracted by the Consultants on the basis Field Studies

Table 3.43: ENCROACHMENTS ALONG ROAD

Sr. No	Road	From	To	Encroached by
1	Cart Road	Lari Adda	Dilkusha	Shops & open air stall
2	Mall Road	In front of Millennium Mall	--	Open Air Stalls
3	Kuldana Chowk	--	--	Auto workshops
4	Jhika Gali	--	--	Open air stall & auto workshops
5	Sunny Bank	--	--	Open air stalls & auto workshops
6	Lower Mall	--	--	Open air stalls & shops
7	Tehsil Road	--	--	Open air stalls
8	Mall Road	--	--	Open Air stalls
9	Ring Road	--	--	Open air stalls & shops

Source: Extracted by the Consultants on the basis Field Studies

3.7.3 PARKING DEMAND ASSESSMENT:

To assess parking demand , we must refer to the tourist / traffic volumes extracted through traffic field studies that shows, in peak days around 15000 tourists reside over nightly, adding overlapping / already residing tourists (Based on average 2 nights stay of each tourist) 15000+15000, it sums up to 45,000 tourists in any peak day. Assuming that 30,000 of local urban population with cars have their own parking spaces within their premises, this figure remains 45,000. Considering that 80% of this total volume has travelled by Car, it gives out 36,250 persons who travelled by car and assuming 3.5 persons per car (including children), we get around 10,500 car parking spaces required for the year 2011 and this demand expected to rise to 15356 cars by the year 2016 and 48040 in 2031 calculated at static growth rate of 7.9% per annum. Ultimately we have to consider for this volume for our immediate short term plan. Hotels are already providing space for 1471 cars, reserved parking lots provide another 1085 spaces and around 1600 summer houses / rental lodges provide another space for 3200 cars (2 car spaces per lodge on an average), thus finally we get a total of 5756 existing available parking spaces (including both paid / free public and private, rental lodges, summer houses and hotels etc.). So another 4601 car spaces for resident overnight tourists in peaks are still needed.Now considering day trippers car volume (around 14000 cars entered that peak day, out of which 9600 left

same day), if we assume that out of these 9600 day tripping cars, 80% at least should have parked their car for 2 hrs. On an average to have Lunch or some other activity, we must arrange for 2500 day tripping cars at least. So total parking demand comes out to be for 4601+2500= 7101 total car spaces to be accommodated in any peak day. Thus, eventually it requires additional physical space of 40 Acres (1,775,000 sft) to accommodate current peak demand and another 28 acres by the year 2016. However, this demand expected to grow with 7.9 % average annual tourist volume increase (as estimated / projected from field studies and considering the 431,300 tourists in 1987 as Master Plan 1988-2013 stated) in the tourist volume (given in tourists projection table in coming section) every year.

Table 3.44: Parking Demand Projections

YEAR	PROJECTED PARKING DEMAND (No of Cars)
2011	10500
2012	11329
2013	12224
2014	13190
2015	14232
2016	15356
2017	16570
2018	17879
2019	19291
2020	20815
2021	22459
2022	24233
2023	26147
2024	28213
2025	30442
2026	32847
2027	35442
2028	38242
2029	41263
2030	44523
2031	48040

Source: Extracted by the Consultants on the basis Field Studies

Road Users Behavior:

It has been observed during peak season that most of the chocks / congestion are caused by irresponsible behavior exhibited by road user. Road users, especially young impatient drivers tend to violate lanes and ultimately cause chocks. In addition sometimes noncooperation to the traffic wardens is also a common scene.

3.8 TOURISM INFRASTRUCTURE:

Tourism infrastructure is largely defined as supporting elements that a tourist destination needs to offer for its visitors such as the accessibility to the tourist destination, local facilities and identification of thrust areas of tourism promotion. The development of tourism relies on the development of appropriate infrastructure, which services a tourist's needs and encourages investment by the private sector in

competitive tourism product. Infrastructure such as accommodation, restaurants, built attractions; tours and transport are primarily developed by the private sector. Private investors are unwilling to invest in tourism facilities, however, without good infrastructure and the availability of affordable basic services such as power, water, sewerage, electricity and telecommunications, which together make tourism investments economically viable.

The current infrastructure of Murree is not able to cope with abnormally high peak tourist each year. The current tourism infrastructure is explained briefly in the coming sub-sections.

3.8.1HOTELS:

Murree houses several hotels ranging from bed-hotels to five star hotels. There are about 266 hotels (out of which 216 are registered with Excise & Taxation Department) of different category in Murree which provide accommodation services to the tourists. Depending upon the tourist's affordability, a range of hotel accommodationis available. However, there is a great need to improve the hotels' level of service and satisfaction experiences of the tourists.

Table 3.45: An indicative categorization of hotels is given below:

Sr. No	Hotel Category on availability of Rooms	Total Nos.	Separate Bath	Ensuite Bath	In-house Restaurant	Parking Space
1.	Less than 10	84	Yes	Yes	Yes	Provided but less than 2 cars can park at one time
2.	11 – 20	86	Yes	Yes	Yes	Normally for 2 - 4 cars, parking is provided
3.	21 – 30	38	Yes	Yes	Yes	3 to 6 cars, parking is provided
4.	31 – 40	45	Yes	Yes	Yes	5 to 12 cars, parking is provided
5.	41 – 50	7	Yes	Yes	Yes	10 to 15 cars, Parking is provided
6.	51 – 60	3	Yes	Yes	Yes	10 to 15 cars, Parking is provided
7.	61 - above	3	Yes	Yes	Yes	20 or more cars, parking is provided.
	Total	**266**				

Source: Extracted by the Consultants on the basis Field Studies

3.8.2 LODGES:

Lodges are generally small houses build in the grounds of a large house, typically occupied by a gatekeeper, gardener, or other employee. As such there are very little lodges are available in Murree but most of the accommodations are titled as lodges to attract tourists.

3.8.3 APARTMENTS:

There are quite a large number of (approx. **1423)** apartment buildings built for tourists' accommodation. These are normally rented out or leased out on long term basis to the affluent.

Rental Houses:

Rental houses are normally built for the purpose of renting out housing facilities for the local population and or the working community who are engaged in the tourism industry at different levels.

Rental Rooms:

Rental rooms are individual rentable unit's e.g. suites or studio apartments within an apartment. These serve the purpose for cheap accommodation to the short term visitors.

1. Public Sector / Institution Owned Accommodation:

These are normally those accommodations which are built by some public sector institution for its local employees or employees of the same organization working in some other city. These are built for the purpose to accommodate such employees who visit Murree in a season either on account of disposal of official duty or enjoying holidays. The Public Sector / Institution Owned Accommodations are normally called as Rest House.

Leisure Sites:

Leisure sites are typically those areas which host a kind of activities for the tourists for their free time. Murree houses various leisure sites for everyone to enjoy depending upon the inclination and affordability of the individual to engage in such leisure activities of their choice. Famous leisure sites include Kashmir Point, Pindi Point and recreationally Mall road to roam about in evening to name a few.

3.8.3 Cable Cars / Soft Wheel Train:

Chair lifts or cable cars are the main attraction for every age in Murree. Installed at Pindi Point, these are easily accessible and affordable, running on a length of 1.5 km one side. The round-trip which usually takes 20 minutes, makes the one's experience more exciting as below one come across magnificent natural sceneries and serenity of the Murree' stunning beaut, lush green pine trees stand throughout the journey. En-route down the valley there is a stop-over, housing a coffee shop & children play land. The lush green jungle can be enjoyed from this point.

Soft wheel Train is recently added into the tourism infrastructure by Tourism Development Corporation of Pakistan (TDCP) which starts its journey from Kashmir Point to Governor House round trip with a carrying capacity of 70 tourists and charging Rs. 100 per person.

A modernized Cable Car is installed at Patriata some 15 KM away from Murree which is another tourist attraction in the Murree region.

Street Furniture:

Street furniture in terms of tourism is very important as it is used as a refuge, sense of being, inspiration, architecturally exquisite and may become a monument that histories to remind. Murree obviously in known past and present lacks the street furniture that doesn't respond to heavy tourist traffic. The public spaces and places are frequently marred with heavy encroachments, visual intrusion, vandalism and uncontrolled commercialization. There are very few facilities for the tourists that are part of street furniture such as rain shelters, street benches, streetscape, lights, waste bins, and signage and location maps. However, it is highly needed that the street furniture may also be provided that blends with the historic architecture of Murree.

3.8.5 Trade & Commerce:

Murree city has a mixed economic base, the, more significant amongst them being Trade & Commerce related to Tourism and Hospitality. Hotel and restaurants trade dominates the city. Thereafter tourism based trade play an important role in Murree's economy. The market centers are largely concentrated along major city roads like Mall Road and Kashmir Road with also historic bazaars in the central city. The trade and commerce activities not only catering the needs of Murree but also the needs of fringe area residents. The market center also serves to the nearby small settlements for supplying various commodities especially building materials and consumer products. As they have considerable effect on Murree's economic profile, most of the local population is involved in hotel and related activities.

The industries are not well developed in and around Murree like any other hilly town because of the unavailability of proper infrastructure, hilly region and environmental constraints. Traditional small-scale industries like wool spinning and weaving, basket making, metal work, that use local resources are still alive without much progress. Apart from this, wood working, black-smithy, dying and manufacturing works, pottery, gold smithy are other small scale industries practiced in the town. Murree Brewery which is the largest beer production industry in Pakistan is also located in Murree.

A small population is also involved in home based handicrafts and artifacts to serve the needs of tourist population in Murree.

3.8.6 Historical and Cultural Heritage:

Murree has a distinct history and cultural heritage that dates back to 18th Century. Many historical buildings are located in the city. Areas like Lower Bazar, Dhobi Ghat and Mall Road have a lot of historical and cultural buildings. Murree Brewery is another heritage being lost. Pressure of commercial development is

currently being felt on the city's built heritage. High-rise buildings are overpowering heritage structures and sites leading to devaluation of the heritage value of the city. Natural heritage in terms of open spaces, tree lined avenues, historic precincts and the natural landscapes are losing their functional and aesthetic identity due to frequent human interaction.

3.9 TOURISTS:

Tourist Classification:

To provide services to tourists and aid the industry with the availability of enabling infrastructure, it is very much necessary that the tourists are classified. Their classification helps in analyzing and understanding the need and requirements of different strata of tourists and their activities to be performed in a tourist destination. Without such information, the planning for tourism infrastructure and facilities could be fiasco. The tourist classification also helps in establishing regulatory requirements related to tourism, standardization of travel and tourism services and monitoring of and inspection of tourist's establishments and service providers etc. The general Classification is done on the basis of age, sex and purpose of travel, estimated number of days stay in an area etc.

Age & Gender Composition:

Gender is an important aspect to be studied in the tourism. The male and female ratio among tourist population is found as under:

Table 3.46: Age and Gender Composition

Tourist Age	Male (%age)	Female (%age)
Infants (accompanied)	1.5	2
3 – 12 years	2.5	3
13 - 19 years	15	13
20 - 24 years	20	19
25 - 29 years	18	19
30 - 34 years	13	12
35 - 39 years	8	4.5
40 - 44 years	4	6
45 - 49 years	5	5
50 - 54 years	2	4.9
55 - 59 years	7	5
60 - 64 years	3	5.6
65 - 69 years	0.5	0.7
70 years or over	0.5	0.3

Source: Extracted by the Consultants on the basis Field Studies









Note: These plans represent themes to be refinedin further planning. Land uses, streetpatterns, and exact alignments in all areas areconceptual / Indicative, and to be subjected to any kind of detailed evaluationand confirmation. Under no circumstancesshould these plans / illustrations be construed as final representations /directivesfor specific sites or areas.

CONSULTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

HISTORICAL BUILDINGS

SHEET # -a **SCALE: N.T.S**

3.9.1 VISIT/TRIP WISE CLASSIFICATION:

Volumes & Seasonality:

For holiday/tourist visitors, the most popular months are July/August (32 percent of total tourist arrivals), followed by December, January & February. March, April, May, September, October and November are the least popular months. Analysis has shown that overall the 48.08 percent of all year's tourist's visit alone in the months of June to August (3 months). This is mainly because in most parts of Pakistan, schools are closed and the scorching heat in the plains of Punjab and Sindh encourage the tourists to spend the summers in the resort town of Murree. Another peak season December to February is witnessed (21.15% of all years' tourism) is done during this period. Rest of the months (March, April, May, September, October and November) observe 30.77% of tourism. As tourism demand to Murree increases due to improvement in road infrastructure, accessibility and rapid increase in car ownership rate, a more significant seasonal pattern is likely to emerge. The reason for this is that 'day visitor' traffic tends to be rather evenly distributed throughout the year, whereas holiday traffic tends to be more peaked at certain times of the year, especially the summer as a peak seasons.

Table 3.47: Tourist Volume Projections

Tourist Forecasting for Murree			COMMENTS
Year	**Annual Tourist Draw**	**Annual % Increase**	
1987	437,000	5%	Normal Predicted Increase
1988	458,850	5%	Normal Predicted Increase
1989	481,793	5%	Normal Predicted Increase
1990	505,882	5%	Normal Predicted Increase
1991	531,176	5%	Normal Predicted Increase
1992	557,735	5%	Normal Predicted Increase
1993	585,622	5%	Normal Predicted Increase
1994	614,903	5%	Normal Predicted Increase
1995	645,648	5%	Normal Predicted Increase
1996	677,930	5%	Normal Predicted Increase
1997	711,827	5%	Normal Predicted Increase
1998	747,418	5%	Normal Predicted Increase
1999	784,789	5%	Normal Predicted Increase
2000	824,029	5%	Normal Predicted Increase
2001	865,230	5%	Normal Predicted Increase
2002	912,818	5%	Normal Predicted Increase
2003	958,459	6%	Reflecting car Ownership Increase
2004	1,021,717	7%	Reflecting car Ownership Increase
2005	1,093,237	7%	Reflecting car Ownership Increase
2006	1,180,696	9%	Reflecting car Ownership Increase
2007	1,298,766	11%	Abnormal Increase Due to Peace
2008	1,454,618	13%	Abnormal Increase Due to Peace
2009	1,672,810	15%	Abnormal Increase Due to Peace
2010	1,973,916	17%	Abnormal Increase Due to Peace
2011	2,388,438	17%	Abnormal Increase Due to Peace
2016	2,866,126	20%	Trend Continues (Normal Abnormal)
2031	3,439,351	20%	Trend Continues (Normal Abnormal)

Source: Extracted be the Consultants on the basis of figures extracted from Master Plan 1988-2013 and correlated to Field Studies

Table 3.48: Tourist Volume Distribution overthe Year

Month	%age of Total	Monthly Tourists	Cumulative % Season-wise	Remarks for Seasonality Factors
Jan	7.70%	183,909.76	20.99%	Start of New Year + Lower School Attendance
Feb	4.50%	107,479.73		Low Tourist Draw as Many Schools are taking annual examinations
Mar	2.60%	62,099.40	14.80%	Extremely Low Tourist Draw as Many Schools are taking annual examinations
Apr	4.90%	117,033.48		Start of New Academic Years, Families are relatively busy
May	7.30%	174,356.00		Tending to be free
Jun	14.25%	340,352.47	48.08%	School Summer Vacations Start
Jul	17.48%	417,499.03		School Summer Vacations
Aug	16.35%	390,509.68		School Summer Vacations
Sep	8.29%	198,001.54	16.13%	Academic Sessions starting
Oct	3.24%	77,385.40		Mid-year Exams in Schools taking place
Nov	4.60%	109,868.17		Mid-year Exams in Schools taking place
Dec	8.79%	209,943.74		Winter Vacations Start, relatively high influx starts
Total		**2,388,438**	**100%**	

Source: Source: Extracted by the Consultants on the basis Field Studies

3.9.2 AVERAGE LENGTH OF STAY:

The average length of stay refers to the average number of nights/days a guest stays in an establishment. It is calculated from the duration of a guest's stay from his/her registration until the check-out from the establishment. It is very important element in studying tourists' behavior and their classification and determining their visit/trip wise classification. It also reveals the burden the tourism infrastructure would probably shares by the duration of the visitors' stay at a destination. The average length of stay is 2 nights for the tourists visiting Murree, but there is wide variation depending upon the classification of tourists' staying at the type of accommodation. Following information has been produced from field studies in Murree about the Length of Stay by accommodation type:-

Table 3.49: Average Length of Stay

Type of Accommodation	Avg. Length of Stay (nights)
Hotels	2
Visiting Friends & Relatives (VFR)	1
Guest Accommodation at Rental Suites / Apartments	2
Guest Accommodation at Owned Suites / Apartments	7
Overall Average	3

Source: Extracted by the Consultants on the basis Field Studies

3.9.3 TOURISM EXPENDITURE:

It has been estimated from the field studies that an average tourist spends Rs. 5300 per day during his stay in Murree. It is estimated that annually Rs. 50, 918 Million is spent in Murree by the tourists. A typical breakdown of breakdown of where that expenditure takes place is given below:-

Table 3.50: Itemized Average Expenditure by Type of Visitor

Expenditure Items	Expenditure % age	
	Staying Visitors	Day Visitors
Accommodation	33.00	-
Food and Drink	18.00	16.00
Retail Shopping	7.00	4.00
Attractions	9.00	16.00
Transport	23.00	29.00
Shopping for Friends, Relatives etc.	10.00	35.00

Source: Extracted by the Consultants on the basis Field Studies Retail 17% 13%

Occupancy Rates:

The peak room occupancy in Murree is stated to be 85% by Hotel Owners Association, Murree. A very interesting phenomenon has been observed in Murree is highly inconsistent occupancy rates over the year. The current road infrastructure of Murree is always overcrowded in peak seasons or even widely observed at peak days. Most of the visitors on such peak days forced day-tripping, as the hospitality hub of Murree are located in central city where most of hotel establishments are present; tourists cannot access affordable hotels or tourists don't have access to the desired hotels of their choice due to congestion in Murree on such days. Hence, they have to commute back to neighboring cities like Rawalpindi, Islamabad where they wish to find easily located hotels. Hence a low occupancy rates are always prevail even in the peak seasons in Murree.

Average bed occupancy rates increase for the period June to August and again in December to February. In each year, the lowest average bed occupancy rates were recorded in the months of March to May, September to November. It is also observed that as all activities are tourists eccentric like commercial activities also reduce by reduction in tourists' influx.

3.9.4 TOURISM INVENTORY:

The recreation inventory was conducted through onsite visits to each of the prominent locations. The tourism inventory is done to get information about the valuable set of data such as visitor counts and admission to area attractions. Tourism inventories are useful indicators of total visitor numbers in tracking trends at specific attractions. However, without survey data, it is difficult to use these data directly to

estimate visitor numbers and impacts. This is because both local residents and visitors may visit attractions and it can be difficult or impossible to determine what percent of total people admitted are visitors. The tourism inventories thus in the case of Murree are not accurate to the extent. In addition, another problem also encountered that the visitors to an area are likely to visit more than one attraction. Without survey data indicating the average number of attractions visited and which attractions are visited, it is difficult to use the attraction visitor counts to estimate total visitors to such locations. Finally, not all visitors will visit local attractions, especially if they are in the community on business or to see family and friends. In Murree, visitor counts and admission to individual facilities is also difficult at this moment as no registers are maintained to count visitors to such public attractions.

During field visits to famous tourist attractions in Murree, the Consultants have determined that the visitation to such places is not planned by both the host place and the visitors' end as well. Most of such visits are accidental in nature such as passing by to some other location; the visitors come across a public attraction place. This is why most of public places in Murree look hotchpotch and a sense of clutter are felt rather the visitors enjoy serenity and a sense of being at some place. Further, the visual pollution coupled with extrinsic encroachments mar the beauties of public attractions. Some of the figures from field surveys reveal the following numbers to some important places in Murre:

Table 3.51: Visits to Public Attractions

Sr. No.	**Public Attraction**	**No of Visitors /day**	**Remarks**
1.	GPO Chowk	50,000 – 90,000	Generally visitors come to the central city. The visitation is accidental in nature for most of the visitors.
2.	Churches in Murree	Upto 500	As the Churches are worship places for Christians, the visitation is limited on ethnic grounds. However general public passes by such churches as accidental. The visitation by Christians on Sundays or some sacred days may increase.
3.	Masjid Imam-e-Kaaba, Company Bagh, Murree	Upto 5000	Masjid Imam-e-Kaaba is amongst the most beautiful mosques of Pakistan developed by a British New Muslim Lady Mrs. Ghufran Qureshi. It's the 1st mosque in the history of Pakistan which is inaugurated by Imam-e-Kaaba Sheikh Saleh Bin Abdullah Bin Humaid. The lights in the mosque resembling Harmain Sharifain and Masjid-e-Nabwi remind its visitors the memories of Makkah Mukkarma & Madina Munawwara. Along with Muslims, a number of Non -Muslims also come to visit this mosque and are highly impressed with its natural beauty and spirituality.
4.	Convent of Jesus & Mary	500 – 2000	Founded in 1818, the Convent of Jesus & Mary offers boarding high school education to young ladies of Roman Catholic. However, in 2007, the Convent discontinued its tradition of offering boarding schooling. The site is especially attractive for foreign visitors.

5.	Lawrence College Murree	200 – 1000	Established in 1860, spread over an area of 150 acres, the College was built with an aim to impart boarding education to the children of British army. However, later after independence, the College is being administered by the Pakistan Army. The site being historical in nature is much attractive to foreign tourists or visitors having interest in historical buildings.
6.	The Mall	90,000 – 150,000	Mall road is the famous market place in Murree. The shopping hub is mostly crowded by the tourists after the sunset. The reason that why Mall Road is full of tourists in the evening is that mostly tourists visit hills at day time and Mall Road at night when they only have to just shop or dine. It is a slope starting from General Post Office. Food & misc. souvenir shops are situated on the both sides of Road. It is open till midnight.
7.	Kashmir Point	10,000 – 60,000	Kashmir Point is a spot on Mall Road, going up from GPO about 1 km. It is at the top of a hill facing beautiful view towards Kashmir peaks that's why this point is called Kashmir Point. In the months of May/June, one can see the far-distant Kashmir hills covered in snow from this point. Two roads/paths go up the GPO towards Kashmir Point. View of Murree from both ways is different. Some tourists do hiking towards Kashmir Point. The place has recently decorated with new tourism infrastructure such as kiosks, sitting benches and a new beauty to the town – The Soft wheel Train which starts its journey from Kashmir Point to the President House, the tourists can enjoy the beautiful scenery of Murree hills on their way around. 15 refreshment points are available here for tourists. Water tanks which supply the drinking water throughout the Murree Town are also located here. .A filtration plant is also installed for providing safe drinking water to the tourists and the residents. In July and August this point is almost seen covered with full fog. This scene ignites the poetic nature of people and they feel it as a paradise. A small children park is also constructed at this point.
8.	Pindi Point	10,000 – 60,000	Pindi Point is another peak in Murree facing Rawalpindi / Islamabad and hence is named as Pindi Point. The site is mostly attractive for the visitors that Murree Chair Lift starts from here. Sitting plan is also available for tourist which goes through the jungle below offering a natural view to the tourists. The tourists can enjoy the conveyance available which picks the tourists from Usmania Point to Chair Lift.
9.	Tomb of Marry (A.S)	A few hundreds	The site is located at Pindi Point where these days TV Boosters are installed. The site is allegedly supposed to be the resting place for Hazrat Marium or Marry (A.S). The site lacks evidence but still the place is regarded sacred to both Muslims and Christians. If the authenticity of this place is proved, it is envisaged that Murree would become a pilgrimage city for Muslims and Christians.
10.	Bhurban	1,000 – 10,000	Bhurban is a small town and a hill located in North approximately 13 kilometers from Murree city. It is one of the most picturesque places in the Murree region; it is a tourist paradise with fauna, flora and a wide variety species of animals not found elsewhere in Pakistan. It is known for a nine hole golf course, which is golfer delight during the summer season. Bhurban is also famous and attractive for a 5 Star hotel.
11.	Hiking Treks	A few hundreds	From Pindi Point To By Pass: The trek offers the tourists to enjoy hiking with a direct view to natural serenity of Murree hills. The hiking trek is a good tourist infrastructure, however, the steps are steep and to some extent slippery which is highly dangerous for the hikers. Overall the trek is in good condition. Hiking Trek from Kuldana Chowk to Kashmir Point: This trek is

			partly damaged from start and the middle. The trek is steep & slippery which is very harmful for trekkers. Hiking Track from Dairy Form to President House: This trek is also partly damaged from middle. It is also steep and slippery.
12.	Bansara Gali Water Fall		It is very beautiful scenery which attracts the tourist. Two little water falls very near to one another exist here. Water is not pure which flows at this point due to open dumping many shopping bags come on this point and affect the beauty.
13.	Wild Life Park Bansra Gali		A wild life park is present in natural atmosphere. A wide car parking is available for tourists. A few animals and birds are present here like Silver Pheasant, Yak (4, 5), Siberian tiger, deer etc. a natural stones, hiking trek is also made here for tourists to interact with nature. A children park is also available. However, the park is in very rough condition. The access road is very steep and badly damaged and not suitable for cars. The animals look hungry and malnourished. Park authorities are also not interested to make park attractive or beautiful.
14.	Horse Ridding		Another entertainment for tourist is horse riding. Beautiful horses are available at Kashmir point as well as Pindi Point. Beautiful flowers make the Cantt. Area so attractive making it very clean and pure environment where no noise of traffic and pollution is felt. These are the places worth scene.

Source: Extracted by the Consultants on the basis Field Studies

3.9.5 EVENTS AND ACTIVITIES TO ATTRACT PEOPLE:

The attractions are sometimes the purpose of visiting a tourist town. Murree has a great potential for attracting people thus generating domestic tourism who can easily access and afford the local tourism in Pakistan. The inventory of tourist activities further explore that most people are attracted to Murree due to several reasons, briefly described in annotated form below with comparison to other competitive cities in the region / part. From the next given analysis it can rightly be concluded that Murree is more attractive and thus most favorable for domestic tourism in all seasons.

Table 3.52: Comparison of Tourist Sites

Competitor Tourism Sites	*Price/ value/ affordability*	*Accessibility*	*Public Facilities*	*Mountains*	*City Attractions*	*Forest/Nature*	*Heritage & Culture*	*Adventure*	*Accommodation.*	*City Image*	*Urban Security*
Murree	**	***	***	**	***	***	***	**	***	***	***
AJK / Neelum	***	**	**	***	**	**	*	*	**	***	**
Galliat Abbottabad	**	**	*	***	**	***	**	**	**	**	*
Swat	**	*	**	***	**	***	**	***	**	**	*
Naran	**	*	*	***	*	***	*	***	*	***	***

* Average ** Good *** Excellent

Source: Source: Extracted by the Consultants on the basis Field Studies

Cultural Events:

Some hotels arrange musical events to attract people. There are also some newspapers which participate in cultural events through local organizers such as to celebrate family fun day, musical eves, flower shows, mango festival, events for children, exhibitions by local artists, poetry and essay competition etc. However, religious festivals (Muslim & Christians) are celebrated with full fervor in Murree and in harmony with religious tolerance. Most recently, Mr. M P Bhandara Memorial (Murree Brewery Polo Cup) was also celebrated in Rawalpindi. However, there is a great need to organize cultural events in Murree which portray and highlight the local cultural aspects.

Hotel & Food Services:

Hotels and food services are not the attraction in domestic tourism. The reason which has been figured out is that a very few hotels offer affordable enjoyment and ease of services to the customers. For example, in most of the hotels in Murree, the hotels are only meant for spending nights. There are no other exceptional services such as entertainment, enjoyment, swimming pools etc. are offered. The customers have to go elsewhere. Similarly the food quality being served is not up to the mark. The result of QualiTest shows that tourists term food quality served at hotels is poor. However they grade quality of service and food at local restaurants much better in comparison to the food service at hotels 45.4% & 22.7% respectively.

There is a great need felt to improve the quality of food at hotels and restaurants. The strategies would be discussed in later chapters in Standardization & Accreditations section.

Parks & Resort Recreations:

Murree offers spectacular parks and resort recreations for domestic and international tourists. The famous parks and resort recreations in and around Murree are briefly discussed below:

Murree Wildlife Park: The Murree Wildlife Park, officially known as the Ayubia National Park, is perhaps one of the best representative quarters of the Himalayan Moist Temperate Forest, a sub category of the Montain Forests. The Murree Wildlife Park is a National Park in the North West Frontier Province of Pakistan. It is a small natural park located 26 km from the picturesque hill station of Murree. The Murree National Park has been developed as a resort complex by combining four mini resorts of Changla Gali, Khaira Gali, Khanspur and Ghora Dhaka in Galliat. The Murree Wildlife Park harbors species like the vulture, golden eagle, hill pigeon and sparrow hawk. The animals include the Asiatic black bear, Asiatic leopard, flying squirrel and hill fox.

Proposed Murree Biodiversity Park: Establishment of a biodiversity park in Tehsil Murree is also proposed by Environment Protection Department (END) Punjab in collaboration with Housing, Urban Development & Public Health Engineering Department, Government of the Punjab; Forestry, Wildlife & Fisheries Department, Government of the Punjab with technical cooperation of ION Pakistan.

Chatar: This resort nestles at the base of Murree hills at a distance of 15 km on Islamabad-Murree road. This place offers scenic walks, gently flowing stream, waterfall and the surrounding hillside are a perfect attraction. The resort has a restaurant, barbecue and two air-conditioned tourist cottages. The Children's Park and playground are spread over an area of 12.5 acres.

Salgiraan: Saligiraan is 29 km from Islamabad and 5 km from Chattar Bagh. TDCP developed this spot and make it attractive for picnics and day visitors. Mostly people come to stay here for 15 to 20 minutes have a cup of tea or cold drink take some rest and then start their journey towards Murree.

Chara Pani: Chara Pani is about 38 km from Rawalpindi and 18 Km from Murree. Charra Pani means a place where cold water springs gush out of the hillside. Tourists stop over for a short time. Due to its healthy atmosphere of this spot major TB sanatorium is established here.

Bhurban: Bhurban is a minor resort eight kilometers from Murree on the road leading northeast to Kohala and the Jhelum Valley and accessible by Bhurban Road & N-75 through Alyot. A nine-hole golf course is also located and is open only to members. A major hotel chain also established their branch here, which is the only one Five Star Hotel in Murree.

Patriata: Patriata is 25 km from Murree. It has become a new tourist resort. There is a chairlift and cable car system, which takes visitors up to Patriata Ridge in two stages from Gulehra Gali. The first stage is by chair lift up to Patriata Bazaar. From here visitors transfer to cable car gondolas for the ride up to Patriata Ride. A restaurant has also been established. Further plans include development of a wildlife park at the mid-station.

Ayubia:Khaira Galli, Changla Galli, Khanspur and Ghora Dhaka, these four mini resorts spread over an area of 26 km have been developed into a resort complex called Ayubia. In addition to riding trails, hiking places and picnic spots, Ayubia has a chair lift, which like a ski-lift, takes you up to the summit of the nearby range for a panoramic view of the forested hills. Ayubia is 26 km from Murree.

The Galliat:

Nathia Galli: Perhaps the most sought after is the beautiful Nathia Galli perched 2501 meters high about 32 km away from Murree. The bracing air of the surrounding mountains is as pure as fresh spring water.

Dunga Galli: Dungagali is a picturesque small resort situated on the slopes of the Mukshpuri hill (2376 m). It commands a charming view of a series of wooded spurs projecting towards the River Jhelum on the western side. From Dungagali one can climb the 2813-m peak of Mukhshpuri, which is the highest point in the range. Natural springs abound on the slopes. It is 30 km from Murree.

Khairagali: Khairagali is 16 km from Murree at an elevation of 2346 m and commands a panoramic view on either side of the ridge.

Changlagali: Changlagali is 16 km from Murree at an altitude of 2559 m. There is a rest house located in the most picturesque surroundings.

Shopping

Shopping and retail business is a prime aspect in tourism as it is the one sector that targets the tourists' money that directly benefits the local population. In Murree, the land use distribution shows that 4.1% of the total land area is being used for commercial / shops activities. Out of 4.1% area 65.85% land is being utilized for shops / retail outlets of various types. The Land Use Survey conducted by the Consultants also show that commercial activities that attracts tourists are General Stores (34.96%) followed by Souvenir Stores / Shops (15.45%) and then Fashion Stores (9.76%). The survey data indicates that shopping is one of Murree's strongest visitor draws though it is not the primary reason for visiting Murree by the non-residents but is an ancillary activity during their stay in Murree. Hence, shopping is a major contributor to the Murree's economic well-being. The study conducted by the Consultants estimates that shopping activities performed by non-resident tourists in Murree generate between MKR. 15-16 million per day out-of-total expenditure done by the tourists, with an estimated economic impact of PK Rs 6084 million annually.

Although the shopping / retail sector seems grooming in Murree, but at the same time there are many issues related to this sector from the visitors' point of view like value for money and the quality of services that this sector is being providing to them. Since, a tourist's main purpose to shop in a tourist town is to save his memento of his visit to such place, thus there is a great need to beautify the shopping experience of the visitors by enhancing the value for money and quality of services being provided to the visitors. The strategies would be discussed at length in the recommendations in the later chapters.

3.9.6 INFORMATION DISSEMINATION

Sustainable tourism development can only be achieved through proper information dissemination to the tourists. Though Murree is known by name to almost every Pakistani tourist who has visited or yet planning to visit, but still there are many gaps found between the necessary information flow and the tourists. The Consultants have carefully studied the existing visiting behavior of tourists in Murree and are very much surprised to know that a very few percentage of tourists really know about Murree and the things to know about Murree before starting their journey. For example, a very few people know the various accommodation services available in Murree; the things which they should have brought for the visit; the dressing and weather information; the local attractions and things to do in Murree and around etc. The reasons which the Consultants have worked out are:

- Improper / insufficient information availability to the general public about Murree and touring in Murree;
- The information gaps are largely coming from the responsible organizations like PTDC, TDCP, Hotels Associations, Local administration etc. for inadequate provision of necessary information about Murree in print and electronic media including websites;
- Lack of travel management and tour operations by the tour operators and the tourists as well;
- Lack of provision of local tourism maps indicating places of interest, road network, important places and other related tourist information;
- Only one Tourist Information Center (TIC) is located in Murree on Mall road, whereas TICs should be conveniently located at different places in and around Murree;
- Inadequate tourists guiding signage and directional posts in Murree.

If the information dissemination is streamlined properly it is hoped that tourism in Murree will also be in line with the tourism goals.

3.10 ACCESSIBILITY & CONSTRAINTS:

The accessibility and constraints in tourism refers to the facilitation and barriers in recreational activities for the general public and specifically to the persons with disabilities and people with limited mobility including elderly people and families with infants that require a pushchair or pram. As leisure based tourism is considered to be barriers-free, thus it leads to a better understanding of tourist motivation, decision-making and destination image. The Consultants have considered all the factors governing accessibility and constraints for tourists visiting Murree. These are briefly categorized as:

Environmental Constraints: These include any environmental negative points that may discourage tourists to visit Murree such as unsuitable climate or increased level of pollution at local level.

Socio-Economic Constraints: These include social and economic aspects like affordability of the tourists and social acceptability of the local population or their general attitude for the tourists' population.

Physical Constraints:

These include any physical infrastructure disadvantages that affect tourist arrival in Murree e.g. congestion which sometimes forces tourists to go back even without entering central Murree; inadequate tourism infrastructure especially considering people with disabilities, ageing people and families with infants, quality of service and infrastructure deterioration.

Interaction based constraints:

These include interactive behavior of local population with the tourist population e.g. cultural barriers such as language problem. These also include level of service and skills offered by host population to the tourist population. The Consultants, have analyzed the situation for above factors and are of the view that Murree is a perfect place for tourist and local population. However, there is only need to improve and update the physical infrastructure as it is not much friendly for persons with disabilities and people with limited mobility including elderly people and families with infants and quality of services in the tourism sector.

Environmental Stewardship / awareness

Environmental Stewardship refers to the actions and outreach that provide opportunities for the public to become personally involved with nature so they can experience an intimate relationship with the environment they share. Since Murree has been declared as an environmentally sensitive area, it has become a dire need to protect the environmental quality of Murree. Unfortunately, the tourists seem least interested in environmental conservation. However, the public and tourist population can be motivated for safeguarding the local environment by educating, awareness campaigns and through responsive tourism.

3.11 PUBLIC PARTICIPATION:

The planning process can be more effective if the public is involved. Since this master planning is not a traditional planning exercise, it is focusing on tourism development and its integration with the urban development and environmental conservation of Murree, thus it becomes more critical to include the wishes and views of the public and tourist for achieving sustainable tourism in Murree. As the impacts of tourism are felt most keenly at the local destination area and, community residents

are being recognized as an essential ingredient in the 'hospitality atmosphere' of a destination. The Consultants have thus tried to include the view points of the public in the Master Planning Process. The efforts are discussed briefly below:

3.12 QUALITEST ASSESSMENT:

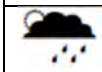
The QUALITEST tool is based on a set of recommended indicators for evaluating the quality performance of tourist destinations and services, which is widely practiced in evaluating quality and performance of services provided by tourism industry in Europe and other parts of the world. The Consultants have also used the standard indicators developed by the European Communities / European Union. The indicators are built on a range of specific expressions. QUALITEST is based on sound business practice, in effect what a tourist destination should be doing automatically to give best value. The results of the QUALITEST will help Murree to strive for improvement of the quality it offers to its customers. Since achieving quality is a continuous process of quality management, the Consultants envision that local tourism industry shall work on the provision of quality services and their maintenance.

Table 3.53: QualiTest Assessment Matrix

Indicator	Quality Perception Condition Indicators (QPCI)	Quality Management Indicators (QMI)	Quality Performance Indicators (QPI)
 **Viability of local tourism Industry**	It is the percentage of local tourism industry professionals more than satisfied with business last season in comparison with the previous season. The survey results show that the local tourism industry is working well. The Hotels Association is 99% satisfied with the business outreach.	It is the measure of how the local tourism industry's owners / managers are networked and how their problems / issues are communicated and the tourist facility is facilitated and functions effectively. The Consultants have analyzed and found that as a forum "Hotels Association" is present and working efficiently. It is further assessed that the managers of tourists' facilities are well aware of their responsibilities and their functions.	It is the percentage growth of the tourism industry in Murree over the years. Since 1987, the percentage of tourists flow to Murree has increased 36% from the tourist influx of 431,300 to over 1.2 million annually. This higher growth of tourist influx in Murree has recently been recorded due to several reasons mainly the deteriorating law and order situation in Swat and other parts of tourist destinations in Pakistan.
 **Support to**	It is the measure of satisfaction level of local tourism industry professionals with the	It is the measure of if any programme is in place to coordinate business support to	It is the reflection of how local tourism industry is availing the business support if

local tourism industry	business support opportunities offered in the destination. The analysis shows that the local tourism industry is relatively satisfied with the efforts of the government for fostering local tourism industry. As the Hotels Association showed concerns over the less investment in tourism infrastructure. Further, the local tourism industry is not being encouraged / supported through technical advice for further growth of their business, government funding, provision of soft loans etc.	tourist services. The Consultants have assessed that Govt. of the Punjab and Govt. of Pakistan are highly interested in developing Murree as a successful tourist destination. The recent investments in road infrastructure by Federal Government (Murree Expressway for example) and Provincial Govt's efforts like preparation of Murree Master Plan in past and currently the Tourism Master Plan under preparation by the Consultants are examples of government support and interest. It is further highlighted that Punjab Govt. has initiated various projects for the improvement of physical infrastructure and tourism infrastructure in Murree. However, there is a great need to work on local business support through soft loans, funding programmes for their initiation and sustainability.	any. The assessment shows that the local tourism industry is dissatisfied with the efforts and patronage of government for business support opportunities to the local tourism industry. There is a need to improve the system at government level and gain the trust of local tourism industry.
 **Marketing and promotion**	It is the measure of satisfaction of local tourism industry professionals with the quality of marketing and promotion of destination. The Consultants have assessed that the marketing and promotion campaigns for tourist attraction is mainly done by the individual private sector. The government patronage is relatively low. Moreover, being a tourist destination, Murree has never been marketed as a brand.	It is the measure of conformance of the marketing and promotion with the formally approved tourism strategy / master plan. This needs to be checked on the basis that the Master Plan estimates and recommends the extension of tourist facilities and services in line with the tourism demand. If the destination is over-marketed and promoted,	It is the measure of the level of marketing and promotion investment and the associated benefits. The Consultants have assessed that the money invested in marketing and promotion of Murree is less whereas it returns back with great economic benefits to the local tourism industry.

		there is fear that the tourists would receive low-end tourist services and there will be deterioration of quality of services. The Consultants have assessed that Murree has been over-ambitiously promoted by the private sector, thus its tourism infrastructure cannot support the tourists influx presently. Further, the tourists seem highly dissatisfied with the quality of number of services being provided to them.	
 **Quality of welcome**	It is the percentage of tourists more than satisfied with the friendliness of the local population. The survey results indicate that 48% of visitors were found satisfied with the friendliness of local people.	It is the measure and mechanism of regularly receiving feedback from tourists and local people on their opinion of tourism in Murree and how they perceive the friendliness and feel at ease dealing with each other. The survey results indicate that the local people are friendly and peaceful with tourists and tourists also behave like the same.	It is the indication of how tourist season pressure on the destination. In Murree, the seasonality is experienced frequently. The friendliness however is not changing with the increased tourists' influx. This is mainly because the local tourism industry is dependent on the tourists flow. However, a high seasonality sometimes leads to pressures on the destination in the form of overcrowding, and potential resource shortages, such as lack of drinking water and shortage of tourism accommodation.
 **Safety and Security**	It is the measure of tourists more than satisfied with feeling of security and safety (including availability of health services) during their stay. The survey results show that 77% of	It is the reflection of how cohesive is local society in general. The low ratio of crimes and law and order situation in Murree attracts more people to visit Murree.	The incidents of criminal acts in Murree are very low. However, minor acts of robbery, pick-pocketing and harassment of females are reported. The

	tourists are satisfied with the sense of safety and security situation in hotels and at public places.		police is however, proactive in controlling crimes in Murree.
 **Ambient air quality**	It is the percentage of tourists more than satisfied with quality of air in Murree. The Survey results show that about 63% tourists are satisfied with the ambient air quality in Murree. However, they showed concerns over smoke emitting vehicles in urban areas of Murree.	The Environment Protection Department (EPD) Punjab regularly monitors the ambient concentrations of air pollutants in Murree. However, the information is not readily available to the general public.	Murree has a very pleasant weather all over the year. Murree is fortunate in having all day winds and thus transfusion of air pollutants is experienced. However, at ground levels little concentration of air pollution is felt sometimes.
 **Local environmental quality**	It is the percentage of tourists more than satisfied with the cleanliness of the local environment in Murree. The survey results show that 85% tourists are satisfied with the overall environmental quality of Murree. However, 15% tourists showed dissatisfaction over the cleanliness in Murree.	It is the indication of whether responsibilities for managing the cleanliness of Murree have been effectively carried out. The Consultants evaluated the local environmental quality and found that the environmental quality is being deteriorated in recent past due to several reasons mainly on account of inefficient collection of municipal wastes and its disposal practices. Further, the drainage system is also marring the beauty of Murree.	It is indicates how widely litter is dispersed in the destination by measuring the amount of litter per square kilometer. The Consultants have concluded that 1.67 tons of waste is dispersed per Sq. Km per day over an urban area of 17.9 Sq. KM in Murree. The visual appearance of Murree is of course important both for the residents and for the tourists, who place high demands on a litter free and clean environment.
 **Pre-arrival Communication**	It is the measure of tourists more than satisfied with the quality of communication on the destination received prior to arrival. It is observed that a very few people (12%) are really interested in getting information about their intended accommodation and other tourists services in Murree. Large segment of tourists decide on arrival about the place to stay as per their economic	It is the identification of significant market segments and their expectations. It has been observed that usually tourists are attracted through number of ways like referred by friends, magazines, brochures and internet. However, attention should be paid by the concerned departments and tourist facilities owners that no wrong information is	It is based on the assumption that if the tourists are unsatisfied with the quality of the product that they have purchased or experienced, and many of their expectations will most likely have been built on marketing and promotion of the destination, then they will complain. In Murree, most of the

	affordability and ease.	communicated to the tourists before or upon their arrival. It is feared that on account of misleading information, the tourists can experience negative quality.	hotels have complaint registered and their complaints are properly addressed. However, there is a dire need to further improve the system.
 **Accessibility**	It is the measure of satisfaction level of the tourists with disabilities and limited mobility with accessibility to tourist services in the destination. The survey results show that 54.6% tourists are satisfied with the accessibility in Murree. However, the Consultants have observed that Murree lacks the required tourism infrastructure for persons with disabilities, elderly persons and families with infants.	It is the indication of the importance of catering for the needs of tourists with disabilities and limited mobility. The concerned departments and hospitality service providers need to work on accessibility issues.	It is the percentage of tourist services suitable for and accessible by, disabled people and people of limited mobility. Unfortunately in Murree there would be around 2% of all the tourist facilities lack accessibility. The persons with disabilities suffer a huge mental agony upon their stay in Murree. The required infrastructure and supported facilities must be provided for easy accessibility of the tourists with special needs at the following levels (i) information and visitor care, (ii) accommodation and catering, (iii) commercial tourist attractions, events and combined products, (iv) sporting and recreational activities.
 **Transport**	It is the measure of tourists more than satisfied with the transport services in the destination. The QualiTest survey results indicate that only 13.6% of tourists are satisfied with the quality and provision of transport services in Murree. The dissatisfaction rate of 86.4% is very high and suggests that the transport service should be improved in Murree.	It is observed that in Murree, about 80% of tourists travel in private car; thus general public is not enjoying quality of transport services. However there is a great need to improve the public transport services within Murree to encourage local and tourist population to use the public transport. This will also result in	The QPI is based on the assumption that if the tourists are unsatisfied with the reliability of the transport service, then they will complain. Unfortunately, in Murrree the system of registering complaints about the quality issues concerning transport services is not being practiced.

		decreasing congestion and improvement of ambient air quality in Murree.	The general public and tourists are bound to utilize the inferior quality transport services. The system needs improvement.
 **Accommodation**	It is the percentage of tourists more than satisfied with their accommodation. The survey results show that 72.7% tourists are satisfied with the quality of accommodation they availed in Murree. This higher number of satisfaction might be inclusive of type of accommodation tourists enjoyed on factors like ease of access and affordability rather purely on the basis of quality of accommodation.	The Hotels Association stresses to provide quality of accommodation in Murree hotels. The hotel operators are also aware of this issue. However, it is observed that during the peak seasons, the quality of accommodation is sometimes compromised.	This stresses the need to monitor accommodation services on some established quality management criteria.
 **Information**	It is the percentage of tourists more than satisfied with the quality of information on things to do in the destination. The survey results show that 45.4% tourists are satisfied with the quality of information on things to do in Murree. However, the Consultants observed that a very less information is communicated to the tourists on things to do in Murree.	The hotels and even Tourist Information Center of TDCP don't have relevant material for the information of tourists. The tourists get largely the information from some reference or Internet or guidance from local people.	The QPI measures the frequency of visits to the TICs in the destination and their success in attracting visitors. The management aspect behind the indicator is that the number of overnights per visit to the TICs must be reduced. It is pertinent here to mention that the domestic tourists do tourism without any such guiding material and information is sought only from local people.

 **Eating and Drinking**	It is the percentage of tourists more than satisfied with the quality of places to eat and drink in the destination. The survey results show that 26.34% of tourists are satisfied with the quality of places and food at hotels and restaurants in Murree.	The QMI concerns the monitoring and exercising quality check on the food and drinks being on offer to the tourists. This is mainly practiced in Murree by the hotel staff and restaurant managers who regularly check the quality of the eating and drinking items including the hygiene checks that are a legal requirements as well for all food-serving establishments.	The QPI measures the number of complaints registered concerning the quality of the eating and drinking establishments in the destination. This may be inspired by several factors, for example poor service, exceptionally poor value for money or at worst food poisoning. Good hotels and restaurants do practice the Customer Complaint Management System and address such complaints on priority.
 Activities	It is the percentage of tourists more than satisfied with the range and quality of things to do in the destination. The survey results show that 20.92% tourists are satisfied with the range and quality of things to do including availability of Tourist attractions for family; and leisure and recreational facilities for Children.	It stresses the need to monitor the quality aspects of tourist attractions in the destination. This also signals that the tourists' satisfaction for using of the facilities is more important as most of such facilities economic viability is based on the users' feedback. The Consultants have observed that none of the facility observes the quality management system in Murree.	The QPI suggests determining the ratio of the number of things to and places to visit within a ½ day's travel of the destination per overnight stay. The Consultants have observed that this ratio is non-existent in case of Murree.
 Bathing water quality	It is the percentage of tourists more than satisfied with the cleanliness of the bathing areas in the destination. The survey results show that 13.63% tourists are satisfied with the cleanliness of the bathing areas in Murree including availability of public restrooms in Murree.	The QMI recognizes the fact that the provision and maintenance of cleanliness of bathing areas and restrooms is highly important to make a tourist destination more attractive and competitive. The Consultants have recorded that the cleanliness of bathing areas and restrooms in Murree is of highly low	The QPI stresses that the bathing areas and toilets are kept clean up to the satisfaction of the tourists. The need to exercise a quality control over such areas raises the value for tourists' attractions and respective accommodation services.

		quality. The management of many hotels, restaurants and other tourist attractions are least concerned for rectifying this issue at large.	
 Value for money	It is the percentage of tourists more than satisfied with value for money in general. Value for money is closely related to the concept of quality. When a tourist judges a product or service to be good value for the price charged, the tourist is making a quality judgment in relation to the price paid. The Survey results show that 22.75% tourists are satisfied with value for money. They argue that the overall quality of service is not up to the mark for most of the activities including lodging and eating in Murree.	The QMI reflects the need for the destination to develop a tourism strategy which needs to be periodically reviewed. In Murree no formal strategy has been prepared, except various master plans. However, it should be noted that the current Master Planning exercise shall be resulting in a key strategic document which can be used for local administration to further evolve strategic decisions for Murree.	The QPI indicates the number of tourists that physically return to the destination. The Consultants have analyzed that 40% of the tourists like to revisit Murree.

Source: Extracted by the Consultants on the basis Field Studies

3.13 PUBLIC PARTICIPATION & CONSULTATION:

As with most planning projects, a fundamental is sound collective participation and transparent process, inviting stakeholders and the public generally to participate in and comment upon preparing plans and strategies; the master plan project is no exception. Different events were held to achieve these outcomes and best enable stakeholders to inform the Consultants for the production of the master plan and this report. Public events were complemented by several sessions with the Project stakeholders like senior officers of Tehsil Municipal Administration (TMA) Murree, municipal government officials, public representatives and the community representatives.

3.13.1 PUBLIC CONSULTATION MEETING:

A Public Consultation Meeting was organized at the start of the project in Murree on 3rd June, 2011 where project aims and objectives were presented and discussed and the context of the study area's potential was set, embodied by a number of proposals and the plans for major land and tourism development and infrastructure projects. The general public's point of view was taken into account and embodied in the planning process. Accordingly study framework was set and field surveys initiated. A brief of discussion with public consultation is given below:

Table 3.54: Public Participation Account

Sr. No.	Participant	Participant Observation / View Point
1.	Solid Waste Management Worker (Mr. Shahzad Ahmad)	- 145sanitary workers +5Drivers +2Vehicles in Operation - 8 Collection Trips daily in peak season from 17 pre-designated open dumps / transfer points - Garbage disposal to nearest transfer station is the responsibility of local population - Before departmental collection scavengers took away a major share of recyclables. - Regular Street Sweeping is practiced - Claims 80% efficiency. - Ultimate disposal to dumping place (where solid wastes are openly burnt) is located outskirts near Kuldana - The open burning turns insufficient in peak days - Open burning also causes air pollution - Mr. Shahzad as a local rural habitant shared some aspects of rural livelihood as well.
2.	Building Inspector TMA (Mr. Mehmood Khan)	- TMA has its own building Bye-laws approved by house in 2008. - 30 feet height restriction and 70% Lot coverage is permissible - Ban on every type of construction since 2008 - Ban lifted for residential construction in Rural UCs - Supreme Court ordered a comprehensive survey of buildings and legal status in 2005 after collapse of an apartment building, according to the survey conducted found out that 162 building were not complying bye-laws. - Despite ban 2 buildings are under construction - Congestion, massive commercialization is observed in Murree. The Mall road turned Raja Bazar and Murree being lost in shops, he commented
3.	Hotel Owner (Mr. Jehanzeb)	- From Gujranwala and runs a facility of 12 room leased from TMA - Shared that business is only for two months i.e. June & July - Satisfied with municipal services. - Local population is not work-worthy

Source: Extracted by the Consultants on the basis Field Studies

3.13.2 STAKEHOLDER CONSULTATION WORKSHOP:

A Stakeholder Consultative Workshop was held on 06 August, 2011 in Murree to discuss the project aims and objectives and the Master Planning exercise context and its need. The Stakeholder Consultative Workshop enabled the Consultants to understand the community needs, aspirations and analyzing the study area. The Consultants presented the options and their sustainability relevance and to enable participants to provide feedback on the options, to inform the master plan. A list of participants is annexed.

Panel discussions were held for various sectors like planning, water, transport, tourism, basic services, environment etc. The panel comprised of the concerned representatives of Government Departments, NGOs/Citizens' forum and elected members. Major issues came out during the workshop were following:

Table 3.55: Stakeholder Consultation Workshop Account

Sr. No.	Issues Discussed	Recommendations Evolved	Participant / Stakeholder
1.	**Traffic:** • Traffic Congestion • Insufficient parking facilities • Most hotels and apartments have no parking of their own • Soft wheel train introduced by TDCP is a failure, as it blocks traffic due to wider turning radius • Generally tourists exhibit positive attitude towards regulated traffic; however local vehicles create problems. When prohibited from parking at certain places, the tourist ask as to where should we park if not here, where is the nearest place to park. Most often we do not have an answer.	• Top most priority for efficient traffic management should be provision of enough parking spaces. • Jhika Gali was not an appropriate site for a parking plaza. This proposal was opposed by most stakeholders, including traffic wardens. • At least 5 parking plazas should be constructed at different locations in the city, with a cumulative capacity of over 3,000 parking spaces. Sites of adequate dimensions should be earmarked at View Forth Road, near Bagh-i-Shaheedan, along Kuldana Road and near Sunny Bank. • Even then, passengers and luggage will require some means of transportation from parking plazas to respective destination. • After construction of parking plazas, only licensed vehicles, with entry passes are allowed to enter the city • Diversions from congested areas, coupled with looped/one-way traffic are possible responses to the current traffic jams.	Representative of Traffic Police
2.	**Environment:** • Samples from water supply in the hotels have shown contamination with bacteria. • In peak season when water shortages are frequent, some	• For a pollution free Murree, priorities should include: educating hotel industry, mandatory construction of septic tanks for hotel effluents till an integrated municipal sewerage system is laid, and	Representative of Environment Protection Department (EPD) Punjab

	vendors supply bowsers with water filled from polluted streams and rain- runoff. • EPA has labs and regularly monitors air quality as well as drinking water and liquid effluents. • All hotels have been surveyed vis-à-vis the quality of drinking water they serve. Hearings of the delinquents are in progress. • 270 hotels were surveyed; none has proper sewerage/ drainage system. All of them dispose effluents to nearby streams, either directly or indirectly. • A major Environmental awareness campaign was recently launched focused on schools. 2500 places were reached with the message; 25 tons of solid waste was collected and disposed during the campaign. • Currently solid wastes is collected and disposed off by open burning, which is not an environmental friendly management option. Thus causing environmental problem. • Current site for disposal of solid wastes is not suitably located. • Proper dumping sites have not been designated. • It was found that 11 springs had polluted water. • Air quality at certain places is also an issue, especially during peak season. • In response to suo motto action of the Supreme Court, a survey of all the streams in the catchment areas of Simly and Rawal dams was conducted and sources of pollution were plugged. • Street sweeping is not proper; most roads remain dusty. • Vehicle fitness certification is done by regional Transport Authority, Rawalpindi. However local EPA formations challan and fine smoke emitting vehicles. • Insufficient water supply • Unsatisfactory drainage system and storm water management • Low-end tourism that creates additional strain on infrastructure	enforcement of primary and secondary effluent treatment. • Restore, rehabilitate and clean natural drainage system • Improve the natural beauty and environment of Murree by provision of green infrastructure • Conservation of soil erosion	

3.	**A Frequent Tourist:** • Areas in the jurisdiction of Murree Hills Cantonment have better facilities and maintenance e.g. foot paths, seating places and rain sheds. On street Parking is also belter regulated and enforced in MHC limits. • Construction of footpaths along major roads will not only facilitate pedestrians, but also restrict indiscriminate parking. • Most college students commute from far flung areas, not served with public transport. • Rain sheds should be constructed at about 500 yards interval along busy pedestrian routes. • No fine collection system / facilitation are provided for day visitors.	• Hiking trek in Ayubia is a model of security and upkeep. There are 5-6 hiking treks in and around Murree, which can be beautified/ improved on Ayubia's pattern. • Provision of adequate street lighting & bus shelters and street-furniture for the tourists • High end tourism development by augmenting various high end tourist activities at the outskirts of Murree like development of Aliyot and Bhurban • Better force for watch and ward of the Forests may be provided on the pattern of traffic wardens. • There should be facility for fine collection through mobile van, as day trippers/ tourists ore often not penalized on traffic violations, on the excuse that they cannot leave their documents behind.	Tourists invited to attend the Penal Discussion
4.	**NGOs / Community:** • Several proposals have been framed by this NGO for the betterment of communities in Murree. • Deforestation is a major problem and root cause of many issues Murree is facing today. • Very few people like to venture in reforestation. • Forest department does not have capacity/ resources to handle forest fires. • AFM has previously been launching tree plantation campaigns through students. • New visitors to Murree often look for direction, but enough traffic/ direction signage have not been installed. Visitors often take a wrong route and get stuck in jammed traffic. For example many visitors take a turn at direction sign to Lower Mall, as if it was a main entrance to Murree and get in the long queue up on the minor and steep road. • The organization conducted a survey of hooliganism during tourism season and found few and far between incidents. • AnjmanFalah-i-Muashra is running a skill development centre.	• Supply of gas to the un-served areas will check the ongoing rampant tree cutting for cooking and heating fuel purposes. • Traffic wardens have conducted a survey to improve road signage and have prepared a comprehensive listing of locations and signage which should be installed as soon as possible. • AFM feels that a Truck Stand can be established near 'Do-Sarki' by constructing a platform on open drain. •	Anjman Falah-e-Muashra (NGO) / Senior Citizens

5.	**Hotel Association:** • Inadequate water supply is a major issue for hotel industry. • A mega project of bulk water supply from Jhelum River was launched some 5 years ago. It was however suspended for allegedly political reasons. • Most hotels do not have fixed tariff/ rates; it fluctuates depending on demand with the influx of tourists. • About 75% of the hotels are owned by locals. • When toll plaza was established at SatraMeel, we were told that the income will be pooled in Murree Development Fund and spent on betterment of Murree. This never happened. However hotel industry is still willing to contribute a percentage of its income in any such fund as and when sincerely established. • There is no public toilet near GPO. • Murree is a relatively safe city as far as incidents of theft and hooliganism are concerned.	Hotel Industry • Bulk Water Supply from Jhelum River may be resumed and completed without further delay. • If TDCP or some other rating agency categories hotels by the quality and coverage of services they offer, the Hotels Association will cooperate and obtain necessary accreditations. • Hotels Association will also cooperate with TDCP if it starts to offer training courses for hotel staff. • The Association has several ideas as to where new routes/ roads can be constructed so as to reduce congestion from the existing roads. (For example near Commerce College!!). • Enough public toilets should be constructed at suitable places for pedestrians and day trippers. • Citizen Police Liaison Committee on the pattern of those in Karachi and Faisalabad would be feasible and welcome in Murree.	Representative of Hotel Industry
6.	**TMA:** • Irregular and unauthorized construction activities • Poor conservation of rich heritage • Water supply for the city has not been augmented since last investment in 1993. • Rainwater harvesting has been in practice by hotels as per the byelaws. This has now been no more required for the hotels or other land uses under the byelaws. • At certain places ground water is available at 380 feet depth. • • Tax is levied on extracting water from aquifers. • A comprehensive survey on water availability was conducted some time back with Japanese assistance which showed results that water availability at certain places but water extraction is costly. • TMA Murree is seriously short of resources to handle solid waste.	**TMA:** • Augmentation of bulk water supply by tapping water from River Jhelum or other water sources • Single authority for entire city for implementation of Master Plan to avoid duplicity and overlapping roles by different government departments • Shifting of activities from core areas, construction of parking facilities at various places. • Encouraging rain water harvesting • Improve solid waste management • Improve the sewerage system • Construction of water channels, new link roads, enhanced pedestrian access and ropeways • Improvement in junctions, pedestrian facilities • Widening of urban roads and removal of encroachments • Adequate provision of affordable public transport within city for local and tourists population • Create open spaces and parks • Accessibility may be improved at public places and spaces. Also the hotels and restaurants should also	Representative of TMA Murree

	• Accessibility is a major issue for persons with disabilities and families with infants and elderly people.	provide facilities for elderly people, people with disabilities and families with infants.	
7.	**Healthcare, Gender & Livelihood:** • Tehsil Headquarter hospital is quite understaffed. There are 2 lady medical officers against 20 posts. • Women do not a source of income. • Local handicrafts do not have a formal, articulated market. • Display center is needed for local products/ handicrafts. • Only recently, women have been allowed admission at post graduate level in Boys College.	Healthcare, Gender & Livelihood: • Doctors and medical staff should be provided in the Tehsil Headquarter Hospital. • Handicrafts and packaging industry can be promoted to generate income. • A separate Degree College for women may be established in Murree.	Representative of Tehsil Headquarter Hospital Murree and Women Representative

Source: Extracted by the Consultants on the basis Field Studies

3.13.3 PUBLIC REPRESENTATIVE CONSULTATION:

Departmental Discussions:

Various Departments of the Govt. of the Punjab were consulted for data collection, understanding of the existing situation of the city and formulation of vision and identification of interventions for the development of the Draft Master Plan. Tehsil Municipal Administration (TMA) Murree, Forest Department, HUD&PHE Department, Department of Transport, TDCP, Environment Protection Department etc. were consulted at various levels and various times during the consultative process.

Focus Group Discussions:

Focus Group Discussions (FGD) were carried out to understand the needs, problems and recommendation of particular section of the society like Murree Hotels Association & Trader's Association etc. The discussions with various focus groups are discussed in following paragraphs.

Hotels Association:

Tourism is one of the major contributors to the economy of Murree. FGD with Murree Hotels Association was conducted on 6th August 2011 to understand the issues, needs & interventions required to sustain the tourism industry.

The issues related to the hotel industry are:

- Lack of adequate parking
- Lack of adequate water supply

- High cost of water
- Lack of Government's patronage for development of tourism infrastructure
- Unsuitable timings and inefficient garbage collection and sanitary services provided by TMA Murree.

Traders' Association:

To understand the requirement of the traders a meeting was organized with the Traders' Association on 6th August, 2011. The issues were highlighted by traders during the discussion are:

- Market on the Mall Road, Lower Bazar, Kuldana and other prime roads is the heart of the economy of Murree and it is mainly dependent on the tourists visiting Murree. The better law and order conditions in the country affect the tourist flow and hence the business.
- The suggestions were provided regarding the sustenance of tourism industry which will also help in sustenance of the business and economy of traders in Murree. The suggestions were as follows:
    - Provision of adequate water
    - Improvement in basic infrastructure like roads, parking
    - Encourage tourism activities
    - Decongestion of the core area
    - Preservation of heritage character of the Mall Road

3.14 ENVIRONMENTAL PROFILE:

Understanding the environment, the dynamic and complex whole of outer physical and biological system in which man and other organisms live and their interaction over time is essential for successful implementation of any strategy for protection and management of the environment. Development, as a multidimensional concept and practice encompasses not only the economic and social aspects of human activity, but also those related to population, the use of natural resources and conscious management of the environment. Perceptions about environmental impacts depend on the environmental set up in a region, comprising all the above, hence the importance of an environmental profile of Murree.

The environment of Murree is both varied and fragile including a variety of natural vistas, habitats, landscapes, vegetation types and has pleasantly cool climate which is the main cause of attraction for tourists. This variety is reflected in turn in the natural, economic, economic, social and cultural character of Murree. Murree can thus be seen as a rich mosaic, a patch of different landscapes and habitat types, coniferous forests, fruit orchards and pastures. It is this diversity which has provided Murree with much of its character as prime tourist attraction, economic activity and shaped its development of tourist-related infrastructure. However, this same diversity

is also the source of Murree's most pressing environmental issues and problems. The very complexity of the landscape means that many of its most attractive habitats and features are small and vulnerable to process of the change going in that area. The very intimacy with which natural habitats, urban centers, transport corridors, forests and farmlands lay side-by-side means that no place in area is immune from human impact.

Human activities have resulted in the depleting of natural resources and the increase of investment and operational cost of economic activities, and influenced the direction of investment also. So have the environmental hazards. The potentialities of Murree's sustainable development are under the threats of environmental deterioration, which affects not only public health and also human wealth but also economic and social development. This section describes the environmental resources and their stresses, their features, the interactions between environmental resources and human activities.

The Murree's environmental profile is prepared to identify and assess environmental issues to be considered during the preparation of this master plan. The Profile seeks to put in perspective information on key environmental challenges, policies, strategies and programs designed to address these challenges.

Profiling Rationale:

Though Murree enjoys prime position among the tourist cities of Pakistan, there is shortage of comprehensive and scientific studies and literature about various aspects of the environment and resources of this area.

The consultants carried out some studies/surveys of different environmental resources and environmental issues of the area to obtain fresh information about these resources and problems.

In addition, different officials of various local departments concerned with Murree's environment and development (Environment Protection Agency, Tehsil Municipal Administration, Forest department etc) were also consulted.

To involve local residents and representatives of different professions (hotels, academia, journalists, women, NGOs etc) in the identification of different issues of the area and prioritization of development goals, meetings with various stakeholders were conducted.

An extensive survey of scientific journals and other literature dealing with various aspects of environment of Murree was also carried out. Some of these documents are referred below.

- Dastak (Quarterly magazine) Murree, Diffferent issues.
- Haigler Bailey, 1998. Environmental Baseline Study of Margala and Margala North. Haigler Bailey Islamabad.
- Khan, Liaqat Ali. Divisional Forest Officer, 1994. Working Plan for Coniferous forests of Murree and kahuta Tehsils of Rawalpindi District, 1994-95 to 2023-2024. Forest Department Government of the Punjab, Lahore.

- Pakistan Journal of Botany; Different issues.
- Planning and Development Department.2009. Multiple indicator cluster survey (MICS), Rawalpindi District. Government of the Punjab, Lahore.
- WWF-UK. 2004. Ethnobotany and the management of fodder and fuel wood at Ayubia National Park, NWFP, Pakistan. WWF-UK. London
- Different theses of the Biology Department, Quaid-i-Azam University, Islamabad.
- WWF-Pak. 2013. An Atlas of Forest Boundaries in Murree.

The following websites were also consulted to solicit information on various environmental aspects of Murree and its adjoining areas.

- http://wildlifeofpakistan.com/
- http:///E:/murree1a/Wildelife-Parks.php.htm
- http://www.hazara.com.pk/
- http://www.punjab.gov.pk
- http://WWF-Pak.org.

3.14.1 BIOLOGICAL RESOURCES:

Biological resources represent one of Murree's most abundant natural resources. Biological resources including flora and fauna are a major resource for the area because they represent the livelihood basis for a large portion of the population. These resources also provide Murree with its tourist-attracting character. Murree and its adjoining areas are rich in biological resources such as flora, wildlife, forests and crop lands.

3.14.1.1. Flora:

Murree and its adjoining forests contain large number of herbaceous plants. There are two seasons when there is good expression of floral diversity of the area. The first is March and April when the flora is of temperate type. The second is at or towards the close of Monsoon season when the flora includes some Tropical to Sub-Tropical species also. More than one hundred herbaceous plants were recorded but only major plant species are presented in the Table 3.57 and Table 3.58. The scientific literature however, reveals that there are 200-300 herbaceous plant species in this area. In addition to their value in maintaining biological diversity of the area, these plants are used by local inhabitants for many purposes. For example, these plants are used as medicines for humans and livestock, some are used as vegetables and pot herbs. Some plants such as *Urtica dioica* are poisonous and many others have ornamental value. Most of these plants are also used as fodder and fuel also. In addition to flowering plants, mosses, lichens, ferns and mushrooms are also found in the area.

In addition to their socio-economic potential, the vegetation of Murree has high conservation status due to the diversity of species and vegetation communities. A number of unique vegetation communities found in this region are endangered and are of high or very high conservation significance. The plant communities rated as areas of high condition are primarily located within remaining contiguous areas of remnant vegetation but these are being depleted rapidly.

Stresses:

The flora of the area is however under heavy anthropogenic pressure in the form of habitat degradation, deforestation and overgrazing. Ever-increasing human population and its related development activities are the main reason of habitat loss in the area leading to loss of floral diversity of the area. Unplanned human settlements, unsustainable harvesting of medicinal plants and soil erosion are other main factors responsible for loss of floral diversity of the area. These activities have led to reduction in populations of different biologically and economically important plants of the area. In previous studies, the number of herbaceous plants in the area has been documented between 200 to 300 species but recent surveys show that this number has been reduced significantly. There are now 100-150 common plant species in the area and many plants of high medicinal value or conservation status are threatened. Similarly, many grass species which are used as fodder are also under threat due to extensive grazing and over-harvesting.

Another factor causing loss of floral diversity near Murree city is the dumping of solid waste in open green areas. The sewerage from homes and commercial centers is also disposed off into open areas damaging the habitats of plants. This situation calls for identification of main causes of loss of floral diversity of the area and suggestion of necessary measures for the mitigation of this loss.

Table 3.56: Floral Diversity of Murree

Plant Group	Number of species
Coniferous trees	8
Angiosperm trees	45
Shrubs	38
Herbs	210
Climbers	22
Mushrooms	10
Lower plants	30
Medicinal plants	70

Source: Extracted by the Consultants on the basis of literature survey and Field Studies

Table 3.57: Major Herbaceous plants in Murree

Species	Distribution Status	Species	Distribution Status
Adiantum caudatum	A	*Artemisia roxburghiana*	A
Bellis perenis	A	*Calimantha umbrosa*	A
Cardamine impatiens	C	*Carthamus oxycantha*	A
Clematis grata	F	*Cynoglossum lanceolatum*	C
Dicliptera roxburghiana	F	*Digeria muricata*	F
Dryopteris ramosa	F	*Duchensea indica*	C
Epilobium royleanum	C	*Erodium cicutarium*	C
Euphorbia wallichii	A	*Fragaria nubicola*	C
Galium aparine	C	*Gentiana contorta*	R
Geranium lucidum	F	*Geum urbanum*	C
Hedera nepalensis	F	*Impatiens bicolor*	F
Lantana camara	R	*Leonorus cardiaca*	R
Leucas mollissima	C	*Malva sylvestris*	F
Melilotus indicus	C	*Mentha longifolia*	R
Myriactis nepalensis	A	*Nepeta erecta*	R
Oenothera rosea	A	*Origanium vulgare*	F
Plantago amplexicaulis	C	*Plantago major*	A
Plectranthus rogosus	R	*Polygonum amplexicaule*	F
Prunella vulgaris	C	*Ranunculus laetus*	R
Rumex hastatus	C	*Rumex nepalensis*	A
Sarcococco saligna	R	*Senecio chrysanthemoides*	F
Sonchus arvensis	C	*Stellaria media*	C
Strobilanthes attentuatus	F	*Swertia chordata*	F
Thalictricum hazaricum	C	*Urtica dioica*	A
Veronica biloba	R	*Veronica melissifolia*	F
Viburnum foetens	C	*Vinca major*	F
Taraxacum officinale	A	*Capsella bursa-pastoris*	F

Legend: **A**: Abundant,: **F** ; Frequent **: C**; Common : **R**; Rare

Source: Extracted by the Consultants on the basis of Field Studies

Table 3.58: Common Grasses in Murree

Species	Distribution Status	Species	Distribution Status
Alopecurus spp.,	F	*Apluda mutica*	C
Andropogon contortus	A	*Brachiaria ramosa*	C
Aristida depressa	C	*Bromus japonicus*	F
Cymbopogon jawarancusa	A	*Cynodon dactylon*	A
Desmostachya bipinnata	F	*Dichanthium annulatum*	F
Digitaria spp.,	F	*Erioscirpus comosus*	C
Festuca spp.,	C	*Heteropogon contortus*	A
Imperata cylindrica	A	*Koeleria macrantha*	C
Lolium persicum	C	*Oplismenus undulatifolius*	R
Panicum spp.	F	*Poa annua*	A
Poa pratensis	C	*Saccharum spontaneum*	C
Setaria italica	R	*Setaria pumila*	F
Sporobolus arabicus	C	*Themeda anathera*	F

Source: Extracted by the Consultants on the basis of Field Studies

3.14.1.2. Forests:

In addition to pleasant cool weather, forests of Murree are the other tourist attraction of the area. The forests lie mainly in the mountainous tract of the sub-Himalayan range. Its elevation ranges from 600 meters to 2100 meters. The direction of the rise in elevation is from the south towards north. The highest point in the area is Patriata peak with an elevation of 2241 meters. The forests exhibit variation in their composition according to geological and climatic variations.

The forests of Murree can be divided into three main groups on the basis of physiognomic characteristics, level of rainfall and other ecological parameters.

1. Sub-Tropical Evergreen Forest:

These forests contain evergreen broad leaved species located at the foothills (below 1000 m) of Murree and are categorized as Sub Tropical Evergreen forest. Annual rainfall varies from 700 to 1200 mm. This forest includes shrub like plants such *as Acacia modesta* and *Dodonaea viscosa*. It includes three types of plant communities:

Acacia modesta Community: This community mainly occurs on south facing slopes of the hills and is dominated by *A. modesta*. This community was recorded at Tret, Nandkot, and lower areas, on southern slopes.

***Olea ferruginea Community*:** The dominant plant of this community is *Olea ferruginea* and it mainly occurs on north facing slopes of the hills.

Dodonaea viscosa Community: It occurs on more or less plain areas, dominated by shrubby vegetation and grasses. It was recorded from some parts of Tret, Charra pani and adjoining areas.

These communities support a mixed open scrub comprising shrubs like *Dodonaea viscosa*, *Justicia adhatoda*, *Punica granatum*, *Rosa macrophylla* and *Carissa opaca*. The common grasses of these forests are *Aristida depressa*, *Sachharum spontaneum*, *Desmostachya bipinnata* and *Cynodon dactylon*.

1. Dry Temperate Forests

These forests include only one community dominated *by Pinus roxburghii* (Chir) and it occurs between 800 to 1700 m. It was recorded at Bansra galli, Ghora galli, Chitta mor and Nambal. This is also termed as ***Chir zone fo*rest**. The rainfall varies from 1250 to 1500 mm. At lower elevations, its associated plants are *Olea ferruginea, D. viscosa, and Dicliptera roxburghii*. At higher elevations, *Quercus inacana* and *Pyrus pashia* are other common trees of this community. The under-growth mainly includes *Myrsine africana*, *Berberis lycium*, *Vibrinum continifolium*, *Indigofera heterantha*, *Hedera nepalensis* and *Chrysanthemum leucanthemum*.

3. Moist Temperate Coniferous Forest

This forest is dominated by coniferous trees and occurs between 1800 to 2200 meters. It is also termed as ***Kail Group forest*** by the Forest Department. The climatic conditions include mild to cool summers and severe cold winters. The annual precipitation ranges from 1500 to 1750 mm. *Pinus wallichiana* (kail) is the dominant tree of this forest. The area of this zone is between 5000-6000 acres. It includes three community types.

Pinus wallichiana Community: This community is mainly located at Lower Topa, Jhika Galli, Kuladana and Bhurban (between 1850 to 2200 meters). Its broad-leaved associated trees are *Quercus incana*, *Aesculus indica* and *Populous ciliata*. The last two trees seem declining in the area due to over-harvesting by the local communities. The herbaceous flora includes *Lolium persicum, Hedera nepalensis, Chrysanthemum leucanthemum, Berberis lyceum, Myrsine africana, Viburnum contifolium* and *Plantago major*.

Cedrus deodara Community: It is found at above 1900 meters near Patriata. Its dominant tree is *Cedrus deodara* associated with *Pinus wallichiana*. It also includes low density *Quercus incana*, *Prunus padus*, *Salix spp*. and *Pyrus pashia* as co-dominants. Its ground flora mainly includes *H. nepalensis*, *M. africana, Saccharum bengalense* and *Urtica dioica*.

Abies pindrow Community: This community is found in cool and moist habitats above 2000 meters (Kashmir Point & Patriata). *Pinus wallichiana, Cedrus deodara* and two broad-leaved trees (*Pyrus pashia* & *Aesculus indica*) are its co-dominants. It has a thick undergrowth of herbaceous flora dominated by *Rumex nepalensis*, *Urtica dioica*, *Poa alpina*, *Plantago spp*., *Adiantum capillus-veneris* and *Veronica biloba*.

In addition to timber and fuel wood, the forest plants are used in different ways. Some plants such as *Abies pindrow*, *Ailanthus altissima*, *Dodonea viscosa*, *Quercus spp*. and grasses are used in thatching, sheltering and roofing by the local inhabitants. Some plants such as *Adinatum* and *Bellis perennis* are used for ornamental purposes. The bushy and spiny species such as *Berberis*, *Crataegus* and *Zizyphus* are used for fencing and hedging of crop fields to protect these from grazing animals. In villages, some trees and bushes are also used for making agricultural tools. Other non-timber uses of these forest species include medicinal uses, edible fruits, honey bee species and vegetables.

According to ownership and management criteria, the forests can be classified as *reserve* forests and *guzara* forests. These are managed and protected by the Forest Department. The forests in cantonment areas are however managed separately.

Stresses

The forests of Murree are under threat due to many factors such as ignorance, insufficient public education and awareness, shifting agriculture, unregulated logging, un-planned development in logging areas, unplanned human settlements, fuel wood gathering and ineffective forest policies. These Stresses have resulted in reduction of forest cover of the area posing serious threats to the ecology and tourist potential of the area. These forests are mainly under state control and the Forest Department is owner and custodian of these beautiful forests. There is great concern among the local inhabitants about the deforestation and failure of the Forest Department in conserving and developing these forests. In the stake holders' meetings, the general public blamed the existence of a nexus between timber mafia and forest department for the loss of forest cover. They fear that if this deforestation is not stopped, it will lead to serious damage to tourist potential of the area. The officials of the Forest Department however claim that different management and financial inadequacies found in current forest policies and laws are the cause of their failure in protecting forests. Despite these shortcomings, they claim that they have succeeded in arresting the rate of deforestation and some areas have been reforested also.

Forest fires are another important threat to local forests. The representatives of some local NGOs reported that in some areas forest fires occur every year. According to them, these are deliberately-planned fires which cause heavy losses to forest flora and fauna. For example, in May 2009, heavy fires broke out in the forests of Angoori, Samli, Chaka and Plassy. The whole Sawan Valley and adjoining areas were filled with smoke and thousands of trees were destroyed. In June 2007, fires broke out in the woodlands of Ghora Gali, Mohra Syedan, Charehan, Sehrgran, Forest No. 30 Phofandi killing thousands of trees. The local Forest Department lacks adequate equipment and efficient and trained manpower to deal with such emergencies. There are many other small scale incidents of forest fires which cause heavy losses to local forests, local flora and wildlife. The local inhabitants however blame the Forest Department and timber mafia for these fires which in their opinion are deliberately started to remove the evidences of illegal timber-cutting.

Other natural Stresses on the forest species include snow, frost, erosion, wild animals and fires. Heavy snow may cause breakage of trees and severe frost can kill many herbaceous and shrub species. Soil erosion resulting from infrastructure development schemes, loss of vegetation cover after fire or logging leads to removal of upper fertile layer of soil particularly at slopes and it becomes nearly impossible to

re-vegetate these areas. Some wild animals such as squirrels and monkeys damage the cones reducing regeneration capacity of coniferous trees. Forest fires also play havoc with these forests and in dry summers, it may lead to extensive damage to very old forests. The local forest department has no facilities or equipment for fighting these fires or protecting these forests from this problem.

Table 3.59: Major Trees and Shrubs in Murree

Scientific name	Common name	Scientific name	Common name
Abies pindrow	Partal	*Acer sp.*	Trekhan
Acacia catechu	*Khair*	*Acacia modesta*	*Phulai*
Aesculus indica	banakhor	*Albizia odoratissima*	*Kala sirin*
Alnus spp.		*Bauhinia variegata*	Kachnar
Berberis lycium	Sumblu	*Berberis vulgaris*	Sumblu
Carissa opaca	Garanda	*Cassia fistula*	Amaltas
Cedrus deodara	Diar	*Cedrella serrata*	Drawi
Celtis australis	Batkar	*Cornus oblonga*	Wallingir
Crataegus oxyacantha	Gawalbudla	*Diospyros lotus*	amlok
Dodonaea viscosa	Sanatha	*Ficus palmata*	*Phagwara*
Ficus religiosa	*Bar*	*Juglans regia*	Akhrot
Justicia adhatoda	Bahekar	*Lantana camara*	Panchphuli
Mallotus philippensis	kamla	*Morus alba*	Toot
Maytenus royleanus		*Myrsine africana*	Khokhal
Nerium oleander	Kaner	*Olea cuspidata*	kao
Olea ferruginea	Barko	*Picea smithiana*	*Kacbal*
Pinus roxburgii	Chir	*Pinus wallichiana*	Kail
Pistacia chinensis	Kangar	*Populus alba*	Safeda
Populous ciliata	Palach	Prunus armeniaca	Arhi
Punica granatum	anar	*Pyrus lanata*	Chota
Pyrus pashia	Batangi	*Quercus dilatata*	Barungi
Quercus glauca	Barin	*Quercus incana*	Rin
Robinia pseudacacia	Rubinia	*Rubus ellipticus*	Ache
Salix spp.	Bed	*Taxus baccata*	Barmi
Woodfordia floribunda	Dhawi	*Ziziphus nummularia*	Malla

Source: Extracted by the Consultants on the basis Field Studies

3.14.1.3. Fauna

The forests of Murree and its adjoining Galliat provide habitat and refuge to large variety of animals. These include mammals like common leopard, black bear, Kashmir hill fox, flying squirrel, rhesus monkey and wild boar. Recently the population of Cheetah (common leopard) has increased due to protection of forests. Its main prey animals are wild boar and monkeys but sometimes it attacks livestock also. Indian wolf used to be a common animal of the area and it preys rabbits, deer and other small animals. It moves from one place to another and settles at one place during breeding season. This animal is also under threat and its population is decreasing gradually.

Another zoological attraction of this area is presence of monkeys which include main species of Rhesus monkey. Their population size has increased also and they are commonly found along roads where they are fed by people. They are abundant in upper forests and move in groups.

Some rare mammals of the area are grey goral, barking deer, jungle cat and civet whose populations have been reduced neat to extinction because of habitat loss and other human induced interventions. Grey goral is occasionally found in lower pine forests and its population has declined due to overhunting and habitat loss.

This region includes more than two hundred species of birds which include pheasants, kestrels, falcons, hawks, hill pigeons, parrots, grouse and crows. In addition, this region provides refuge to large number of migratory birds. Koklas pheasant and kalij pheasant are endemic to this area and it houses the largest populations of these pheasants in Pakistan. Among these, many birds including Kalij pheasant, koklas pheasant, peregrine falcon and slender-billed leaf warbler have been declared as 'flagship species' by International Union for Conservation of Nature (IUCN). The forests of Murree and its adjoining areas provide refuge to large number of migratory birds also.

Stresses:

Deforestation, habitat loss, forest fires and illegal hunting are the major stresses affecting the wildlife of this area. Consequently many animals have become extinct or at the verge of extinction in the area. The establishment of Ayubia National Park helped to a great extent in restoring the populations of some wildlife species such as Cheetah but a lot of work has to be done to conserve the biodiversity of the area.

Table 3.60 Faunal Diversity of Murree

Fauna	Number of Species	
Mammals	31	188
Amphibians	6	16
Reptiles	10	174
Birds	300 *160 resident* *80 summer visiting* *90 winter visiting* *80 Transmigratory*	666
Fish (in river Swan)	30	525

Source: Punjab Wildlife Department

Table 3.61: Mammals of Murree

Small Mammals			
Common name	**Status**	**Common name**	**Status**
Common serotine	Endangered	Indian mongoose	Common
Fruit bat	Rare	West Himalayan Shrew	Common
Giant flying squirrel	Rare	Small Kashmir flying squirrel	Common
Rat	Common	Musc shrew	Endangered
Indian falsevampire	Endangered	Scaly anteater	Rare
Large Mammals			
Common name	**Status**	**Common name**	**Status**
Cheetah	Rare	Rabbit	Common
Black bear	Endangered	Jungle cat	Rare
Kashmir hill fox	Rare	Jackal	Common
Red fox	Common	Wolf	Endangered
Rhesus monkey	Common	Wild boar	Common
Indian porcupine	Common	Grey goral	Endangered
Barking deer	Endangered		

Source: Punjab Wildlife Department, WWF-Pak

Table 3.62: Common Birds of Murree

Grouse	Honey Buzzard
Grey Francolin	Chukar Partridge
Asian Koel	Peafowl
Pheasant	Parrot
Bird of paradise	Asian Barren Owl
Eurasian Collared Dove	Hill Pigeon
Eagle:	Kestrel:
Crows	Spotted dove
Collared dove	Golden eagle
Indian hawk	Himalayan vulture

Source: Punjab Wildlife Department, WWF-Pak

3.14.2 AGRICULTURE

Though in recent times, the share of agriculture in local livelihood has decreased as most of the working-age persons migrate to urban areas for employment yet it is a major source of earning and livelihood in rural areas of Murree. The major crops of the area are maize, wheat, barley, millet, peas and potatoes. Some fruits such as apples, cherries, fig and walnuts are also grown. The landholdings are small and farming in Murree entirely depends upon rainfall. Landholdings include crop fields and non-arable lands called as *Rakhan* lands which

are unsuitable for formal cultivation and are too steep or include barren rocks used for growth of wild grass species.

Livestock rearing is another notable activity in villages. Buffaloes, cows, horses and goats are main livestock animals of the area. The animals are fed with crop-residue of maize or millet. Some farmers use wild grasses as fodder also mainly collected by women from the fields. Before winter, crop residues and dry grasses are stored and animals are stall-fed. In spring and summer, fodder is collected on daily basis from crop fields, field margins and rakhans.

In addition, Murree is the largest apple-producing region in Punjab but apple orchards are very low in productivity. Their soils are deficient in nutrients, low-yielding varieties are grown and farmers lack knowledge of modern techniques. The Punjab Fruit Research Station, Murree is helping the farmers to adopt modern methods of horticulture and increase the production of apples in the region.

Table 3.63: Some Main Fodder plants in Murree region

Tree-Fodder Species	Common names
Aesculus indica	Bankhor
Taxus vallichiana	Barmi
Quercus dilatata	Barungi
Prunus padus	Kala kath
Grasses	
Alopecurus spp.,	Maniara
Apluda mutica,	Lundar
Panicum spp.	Malla -
Digitaria spp.,	Dugri
Festuca spp.,	Bheran
Poa spp.	Jodra

Source**:** Extracted by the Consultants on the basis Field Studies

3.14.3 PLANT NURSERIES

As mentioned previously, Murree region hosts a large number of trees, shrubs and herbs. It's cool climate, fertile soils and rich diversity of plants can serve as a strong base for floriculture.

There are four categories of plant nurseries in Murree:

- **Nurseries of Forest Department.**
  These nurseries are managed by local forest department and these are basically used for propagation of forest trees.
- **Nursery of Parks and Horticulture Authority**.
  It is located at Kashmir Point near Bagh-e-Shaheedan Park. It is only a sale point of PHA as the plants in this nursery are brought from PHA nurseries in Rawalpindi. It has no proper facilities for germination/growth of plants and has insignificant role in development of floriculture in the region.
- **Nursery of Directorate of Floriculture**

It is located on Kuldana-Mohra Sharif road and is managed by the local office of the Directorate of Floriculture, Department of Agriculture, Govt. of the Punjab. It mainly grows and supplies young plants of exotic shrubs such as *Prunus* to customers. It grows some flowering plants on a small scale.

- **Private Nurseries**
  There are 3-4 private nurseries near Darya Galli which grow flowering plants and sell these in the markets of Rawalpindi/Islamabad and other cities. These nurseries mainly grow Dahlias and Lilium plants for sale to other cities.

3.14.4 FLORICULTURE

In the recent past, in Pakistan, life style changes have increased the demand for the cut flowers and ornamental plants. Flowers are widely used for different ceremonies and socio-cultural occasions. This change in social trends has highlighted the potential of floriculture as a promising economic activity.

With increase in demand of flowers and their products, growing and selling flowers is gradually developing into a booming business. In Pakistan, the flower nurseries near big cities such as Lahore, Islamabad, Faisalabad and Karachi are meeting the demands of flowers in big cities.

Murree region is famous for its endemic and indigenous flora and it also provides habitats to a wide variety of exotic plants. Murree has a great promise for floriculture development because:

- *It has a climate that can favour and support cultivation of out-of-season flowering plants;*
- *Its close proximity to two large urban centers (Rawalpindi and Islamabad) favours the fast, and cheap transportation, marketing and selling of flowers;*
- *Its fertile soils, cool climate and diversity of ecosystems provide a resource base that can boost floriculture in the area;*
- *The return on floriculture crops is much higher than the other agricultural crops; and*
- *Floriculture does not need heavy investments in machinery or construction and it can prove to be a profitable livelihood and business opportunity due to continuous increasing demand of flowers in the country*.

Murree has a great potential for developing floriculture as an alternate livelihood system to supplement traditional farming. However this potential so far remains untapped. By considering above mentioned factors, in Murree, not much attention has been given to this lucrative business in the past. Recently, Punjab Agriculture Department has taken some initiatives to promote this important area of horticulture.

In Murree, there is a potential of growing popular and rapidly saleable flowering plants such as Lilium bulbs, Carnations, Dahlias and Gladiolus. In addition, exotic shrubs and varieties of roses, magnolias and narcissus can be successfully grown in Murree.

3.14.5 PHYSICAL RESOURCES

Soils

Murree has soils rich in organic matter belonging to soil order ***Mollisols*** with sub-group of Hapludolls (Rafiq, 1996). These soils developed from a parent material weathered from sedimentary rocks. These are represented by Murree Series with an extent of 4000 km^2.

These soils are fertile with organic matter content of 1-3 % which is concentrated in the surface horizon. The pH is circumneutral to slightly alkaline with a range of 6.5 to 8.2. The base saturation is high and these soils support forests or grasslands.

The texture of soils of Murree varies from sandy loam to clay loam. The soils of Murree town, Sunny Bank and Ghora Galli have clay loam texture and the soils of Phugwari and Derya Gali are sandy clay loam. The soils of Dewal and Sehar bangle are loamy in texture (Ahmad *et al*; 2010).

Due to erosion and leaching, these soils are deficient in nutrients such as phosphorus, potassium, zinc and sulphur.

Water:

Water in Murree region is an unusual and important paradox. Considering the annual precipitation, total run off and the length of water courses, this region has few matches in Pakistan. In fact, its water characteristics are the principal component in its scenic beauty. The geomorphic structure of the area however, is such that its distribution renders most of the parts out of use constraining the optimal use of its land potential. Most of the water, in the absence of any water-management system, flows out practically unharnessed into lower regions.

Ground Water:

In general, the ground water potential of Murree is poor. The Murree group of rocks occupies the major portion of the area and primary porosity in these rocks is nearly non-existent. The steep slopes and dissected terrains further decrease the ground water storage capacity of these hills. In valleys and terraces, the alluvial deposits can store water up to some extent but their thickness is not enough to store large amounts of water. These conditions have reduced the ground water potential of the area and ground water storage and harvesting is uncommon here.

However, the ground water here emerges in the form of springs at contact of pervious and impervious beds and other structural features. Springs are common source of ground water in the area and are widely distributed at different altitudes. These are formed where water table is intercepted by topographical features controlled by lithological and structural characters of rocks.

Quality of Ground water

The quality of ground water is an important environmental parameter because of its use in sustaining life, either in the form of personal, domestic and agricultural uses. The quality of ground water therefore can affect the present and future extraction and development programs. The chemical quality of water from springs has been determined by different agencies. The chemical parameters of spring water have been assessed on the analysis carried out in the present project.

Table 3.64: Chemical Characteristics of Spring Water in Murree

Parameter	pH	E.C.	TDS	Fluoride	Phosphate
Value	7.2-7.8	490µs	245	$<0.1 mgl^{-1}$	$54 mgl^{-1}$

Source: Extracted by the Consultants on the basis Field Studies

Ground water quality (chemical) from springs is in general, good for domestic and agricultural purposes as all parameters are within permissible limits. However, biological contamination of spring water is possible and it should be monitored.

Surface Water:

Murree includes many streams and two rivers which constitute its surface water system. River Soan takes rise from within a few kilometers of the Murree hills and flows down deep in the valley for the 6 kilometers of its course till it reaches the plain near old ruined fortress of Pharwala. It flows close to Rawalpindi city and finally joins the Indus near Makhad. Korang river rises near Ghora Gali and trimmers along Murree-Rawalpindi road and its water has been dammed at Rawal dam. It joins Soan near Sihala.

Some parts in the north of Murree are drained by Khaner kas that flows into the Jhelum river. In the west, Haro nullah collects water from south-west of Murree and drains into the Indus. In the eastern part of the area, surface water is collected by Dhirkot and other smaller streams which reach the Jhelum river.

The rivers and streams are fed by rain and snow. This flow in naturally poor in winter and the level of surface run off is highest in monsoon season. Normally 50-60% of the annual discharge of these water courses flows during the summer months.

These drains and their associated streams have little role in local agriculture because there is no irrigation system to harness this water. Most of the crop fields depend upon rainfall for irrigation. At some places, some farmers have made arrangements to divert runoff water into small channels for irrigation purposes.

The anthropogenic factors such as deforestation, wide scale construction and infrastructure development activities have disturbed the natural drainage systems of the area. Consequently natural runoff and flow of surface waters are impeded and

lead to increased land sliding and soil erosion. In Murree therefore, the drainage system for surface and ground water is almost absent or inefficient.

1. Quality of Surface water

Due to above-mentioned factors the quality of surface water for human consumption and irrigation purposes has been severely deteriorated. Near human settlements, mixing of sewage with rain water also affects the usefulness of water. Soil erosion, deforestation and addition of solid waste and sewage into water channels have resulted in increased turbidity, high levels of bacteria and dissolved salts of these waters. The construction of Islamabad-Murree expressway has further increased this process of deterioration of water quality of rivers and streams. The establishment of poultry farms and housing schemes and uncontrolled disposal of their wastes in the catchment region has also affected the quality of water.

Some housing schemes are planning to install tube wells along these water channels which will have serious implications for water resource management of the area and downhill cities such as Rawalpindi and Potohar region. Along newly constructed roads and in certain urban areas, roadside and street drains were built but these have lost their utility due to neglect and poor management. These drains have been choked with debris and some have been broken down.

Table 3.65: Characteristics of Surface Water Channels

Parameter /Water Channel	Korang river	Soan River	Stream near Murree City	NEQS limit
pH	7.2-7.8	7.2-8.1	7.3-7.5	6.5-8.5
Turbidity (NTU)	20-50	6-25	4-12	<5
Coliform bacteria /100ml	1300	1556	2300	Negative
E.C. (µs/cm)	300	435	560	--

Source: Extracted by the Consultants on the basis Field Studies

3.14.6 ENVIRONMENTAL THREATS

Deterioration of Air Resource:

Because of the fluidity and regenerative nature of the atmosphere resource, it is considered as an inexhaustible resource. This invisible resource however, is one of the basic conditions on which humans and other biota depend for existence.

Characteristics of the Air Resource of Murree:

The prevailing wind direction is from the south to the north in Murree. Because of influence of monsoon along with seasonal and diurnal variation, the variation of wind direction is remarkable. In winter, the cold atmosphere from the neighboring Himalayas mainly influences it and its blows from North east in the morning and from the south east in evening. In spring, because the warm atmosphere starts becoming active, wind from north and south appear alternately but the frequency of wind from the south is increasing remarkably. In summer, its

prevailing direction is from south east. The average wind speed is 5.6 knots. The velocity of wind in urban areas may decrease up to 40% than that in suburban areas.

Air Pollution:

Though Murree is famous for its clean air and rich atmospheric resources, in peak tourist season, air pollution may appear as a serious environmental issue. Automobiles and commercial activities in hotels and restaurants are the main sources of air pollution.

The Impacts of different activity sectors on air quality:

The main air pollution sources of Murree are motor vehicles, burning of solid fuels in restaurants and deforestation. Large scale urbanization and related infrastructure have changed the land face and, changed the reflection and radiation properties, heat exchange and roughness of the earth surface. So the physical properties of the atmosphere have been changed. The impermeable buildings and roads have increased in area and the drop down water is not absorbed into soil and quickly discharged into drains and sewers. The volume of water flow is increased but the water vapor evaporated into the atmosphere is decreased. Due to expansion in hotels, restaurants, apartments and other tourist service areas, large amount of energy resources are consumed and air temperature of the inner city increases than its suburban or rural parts. Since the city discharges different kinds of gases, the composition of its air is changed. Such phenomenon not only will raise the air temperature of the area but also the visibility and sunshine in the city are also influenced. With increase in temperature and release of air pollutants, the visibility and turbidity of atmosphere is affected. As the air temperature in the city region is higher than in suburban, the warm and polluted air strip in the city is risen up, then it is spread from high altitude to the surrounding regions, and the rather fresh cool air is blown into the city forming a local circulation. This exchange of gases between city region and suburban is however, is influenced by concentration of high-rise buildings in the city centre. Due to these buildings, the wind speed in the city is slower so that the air pollutants are not readily spread to larger areas. The air pollutants in the city therefore become more concentrated and air pollution becomes more serious.

In terms of space-distribution affected by the heating island function, at the Mall road and at busy cross points such as Jhika Gali and Sunny bank, the pollution may be most serious. With the introduction of CNG vehicles, the automobile-led air pollution has decreased. Due to location of Murree between Rawalpindi and AJK, all the traffic (passenger & goods) to Muzzafarabad passes through this area. It mainly includes diesel-operated buses and trucks which release large amounts of automobile exhausts and contribute to the air pollution of the area. In terms of time-distribution, pollution loads are the maximum in the peak tourist season and on special occasions such as eids and national holidays.

The main pollutants in the area are nitrogen oxides (NOx), sulfur oxides (SOx) and carbon monoxide (CO). If we take a look at the function areas, the pollution at the sites with maximum traffic congestion such as Jhika Gali, Bus Stand and Kuldana is at the maximum. In the commercial areas (hotels & restaurants) it is in the middle and in residential areas, it is the lightest. In addition to automobiles, restaurants and hotels serving Bar-B-Q foods by cooking it on coal are also a source of local air pollution. In winter, the use of fuel wood in hotels and houses for heating of rooms

releases SOx and CO into the air. The peak period of heating and cooking for domestic and hotel residents is 18.0 to 22.0 and 6.0 to 9.0 am. These timings of low wind speed conform to the period of low wind speed and strong temperature inversion. The pollutants formed during these timings are covered by the inversion layer.

Table 3.66: Air Pollutant levels in Murree

Site	SOx µg m^{-3}	Particulate matter µg m^{-3}	CO (ppm)	NOx µg m^{-3}
	NEQS 80	NEQS 400		40
Bus Stand	26	113	Maximum: 9-60 Minimum: 7-21	58.2
Kuldana Chowk	26	172	Maximum: 4-50 Minimum: 2-15	67.5
Jhika Gali	27	180	Maximum: 5-49 Minimum: 1-27	74.4
Sunny Bank	26	156	Maximum: 5-40 Minimum: 1-15	56.2
Pindi Point	12.3	98	Maximum: 3-20 Minimum: 2-9	10.4
GPO Chowk	24	146	Maximum: 0-19 Minimum: 1-4	76.4
Kashmir Point	8.9	86	Maximum: 1-9 Minimum: 1-5	7.8

Source: EPA, others

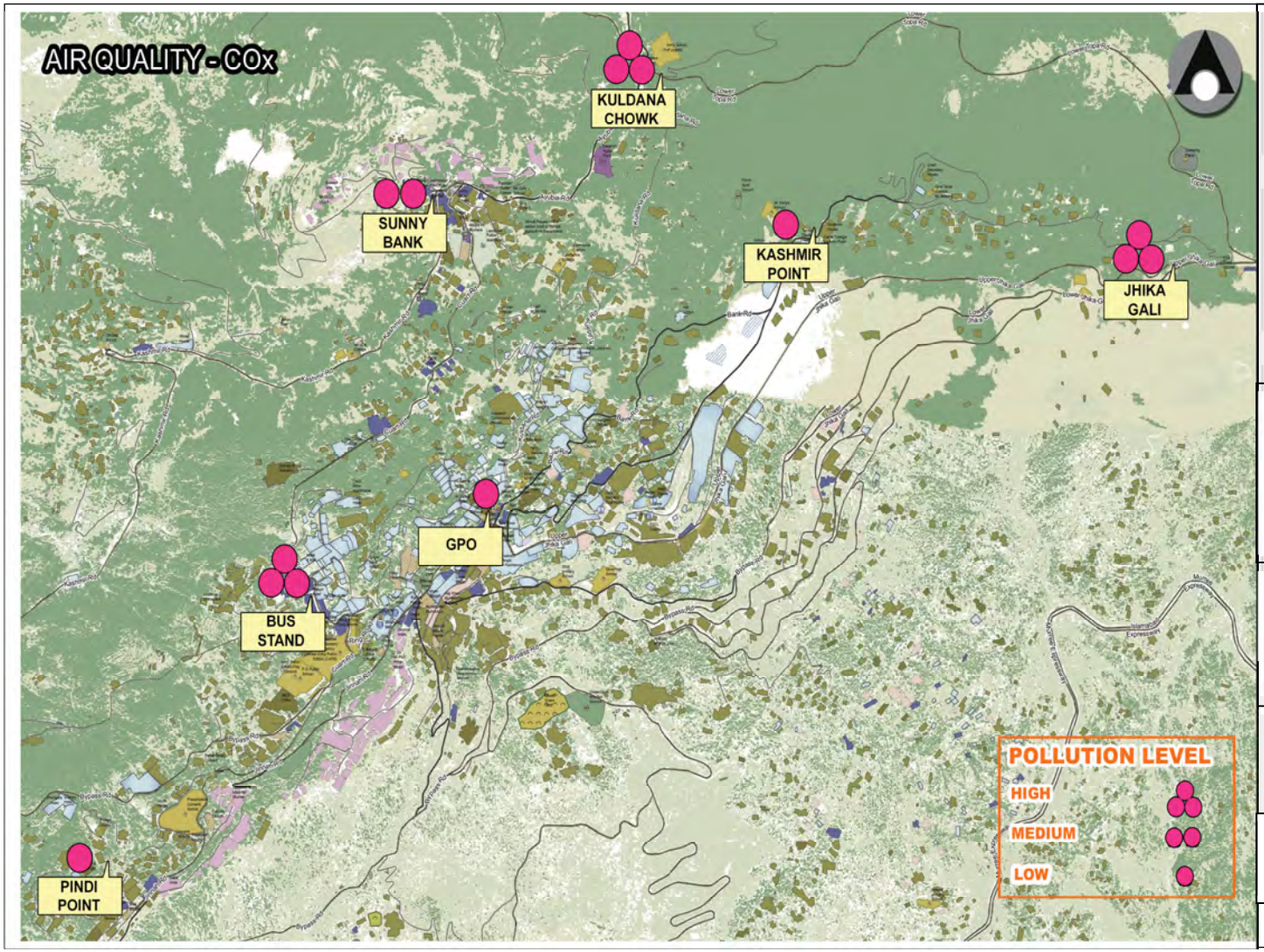
Solid waste:

In Murree, the issue of waste management has grown from relative obscurity to become one of the most urgent environmental problems in recent past. Growing quantities of waste, increasing problems of finding suitable sites for disposal of wastes, problems of pollution from solid waste, and rising costs of waste collection and disposal, have all focused attention on the need to reduce levels of waste generation and improve management methods.

Characteristics of solid waste in Murree:

The solid waste of Murree includes domestic garbage, garbage from hotels and shops, the wastes produced during municipal management activities and residues of plants and dust etc. The problem of solid waste has aggravated so much that some people now call Murree as ***Queen of Garbage*** instead of ***Queen of Hills***.

The columnist of a national English daily has described this problem in these words; "*The horror of all hill stations has to be Murree. Once called "Queen of the Hills," it is now more a case of "Harlot of the Hills" or "Queen of Garbage". There is nothing regal or majestic about Murree. It is a garbage dump peopled by what looks like a subhuman species which is spreading filth, disease and despair in equal proportions across the now polluted air of Murree. There is more refuse in Murree – reports of Nathiagali are no better – than most places put together. The system is*



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSUTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

AIR QUALITY IN MURREE

SHEET # -a SCALE: N.T.S









Note: These plans represent themes to be refinedin further planning. Land uses, streetpatterns, and exact alignments in all areas areconceptual / Indicative, and to be subjected to any kind of detailed evaluationand confirmation. Under no circumstancesshould these plans / illustrations be construed as final representations /directivesfor specific sites or areas.

CONSUTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

AIR POLLUTION

SHEET # **SCALE:**

obvious. The topmost layer throws all refuse down where the second layer adds to the filth and throws it further down, and so the avalanche of stink slithers down and down, choking the valleys, the springs, the rainwater paths and, indeed, all the people who have the misfortune to live below. The stench is unbearable, but if you live here long enough, you get used to it" (The News, June 28,2009).

The waste stream in Murree:

The sequence from initial generation of wastes to final disposal is known as the waste stream. It involves waste generation from different sectors (industry, construction, shops, offices, hotels, homes, restaurants etc), its collection, reuse of some components and disposal of remaining waste. This process is however complex involving many institutions and groups. Consequently monitoring of waste stream is extremely difficult and data on waste are notoriously unreliable. Moreover, little formal or routine monitoring takes place, so most data on wastes are estimates, often based on partial information.

Waste generation:

Wastes are generated by almost all human activities: by manufacturing, agriculture, service industries, construction, demolition, sewage treatment and households. In Murree, households, hotels, restaurants, tourists and transport companies are main agents of waste generation. In addition, crop and forest residues are also a main category of solid waste.

Waste collection:

Tehsil Municipal Administration is responsible for collection, storage, transportation and disposal of solid waste generated within Murree municipal area. Much of the waste which is produced is collected prior to subsequent recycling or disposal.

Table 3.67: Municipal solid waste scenario in Murree

Per capita generation	**0.5 kg/day**
Total waste generated	25-30 tons/per day in peak tourist season
Main components	Organic (50-65%), Inorganic, Dust, Glass, Plastics, Paper, foods, metals, plant residues
Labour force	146 sanitary workers
Vehicles	Two pickups (22 years old)

Source: Extracted by the Consultants on the basis Field Studies

The rag pickers who work at both primary and final dumping sites in the city contribute to the separation of recyclable solid waste particularly glass, textiles, polythene bags and metallic and sell them for recycling.









Note: These plans represent themes to be refinedin further planning. Land uses, streetpatterns, and exact alignments in all areas areconceptual / Indicative, and to be subjected to any kind of detailed evaluationand confirmation. Under no circumstancesshould these plans / illustrations be construed as final representations /directivesfor specific sites or areas.

CONSUTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

CLIENT:

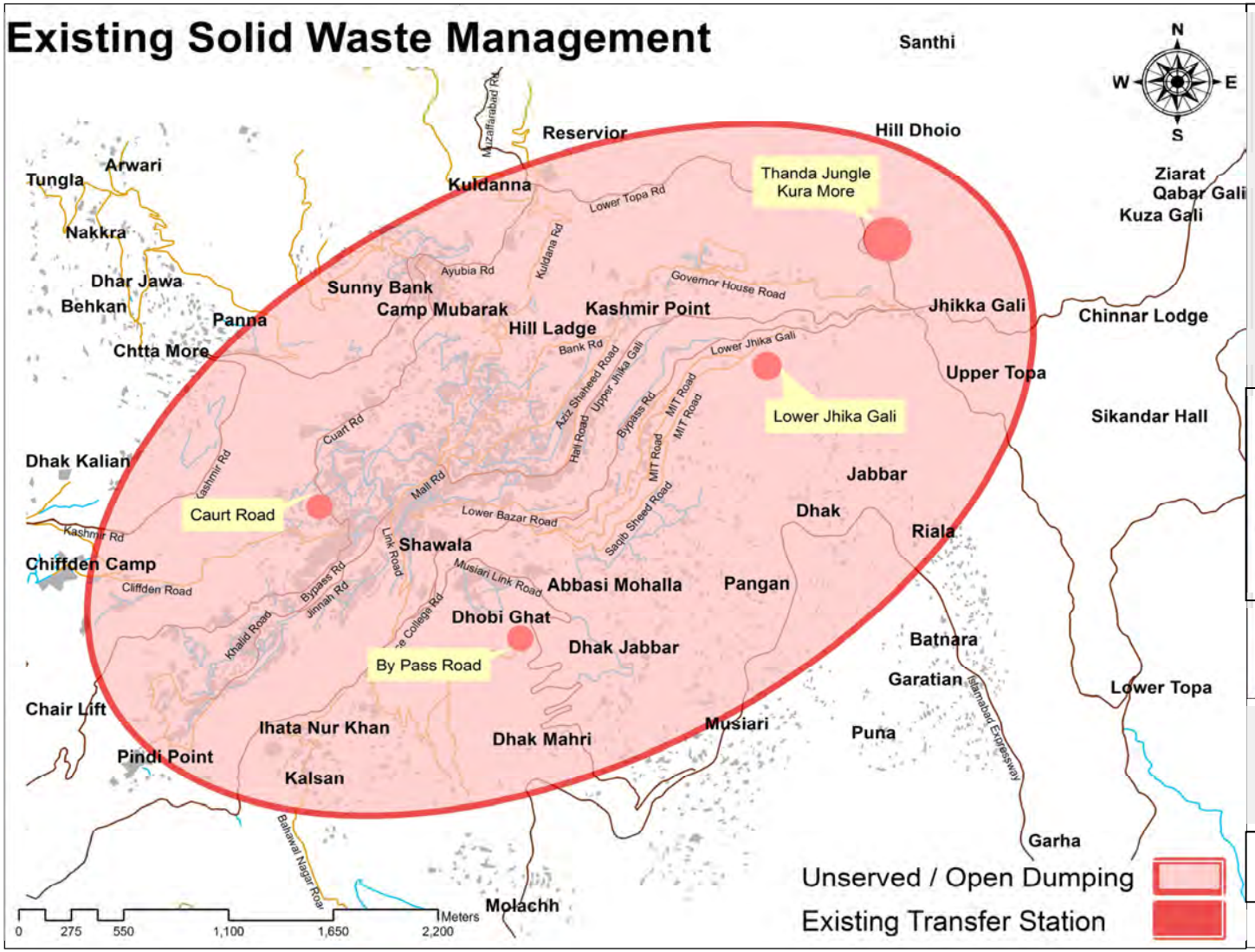
TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

SOLID WASTE DUMPING

SHEET # -a **SCALE: N.T.S**



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

EXISTING SOLID WASTE MANAGEMENT

SHEET # SCALE:

Waste collection by TMA:

From the Mall road, main hotels and public buildings, solid waste is collected by TMA. Trade or commercial wastes are collected by the TMA Murree using a variety of containment facilities, ranging from large plastic bags, wheeled bins and large skips. Similarly, the solid waste from public offices, educational institutions and official residences is also collected by TMA.

The frequency of garbage collection varies depending on the type of locality. In busy commercial areas, it is at least once a day. In residential areas, it is collected once in 3-7 days. Due to shortage of manpower and other resources, only a small fraction (10-20%) of solid waste is collected by TMA.

Self-collection:

A substantial proportion of wastes is collected and disposed of privately. Much of this forms a part of black waste stream (unmeasured, informal) and in some cases illegal.

Table 3.68: Domestic solid waste collection in Murree

Collection method	Collected by TMA	Open dumping in streets	Dumping in nearby open areas
Households %	1.8	3.1	95.0

Source: Extracted by the Consultants on the basis Field Studies

Waste Disposal:

The waste collected by various means ultimately has to be disposed or re-used in some way. TMA Murree has very old and obsolete system of solid waste management. The waste collected by TMA is openly dumped at a site on Kuladan-Jhika Gali road. But it represents a fraction of the total solid waste produced in Murree. The remaining solid waste is openly dumped in open fields causing serious damages to the environment. The negative impacts of this practice include choking of water channels, stinking neighborhoods, soil and water pollution and spread of diseases.

There is no facility for disposal of hazardous waste such as medical waste and medical waste from public hospitals, health centers and private clinics is disposed off like other domestic waste. The piling up of solid waste is open spaces is menacing the environment of Murree and large heaps of garbage are piled up here and there. The water soluble components of these wastes are dissolved in water and percolate downwards contaminating the ground water. After drying, many wastes are air borne and pollute the air. Some of them may dissipate odorous gases and toxic gases.

The solid waste management capacity of local municipal administration is very low and it is unable to formulate concrete plans or projects to tackle this ever-growing problem. The size and function of current dumping site is not satisfactory to accept and treat the City's garbage. Such out of control treatment

of municipal waste is very harmful to the sight and is also harming the tourist potential of Murrree.

Water Pollution:

Murree and its adjoining areas are suffering from acute shortage of fresh water for domestic and commercial uses and a serious problem of water pollution. Not only is there an acute shortage of water, what is left is polluted and sometimes deadly. The outpouring of pollutants from hotels, commercial centers and homes paired with surface runoff from roads creates a water crisis that cannot be ignored.

In Murree, most of the water is polluted by domestic sewage and commercial sewage as there are no industries in the area.

In the absence of piped sewerage system, most of the houses and commercial centers dispose their sewerage water into open places or fields which due to hilly terrain, flows down to join a stream and pollutes aquatic channels.

Table 3.69: Patterns of disposal of domestic sewerage Water in Murree

Type	Pipe line	Open drain	Septic tanks	pits	Open Places
Ratio%	2.6%	9.4%	0.1%	6.4%	81.5%

Source: Punjab MICS survey 2008

This unchecked disposal of sewerage into water channels and open fields has polluted the water not only in Murree but it has affected the water reservoirs of Rawalpindi and Islamabad which receive this water.

The dumping of solid waste into open places and water channels is another cause of water pollution in the area. This problem has grown to such level that the Honorable Supreme Court of Pakistan had to take *suo moto* notice of the issue. Local administration asked the help of EPA, Rawalpindi which identified one hundred and seventy three hotels, poultry farms and other business ventures which were disposing of their solid waste into Korang river and its tributaries only

Main Water Pollutants:

The main pollutant type in Murree are organic pollutants resulting from domestic and commercial sewage and solid waste. These include human excreta, hydrocarbons, pathogenic microorganism and decomposed plant materials.

In the recent past, along with the construction boom in Murree, the water supply piped network or piped sewerage system have not been developed and it is unable to meet the requirements of the local residents as well as those of visiting tourists. Until today, as already mentioned, there is small fraction of local households and other buildings which are connected to piped sewerage system. These pipelines are also very old and leakages are common.









Note: These plans represent themes to be refinedin further planning. Land uses, streetpatterns, and exact alignments in all areas areconceptual / Indicative, and to be subjected to any kind of detailed evaluationand confirmation. Under no circumstancesshould these plans / illustrations be construed as final representations /directivesfor specific sites or areas.

CONSUTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

WASTE POLLUTING WATER STREAMS

SHEET # **SCALE:**









Note: These plans represent themes to be refinedin further planning. Land uses, streetpatterns, and exact alignments in all areas areconceptual / Indicative, and to be subjected to any kind of detailed evaluationand confirmation. Under no circumstancesshould these plans / illustrations be construed as final representations /directivesfor specific sites or areas.

CONSUTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies 4th DIMENSION CONSULTING www. 4thdimensionpk.com

CLIENT:

CLIENT:

TDCP TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

CONDITION OF WATER SUPPLY

SHEET # -a **SCALE: N.T.S**

Another factor affecting the water pollution situation in Murree is the absence of sewage treatment facilities. All the sewage water (piped or released openly) is added to ground aquifers or mainly discharges into the natural water channels polluting the surface water bodies of the area. As in other parts of Pakistan, water ways in Murree region have become the storing sites for domestic and commercial wastes.

Along with the different factors, the discharge volume of wastes is varied. In monsoon, rain water dilutes these sewage effluents to some extent but in other months, these channels are sometimes filled with sewerage water only. These factors have caused the pollution of underground water, are destroying the ecological fabric of the area and wastage of water resources.

With increase in population and in tourist numbers, the provision of hygienically clean and fresh water and environmentally safe disposal of waste water are the core issues of the area. In all the meetings with stakeholders and other observations, the consultants found that the general public is fully aware of this issue and there are regular demands from their side to solve this problem. This issue therefore needs urgent attention and demands concrete and sound steps to solve this problem in accordance with environmental and health considerations.

Noise Pollution:

Noise pollution is another issue of modern urban life. It may affect human health, hearing ability, behaviors and work-efficiency. Noise can be categorized into different groups depending upon its source and intensity. The main categories of noise pollution are community noise, occupational noise and intermittent noise.

In Murree, most of the noise is of community type (domestic or residential) which includes noise generated from roads, vehicles, public places and loud music etc. According to National Environmental Quality Standards (NEQS) of Pakistan, the maximum possible limit of noise for vehicles is 85dB (A) at a distance of 7.5 meters from the source. For residential and commercial areas, there are no standards for noise measurement and control. However, in other countries, maximum limit for noise in residential areas is 45-55 dB(A).

Table 3.70: Noise pollution levels in Murree

SITE	Maximum Recorded Noise level dB(A)	Minimum Recorded Noise level dB(A)	Average
Jhika Gali Chowk	90	47	83
Kuldana Chowk	88	41	78
Sunny bank	85	30	75
GPO	92	38	65
BUS Stand	88	42	69
Kashmir Point	68	25	41
Pindi Point	75	36	42

Source: Extracted by the Consultants on the basis Field Studies

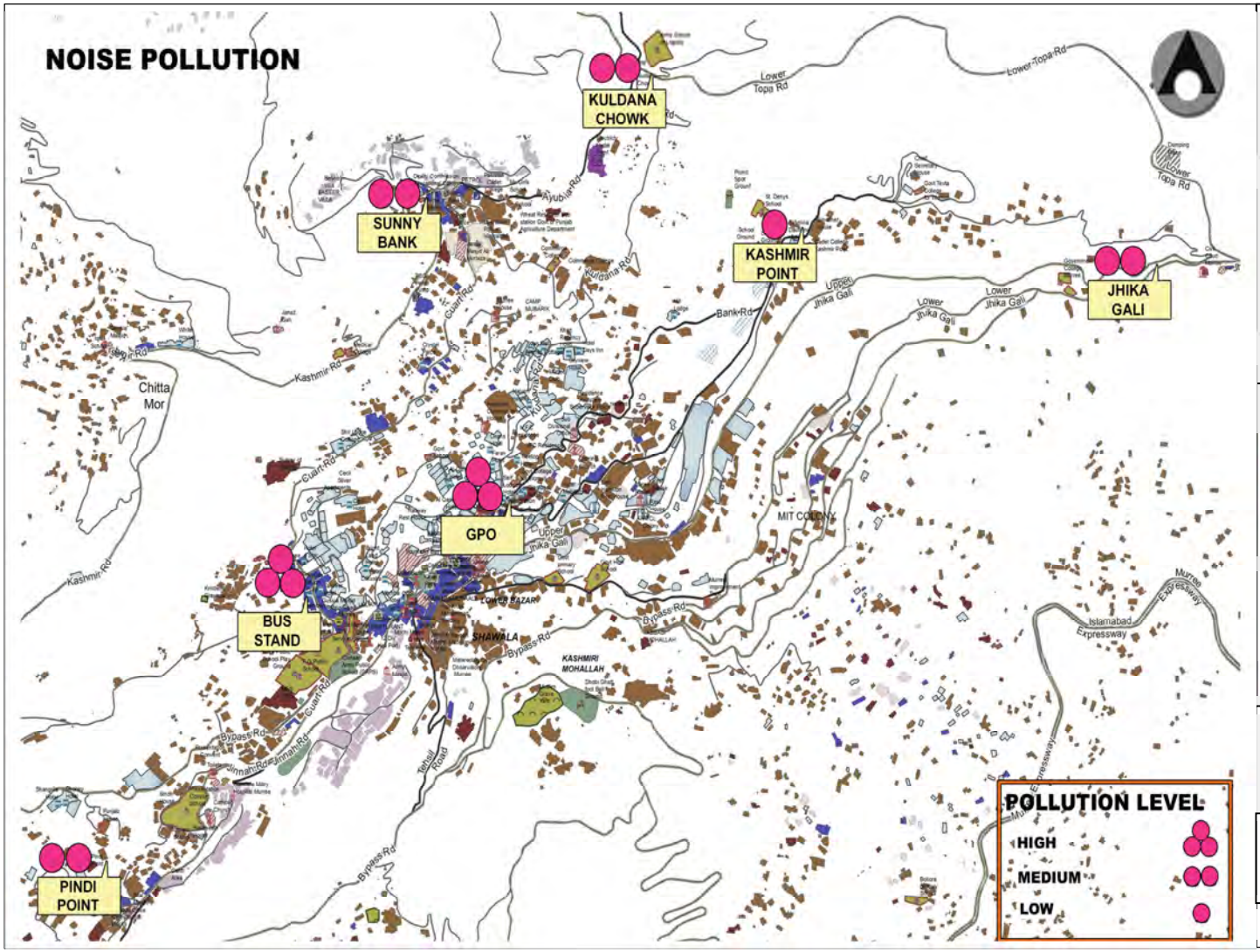
In Murree, most of the noise is generated from vehicular traffic and other commercial activities (restaurants, hotels, shops etc). There is no comprehensive study of the noise levels in Murree, but the random tests by the consultants show that noise level in most of the areas was as high as 68-92 dB(A) which reflects the intensity of noise pollution. The reason for higher noise levels at Jhika Galli Chowk is the busiest intersection of vehicular traffic of Murree. The land sliding of a part of Jhika Galli-Kuldana road has aggravated the traffic flow in this area and there are long queues of vehicles at this chowk. The driver's behavior and lack of traffic sense creates the chaos at the intersection resulting in the frequent use of horns making the situation worse. Though at most of the points in Murree, the mean noise levels are within the permissible limits of the NEQS of Pakistan but these are on the higher side of the range.

In commercial areas, the use of loud music is one of the main causes of noise pollution. In most countries, the maximum permissible limit of noise in residential and commercial areas is 55-65 dB(A). According to this scale, GPO and the Mall road are receiving noise above than the international standard values.

The noise pollution is considered a serious annoyance by the local residents who complained that playing of loud music by tourist's cars, traffic congestions, and noise generated from commercial centers had created serious problems for their daily life.

Aesthetic /Visual Pollution:

Aesthic / visual pollution can be observed as another nuisance characteristic of today's Murree. Visual pollution clinches poor building façades, open garbage dumps, cluttered streets, open litter disposal, graffiti on public places, wall chalking, open horribly laid services like water supply lines, odd paints used on buildings and many other visible in pictures



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

NOISE LEVELS IN MURREE

SHEET # -a **SCALE: N.T.S**









Note: These plans represent themes to be refinedin further planning. Land uses, streetpatterns, and exact alignments in all areas areconceptual / Indicative, and to be subjected to any kind of detailed evaluationand confirmation. Under no circumstancesshould these plans / illustrations be construed as final representations /directivesfor specific sites or areas.

CONSUTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning
Architecture
Engineering Design
Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN"

VISUAL POLLUTION

SHEET # **SCALE:**

3.15. URBAN SECURITY PROFILE

Security of life and property is one of the foremost basic needs of any society and also perceived as a prime responsibility of the state. These security issues include prevention from theft, robbery, fire, disaster, building collapse, terrorism etc. In addition, security for livelihood opportunities such as Work, Food & Shelter are considered as vital components of urban security. In Pakistan, security in urban areas has worsened in recent years and this is due to a breakdown in law and order as well as a result of societal transformation from caste-based to class-based social structures. This situation has been further complicated by benefit seeking interest groups who have seemingly believed in "Survival of the fittest" and resisting to emergence of law institutions. Subsequently, legislation and implementation of new laws have suffered thus leading to administrative and governance failure.

In response to such emerging scenario, interest groups, mafia and sectarian groups have arisen and made hostage majority of the people who have little or no resort to formal sector protection and services (Attack on Christian School). Master plans as a policy document, to devise and govern growth / development of urban areas, must harness solutions to address the stated issues of Urban Security at large.

3.15.1 PHYSICAL SECURITY (LAW & ORDER / TERRORISM):

Safety and security are seen as prime concerns of travelers. Safety and security are vital to providing quality in tourism sector. The success or failure of a tourism destination depends on being able to provide a safe and secure environment for its visitors. Fortunately, Murree is known as a peaceful and tourist-friendly town. In terms of Urban Security, Murree is mostly viewed as a secure town, however, few robbery / snatching incidents are reported through archived newspaper. (Unfortunately the Consultants were not able to get crime data from local police despite efforts). Murree also witnessed a terrorist attack in 2002 when a Missionary school was attacked by terrorists resulted in killing of six people, four Muslims and two Christians. Some criminal data of Murree has been found on website (http://pakistancriminalrecords.com/tag/murree/), but authenticity of this data / events could not be confirmed by any official sources.

There is a great need to ensure personal physical safety and security at tourism attractions and hotels. So that incidence of crime against tourists and accidents may be further reduced such as provision of guard-rails along roads, provision of handrails at public places where steep slopes and other physical dangers exist.

The hotel management and staff are quite trustworthy and very rare incidents of security complaints are received in local police stations. However, a big social problem which breaches safety and security of the tourists' population is that some tourists experience offensive behaviour and harassment against female tourists by male youth which hampers the sense of security and safety in a tourist town. Most of the hotels are also not up to date with the Physical Safety and Security requirements to coping with possible terrorism events like installation of security measures.

3.15.2 HEALTH SECURITY

Health security of inhabitants is another important part of Urban Security regimen. Murree was mainly developed by the British as a resort town especially to provide refuge to the ailing soldiers keeping in view its healthy atmosphere. It was also known as a Sanatorium City in the recent past. Murree is considered to be the most livable city for locals and visiting population. Many tourists remain engaged in walking, hiking and trekking activities to maintain their health. The Murree Tehsil has a total of 29 medical facilities including Tehsil Headquarter Hospital and Combined Military Hospital. These medical facilities include all kind of government hospitals, private clinics and hospitals, hakims and homeopathic facilities as well.

During the field surveys, the Consultants have come across the following health facts:

Table 3.71: Cases Reported At Opd Department Thq Hospital Murree

Medical Departments	Total in 2009	Total in 2010
Emergency	19006	20944
OPD	88127	98838
Dental OPD	4546	5175
Homeo	16935	15513
Tib	6192	6794
In Door	6132	5554
Operation/ Major	486	179
Operation/ Minor	3897	3833
Laboratory	28609	27439
X-Ray	3582	2637
Ultra Sound	6015	6160
ECG	325	869
Blood Bank	477	510
Labor Room	2075	2103
EPI	2636	3874
M.L.C.	-	460

Source: Extracted by the Consultants on the basis Field Studies

That most cases referred to the OPD were emergency cases. It has also come to know that most of the emergency cases are related to traffic accidents involving tourists.

Table 3.72: Gastro Cases Registered At Thq Hospital Murree

Month	Outdoor	Indoor	Peads	Emergency	Total Patients
July 2011	703	340	630	574	2247
August 2011	192	86	115	86	479

Source: Extracted by the Consultants on the basis Field Studies

Another astonishing fact came into notice that the Gastro cases have been seen high in the months of July and August 2011. This is mainly because of higher usage of contaminated water in local hotels and housing sector (Water Borne Disease). The reasons have already been defined in the environmental issues.

It should be noted that historically, Murree was a convalescence center. It has witnessed limited development in this sector. The Consultants envisage that with a focused approach Murree can be directed to promote development of health tourism in Pakistan by improving the needed infrastructure.

3.15.3 FOOD SECURITY:

Food security ensures quality, quantity & even supply of food items to the residents around the year at affordable prices. Local rural inhabitants stated that they used to grow vegetables on their small farm landholdings in rural vicinity to make their daily food needs and they also used to share surplus quantities with neighbors. It was an appreciable cause towards developing a Community Pool which was hampered in recent years due to unavailability of quality water for agriculture. They further stated that sub soil water is of brackish quality and not suitable for growing crops and vegetables. Perishable food items are brought to the town mainly from Rawalpindi. Promoting home garden / farming strategies shall benefit the community at large. Water issue could either be resolved through treatment of uphill sewage through primary procedures and further using it for agriculture. Price of commodities seems another issue affecting livelihood of locals, on an average 30% price hike has been observed during peak season and this eventually puts a substantial burden on local inhabitants' livelihood.

3.15.4 HAZARDS / DISASTERS VULNERABILITY:

Murree is prone to disasters like land sliding and earthquakes (as already discussed at length in Geology section above). To make Murree a disaster resilient community very less work has been done so far. Without engagement of local community at large, disasters cannot be mitigated by the government alone. Murree being in the seismic fault line zone, demands a comprehensive community based disaster management policy to be an integral part of Master Planning Process (learning from 2005 earth quack experience). The development of a comprehensive Community-Based Disaster Risk Management (CBDRM) approach provides opportunities for the local communities to evaluate their situations based on their own experiences and promotes participation and partnership.

In the process, the community becomes a major player and stakeholder. CBDRM constitutes a process of disaster risk management in which at risk communities are actively engaged in the disaster risk identification, risk assessment, situational analysis, preparedness, mitigation, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities. In CBDRM, local, provincial and national governments are involved and supportive. The local people are the prime movers in reducing disaster risks in their community.

Another common disaster observed in Murree is Bush / Forest Fires in rural suburbs, which ignites up incidentally or deliberately almost every year and evidences report that hundreds of grown up trees have been set blazed, in such incidences, over the years. These incidences may risk human lives as well if

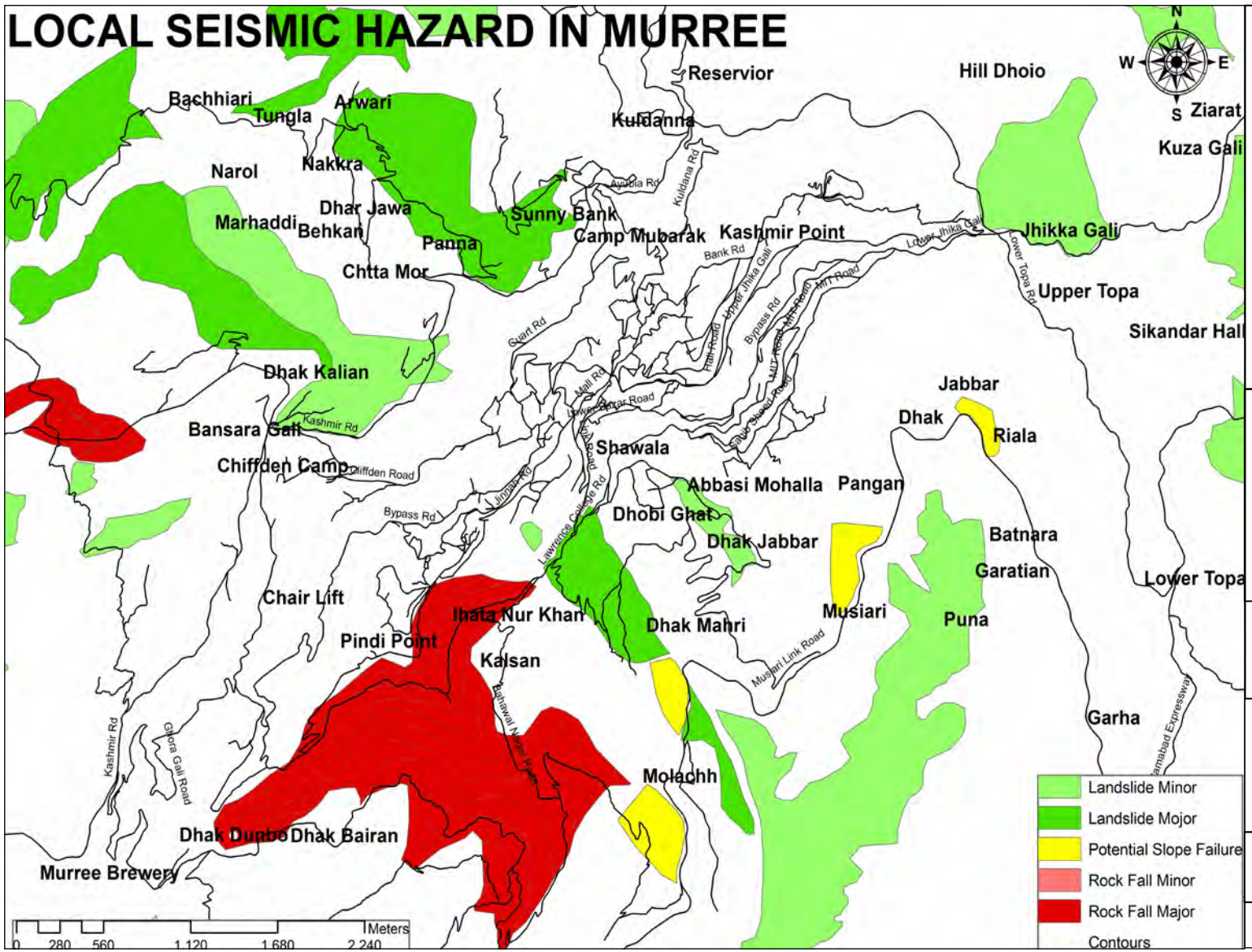
preemptive measures are not to be taken up by the concerned departments such as TMA firefighting and Forest department on priority. Some evidences also state that strong timber mafia is believed to be involved in such incidences. Recently, Rs. 400,000 has been allocated to the forest department to mitigate the issue and the same amount was announced for subsequent months during the summer season.

Another disaster risk analysis done by Mohammad Riaz: ("Multi-Hazard Vulnerability and Risk Assessment of the Murree Municipality, Rawalpindi District, Pakistan": 2011, National Centre of Excellence in Geology, University of Peshawar, Peshawar) revealed that a total of 284 residential buildings, 20 commercial buildings, 3 critical buildings, 9 km lengths of roads and 17 bridges with a cumulative span of 129 meters are at risk from all the recognized hazards. The earthquake risk analysis revealed that 50% of the buildings and population of the Murree area are under serious threat. The potential land sliding is threatening an estimated 1.5 km of roads, 3 bridges with a total of 17 meter span, 57 residential buildings, 12 commercial buildings and 2 critical buildings. The risks associated with flash floods include 298 meter length of road damage, 3 bridges with a total span of 35 meters, 127 residential buildings, and 4 commercial buildings.

Table 3.73: Local Hazard Vulnerability Chart, Showing Expected Type & Extent of Risk in Murree Urban

Sr. No	Hazard type	Location	Risk level
1	landslide	hotel breeze & masjid bilal pindi point	high
2	landslide	northwest of punjab house	low
3	landslide	southwest of meteorology observatory	med
4	landslide	north graveyard near dhobi ghat football ground	low
5	landslide	north of primary school at ihata sardar khan	med
6	landslide	office	high
7	landslide	treetop hotel	high
8	landslide	se of hajvery heights rest house	med
9	landslide	east of ayenoor lodges	low
10	landslide	east of crystal palace hotel	low
11	landslide	sw of police lines	low
12	landslide	west of sunny bank	med
13	landslide	nw of sindh house	med
14	flash floods	west of dhobi ghat (qureshi mohala)	Med
15	flash floods	ne of dhobi ghat (qureshi mohala)	Med
16	flash floods	nw of deans hotel	High
17	earthquake	murree tma	Low

Source**:** (Mohammad Riaz: "Multi-Hazard Vulnerability and Risk Assessment of the Murree Municipality, Rawalpindi District, Pakistan": 2011)



Note: These plans represent themes to be refined in further planning. Land uses, street patterns, and exact alignments in all areas are conceptual / Indicative, and to be subjected to any kind of detailed evaluation and confirmation. Under no circumstances should these plans / illustrations are construed as final representations /directives for specific sites or areas.

CONSULTANTS:

PEPAC Pakistan Environmental Planning & Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

LOCAL SEISMIC HAZARD IN MURREE

SHEET #









Note: These plans represent themes to be refinedin further planning. Land uses, streetpatterns, and exact alignments in all areas areconceptual / Indicative, and to be subjected to any kind of detailed evaluationand confirmation. Under no circumstancesshould these plans / illustrations be construed as final representations /directivesfor specific sites or areas.

CONSUTANTS:

Pakistan Environmental & Planning Architectural Consultants

Planning Architecture Engineering Design Environmental Studies
4th DIMENSION CONSULTING
www. 4thdimensionpk.com

CLIENT:

CLIENT:

TDCP
TOURISM DEVELOPMENT CORPORATION OF PUNJAB

PROJECT:

MASTER PLAN TO DEVELOP MURREE A POLLUTION FREE TOURIST TOWN

LAND SLIDING

SHEET # -a **SCALE: N.T.S**

3.16 LIVELIHOOD ASSESSMENT:

The livelihood assessment was conducted in order to obtain a general profile of the local population in determining its needs regarding livelihoods and economic security. The assessment was done of population related to the main economic sectors found in Murree i.e.

1. Tourism industry
2. Trade and commerce
3. Agriculture and livestock
4. Arts and crafts industry
5. Others

The assessment is based on the local population's distinct capital types categorized as:

Human capitale.g. household members' 'capabilities' in terms of the number of members and their age, health, education, knowledge, skills, and capacity for work.
Physical capital in terms of local population's ownership to physical assets and tools etc.
Natural capital such as forestry and biodiversity ecosystems they support are seen as 'natural capital', in the sense that they are productive assets on which households may depend.
Financial capitale.g. households' savings, credit (and debt, which is negative capital), insurance and so on.
Social capital that is the kinship networks, associations and community organizations that local population can use in difficulties or turn to in order to gain advantage / survive.

The results of livelihood assessment done by the consultants are shared as follows:

Employment Sector:

The major employment sectors in Murree are Govt. / Private Jobs; Tourism; Commerce & Trade; Agriculture & Livestock; Wage Labour & Services sector. The percent population engaged in different employment sectors is shown below.

Table 3.74: Employment Sector

Sector	Govt/ Private Job	Tourism	Commerce & Trade	Agriculture & Livestock	Wage Labour & Services	Other	Total
%age	32.2	36.4	18.3	3.8	5.6	3.7	100

Source: Extracted by the Consultants on the basis Field Studies

The largest employment sector is tourism industry which employs 36.4% population followed by formal job sector (Govt. / Private Jobs) 32.2%; Commerce & Trade also engages 18.3% of local population; 5.6% surveyed population works in formal wage labour and services such as construction works, porters, helpers etc.; 3.8% population is engaged in agriculture & Livestock sector. The least

working employment is self-employment in terms of other unaccounted services also including arts & crafts and seasonal workers.

Longevity of Work:

It was determined that how many people are engaged in the work sector for how long period. 47% people are working more than 10 years; 22.9% people are working for the period of 6 years to 10 years; 15.7% people are working for less than a year and 14.5% people are working for 1 year to 5 year.

Table 3.75: Longevity of Work

Duration	Less than a year	1 Yr. – 5 yr.	6 yr. – 10 yr.	More than 10 yr.	*Total*
%age	15.7	14.5	22.9	47	100

Source: Extracted by the Consultants on the basis Field Studies

3.16.1 People working in Tourism Industry:

The percentage of persons working in tourism industry out of surveyed population are 84% are engaged in providing accommodation services; 7.4% people are working in the transportation services; 3.7% people are working in food & beverage services; 2.5% are working in retail sales and 2.5% people are working for the provision of tourist services; 0% persons out of surveyed population are found to be working in the provision of cultural & recreational services.

Table 3.76: People working in Tourism Industry (%age)

Accommodation Services	Food & Beverage Services	Transportation	Retail Sales	Tourist Services	Cultural & Recreational Services	*Total*
84	3.7	7.4	2.5	2.5	0	100

Source: Extracted by the Consultants on the basis Field Studies

3.16.2 Trading / Retail Sales:

In the trading & retail sales sector, most of the population own their businesses or establishments and are self-employed. The major percentage of population is running Grocery Stores/Shops i.e. 87.6% followed by population engaged in selling of vegetable items (6.8%); then 3.9% surveyed population runs PCO & Mobile shops and unaccounted / other trade & retail sales are 1.7%.

Table 3.77: Trading / Retail Sales

Type	Grocery Store / Shop	Specialized Tourist items	Vegetable Items	PCO & Mobile	Sports	Other	Total
%age	87.6	0	6.8	3.9	0	1.7	100

Source: Extracted by the Consultants on the basis Field Studies

3.16.3 Dependence on Agriculture & Livestock:

The subsistence on agriculture and livestock of the population living in the rural neighborhoods of Murree are very much. As the rural areas and peri-urban areas around Murree are the ecological footprints of the city, they serve sufficient food and agricultural produce to the urban Murree. 28.5% surveyed population's survival is on the availability of agricultural land they own; 20.8% surveyed population depends on livestock farming for their livelihood; 17.6% rural population survives on small scale poultry farming and poultry products; 7.7% population survives on availability of forest products such as sale of firewood and timber products; 2.8% surveyed population likes honey-bee keeping and its products along with other side works to support their livelihood; whereas 8.5% population works in the agriculture sector as a labour.

Table 3.78: Dependence on Agriculture & Livestock

	Agricultural Land	Livestock Farming	Fruit/Floral/Horticulture	Poultry Farming	Honey Bee Keeping	Forestry	Other	Total
%	28.5	14.1	20.8	17.6	2.8	7.7	8.5	100

Source: Extracted by the Consultants on the basis Field Studies

3.16.4 Access to Water for Livelihood Needs:

Water is a very important element for supporting livelihood system. The access to water is thus very important for the local population. 76.5% out of surveyed population confirmed access to water whereas only 23.5% population denied direct access to water for their livelihood needs. However, they have to fetch water from some source to support the activities of their livelihoods.

Table 3.79: Access to Water for Livelihood Needs

	Yes	No	Total
%age	76.5	23.5	100

Source: Extracted by the Consultants on the basis Field Studies

In the rural Murree, 79.3% population survives on rainwater harvesting and other sources of fresh water; 14.6% of peri-urban population is served with municipal water supply; whereas 6.1% population gets water through bowsers.

Table 3.80: Source of water

	Rainwater Harvesting	Municipal Supply	Bowser	Total
%age	79.3	14.6	6.1	100

Source: Extracted by the Consultants on the basis Field Studies

3.16.5 Agricultural Products & Their Usage:

When asked about the usage of agricultural products, 59.2% population answered that they sell it in the local market to get the cash receipts which are important for their survival. 28.7% population answered that they consume the agricultural produced for their own use; whereas 12.1% population also told that the

agricultural produce is a better way of mutual sharing for them, which in returns yields some kind of services and products for them.

Table 3.81: Usage of Agricultural Products

	Self / Family	Trade in Market	Mutual Sharing	Total
%age	28.7	59.2	12.1	100

Source: Extracted by the Consultants on the basis Field Studies

Monthly Income:

In Murree, 32.9% population earns Rs. 5001 to Rs. 10,000 per month followed by 27.7% population that earns Rs. 15,001 to Rs. 20,000 per month. 26% population earns Rs. 10,001 to Rs. 15,000 per month followed by 9.4% population that earns Rs. 20,001 and above per month. There are 4% surveyed population that earns below Rs. 5,000 per month, they are attributed as minor workers largely the females who remain mostly unpaid or underpaid

Table 3.82: Monthly Income

	Below Rs. 5000	Rs. 5001 – Rs. 10000	Rs. 10001 – Rs. 15000	Rs. 15001 – Rs. 20000	Rs. 20001 and above	Total
%	4	32.9	26	27.7	9.4	100

Source: Extracted by the Consultants on the basis Field Studies

Monthly Savings:

In Murree, out of surveyed population 66.8% proclaimed that they hardly save below Rs. 5,000 per month; followed by 18.3% population who saves Rs. 5001 to Rs. 10,000 per month. 9.7% population announced that they save between the range of Rs. 10,001 to Rs. 20,000 per month; whereas only 5.2% population saves Rs. 20,000 and above.

Table 3.83: Monthly Savings

	Below Rs. 5000	Rs. 5001 – Rs. 10000	Rs. 10001 – Rs. 20000	Rs. 20000 & Above	Total
%age	66.8	18.3	9.7	5.2	100

Source: Extracted by the Consultants on the basis Field Studies

Following matrix explains the characteristics of different occupational groups found in Murree and their subsistence level on livelihood.

Table 3.84: Occupation Groups in Murree

OCCUPATIONAL GROUPS						
Criteria	**Tourism**	**Trade & Commerce**	**Agriculture & Livestock**	**Arts & Crafts Industry**	**Local Job Market (Govt. & Private Sector)**	**Others including Wage Labor/ Service Industry**
Livelihood Subsistence / Dependence	Foreign & Local Tourists	Local Population & Tourists	Local Population & Tourists	Tourists	Job / Work	**Local Population / to some extent tourists**
Assets	Hotels, Restaurants, Transport, Tourist Services	Shops and trade items	Land, Livestock, Poultry, Grains, Dairy Products, Forest products collection	Arts & Crafts / Local Culture	Small cash savings / personal property if any	**Small cash savings / personal property if any**
Source of Income	Food, Lodging and Transport services	Products	Cash crops livestock, poultry and eggs, dairy products	Selling of pieces of arts and crafts	Salary	**Construction works, Tourism, Entertainment, Restaurants**
Power to buy food and services	Yes	Yes	Marginalized	Marginalized	Yes	**Highly marginalized**
Affect of Seasonal Variations of Tourist Influx	High	Mild	Mild	High	Govt. Sector Employees – No Affect; Private Sector Employees – Mild Affect	**High**
Savings	**High**	**High**	**Low**	**Mild**	**Mild**	**Low**

Source: Extracted by the Consultants on the basis of Field Studies

APPENDIX:

LIST OF CONTRIBUTING PROFESSIONALS:

	KEY PROFESSIONAL	RESPONSIBILITY
1	Muhammad Ashraf Malik (MD PEPAC Ltd.)	Overall Team Leader
2	Mr. Nawazish Iqbal (PEPAC Ltd.)	Project Manager
3	Mr. Nadeem Khurshid (4th Dimension)	Technical Team Leader / City Planner
4	Mr. Atta Ullah Khan (4th Dimension)	Dy. Tech. Team Leader / City Planner
5	Dr. Khalid Farooq Akbar (4th Dimension)	Urban Environmental Expert
6	Mr. Sher Bahadur Wazir (PEPAC Ltd.)	Geologist
7	Ms. Sarah Binte-Ali (4th Dimension)	Urban Design Expert
8	Engr. Tariq Taimoor Mian (PEPAC Ltd.)	Electrical Engineer I
9	Engr. Siddique Bhatti (PEPAC Ltd.)	Structural Engineer I
10	Mr. Hayatullah Khan (PEPAC Ltd.)	Agricultural / Water Resource Expert
11	Mr. Ijaz Ahmed (4th Dimension)	Urban Transportation Expert
12	Mr. Khurram Shahzad (4th Dimension)	Urban Planner / Physical Surveys Expert
13	Mr. Shakil Qureshi (4th Dimension)	Infrastructure Specialist
14	Mr. Muhammad Shoaib (4th Dimension)	Urban Regeneration Specialist
15	Mr. Muhammad Qadeer (4th Dimension)	Urban Planner & GIS/MIS Expert
16	Mr. Faisal Latif FCA (PEPAC Ltd.)	Financial Analyst
17	Mr. Athar Saeed (PEPAC Ltd.)	Principal Architect
18	Mr. Irfan Shaukat (PEPAC Ltd.)	Project Coordinator
19	Engr. Aamir Abbas (PEPAC Ltd.)	Municipal Services Engineer
20	Engr. Omar Hayat (PEPAC Ltd.)	Structural Engineer II
21	Engr. Usman Ali Khan (PEPAC Ltd.)	Electrical Engineer II
22	Mr. Hanif Yusafzai (4th Dimension)	Urban Planner / Data Analyst
23	Ms. Khadeja Sajid (4th Dimension)	Urban Planner / Report Writer
24	Ms. Maha Shafique (4th Dimension)	Urban Planner / Report Writer
25	Ms. Amna Arshad (4th Dimension)	Urban Planner / Report Writer
26	Ms. Iffat Ashraf (4th Dimension)	EIA / SEA Expert
27	Mr. Imran Habib (4th Dimension)	GIS Analyst

PROJECT DEVELOPMENT ACTIVITIES:

Activities	Dates	Time / Status	Responsibilities
• **Bid submission / evaluation** • **Multiple Presentations**	Sep 2010- April 2011	08 Months / Completed	TDCP/ Consultant
• **Project awarded & contract signed**	May 25, 2011		TDCP
• **Project Initiation**	May 25, 2011	35 Days / Completed	Consultants
• **Presentation on Work Plan**			
• **MMP Inception Report Submitted**	June 30, 2011		
• **Field Work Initiation**	July 01, 2011	65 Days / Completed	Consultants
• **Stakeholder/Public Consultation**	Aug 08, 2011		
• **Field Work Compiled**	Aug 18, 2011		
• **MMP Draft Report Compiled**	Sep 05, 2011		
• **Scope of Work Enhanced**	Sep 01, 2011	65 Days / Completed	Consultants
• **Enhanced Scope of work agreed**	Sep 15, 2011		
• **MMP Draft Report Submitted**	Oct 03, 2011		
• **Evaluation & Feedback on Draft Report**	May 02, 12	08 Months / Completed	TDCP
• **Presentation on Draft Report Stakeholder Conference at Lahore for Comments (attended by Urban Unit, EPD, P&D, PHATA, WWF, Housing, TDCP & Transport Departments of Punjab)**	May 02, 2012	23 Days/ Completed	TDCP / Consultants
• **Presentation to Murree Steering Committee at Rawalpindi including CDG, TDCP and TMA Murree**	May 23, 2012		
• **Presentation to Honorable CM**	June 03, 2012	Postponed	TDCP
• **Directed for submission of Final Report**	June 09, 2012	13 Days / Completed	Consultants
• **MMP Final Report Submitted**	June 21, 2012		
• **Evaluation / Comments on Final MMP Report**	June 21 – March 04, 2013	09 Months/ In process	TDCP

• **Three consecutive stakeholder consultation seminars and meetings with Hon. Chairman Murree Steering Committee, CDG RWP, TDCP, Urban Unit, WWF, Forest, Wildlife, RDA, PHA, PHATA, LG&CD, Transport, UET, AC Murree, EPD, P&D and TMA Murree**	March 04, March 21 & April 06,2013	Completed, Comments and Suggestions Discussed and registered	Consultants
• **Go ahead issued by the TDCP for finalization of Murree Master Plan after consensus building on incorporation of suggestions made along with Sector Action Plan**	May 02, 2013	Suggestions Incorporated	TDCP/Consultants
• **Finalization and submission of Murree Master Plan 2031**	June 07, 2013	Completed and Submitted	Consultants

PROJECT IN PICTURES:



1 Field Work ; Murree July 2011



2 Experts in Field; Murree Sep 2011



3 Presentation to Murree Steering Committee, CDG & TMA Murree; Rawalpindi May 2012



4 Presentation to Murree Steering Committee, CDG & TMA Murree; Rawalpindi May 2012



5 Stakeholder Consultation; Lahore May 2012



6 Stakeholder Consultation; Lahore March 2013



7 Stakeholder Consultation; Murree August 2011



8 Stakeholder Consultation; Murree August 2011

:

LIST OF DEPARTMENTS/STAKEHOLDERS CONSULTED:

1. TDCP
2. Punjab Urban Unit
3. Environment Protection Department, Govt. of the Punjab
4. P&D, Govt. of the Punjab
5. Punjab Wildlife & Parks Department, Govt. of the Punjab
6. WWF Pakistan
7. Rawalpindi Development Authority (RDA) Rawalpindi
8. Parks & Horticulture Agency (PHA) Rawalpindi
9. Parks & Horticulture Agency (PHA) Lahore
10. PHATA Punjab
11. LG&CD, Govt. of the Punjab
12. Department of Forest, Govt. of the Punjab
13. Department of Housing, Govt. of the Punjab
14. Department of Transport, Govt. of the Punjab
15. City District Government, Rawalpindi
16. Commissioner Rawalpindi Division, Rawalpindi
17. Assistant Commissioner Murree
18. TMA Murree
19. UET Lahore
20. Murree Steering Committee, chaired by Hon'ble Mr. Shahid Khaqan Abbasi, MNA
21. PSO to Prime Minister of Islamic Republic of Pakistan
22. UNDP
23. Anjman-e-Falah-e-Muashra, Murree (NGO)
24. Journalists

LIST OF PARTICIPANTS:

STAKEHOLDER CONSULTATION WORKSHOP CONDUCTED ON 06 AUGUST, 2011 AT MURREE:

NAME	AFFILIATION
Mr. Jamil Abbasi	Inspector, City Traffic Police, Murree
Mr. Shafiqur Rehman	Beat Incharge, City Traffic Police, Murree
Mr. Muhammad Safdar	Reader, DSP Traffic, Murree
Mr. Zahid Mehmood	Asstt. Research Officer, EPD, Murree
Kh. Tanveer Ahmad	Asstt. Director Research, EPD, Murree
Prof. Javed Mehmood Saho	Professor, Government College, Murree
Sh. Mohammad Yaqoob	Retired Commissioner Income Tax, Murree
Mr. Nayyar Naeem	Sr. V. President, Hotels Association, Murree
Mr. Mazhar Mehmood Abbasi	General Secretary, Hotels Association, Murree
Mr. Tariq Habib	Asstt. Professor, Government College, Murree
Mian Irfan Shaukat	Business Development Manager, PEPAC
Mr. Muhammad Ashraf Malik	Managing Director, PEPAC, Islamabad
Mr. Farrukh Latif	Asstt. Librarian, Iqbal Municipal Library, Murree
Mr. Muhammad Rasheed	Executive Engineer/ TO(I&S), TMA, Murree
Ms. Shakeela Sabir	President, Women Welfare Society, Murree
Mr. Raja Danish	Tehsil Headquarter Hospital, Murree
Mr. Nadeem Khurshid	Technical Team Leader, 4th Dimension
Mr. Muhammad Shoaib	Sr. Urban Regeneration Planner, 4th Dimension
Ms. Sarah Binte Ali	Urban Design Expert, 4th Dimension
Mr. Atta Ullah Khan	Deputy Project Manager, 4th Dimension
Dr. Khalid Farooq	Environment Specialist, , 4th Dimension
Mr. Muhammad Hanif	Urban Planner, 4th Dimension

LIST OF DEPARTMENTS CONSULTED:

DESIGNATION / DEPARTMENT	INCUMBENT
Deputy District Officer (DDO), Buildings, C&W.	Shahid Butt
DDO Highways,	Ghulam Rasool
Sub Divisional Police Officer, Murree	Mrs Kausar Hussaini
DDO Roads	Ghulam Rasool (Additional Charge)
Sub Divisional Officer, Machinery	Ghulam Rasool (Additional Charge)
Divisional Forest Officer, Murree	Javaid Iqbal Gill
Soil Conservation Officer	Ch. Rafique
Deputy Superintendent of Police, Traffic	Raja Zaheer
Medical Superintendent, Tehsil Headquarter Hospital, Murree	Dr. Khalid Masood
Medical Superintendent, Samli Sanitorium	Dr. Azhar Hayat
Principal Degree College	Prof. Farooq Hayat
Principal Degree College for Women	Prof. Lubna Shahzad
DDO Education, Male	Mr. Shaukat
DDO Education, Female	Ms. Shaheda
Incharge, SNGPL	Tanveer Khan
Tehsildar	Rana Nayyab
Divisional Engineer, PTCL	
Incharge, NADRA	Zamer Abbasi
Sub Divisional Officer IESCO, Pindi Point	Yousaf Shah
Sub Divisional Officer IESCO, Jhika Gali	
Director Arts Council	Farooq Khan
Assistant Secretary, Murree Improvement Trust	Tariq Abbasi
President Hotels Association	Raja Khalid Abbasi
President, Trade Union	Abdul Hameed
President, Press Club	Shafqat Abbasi