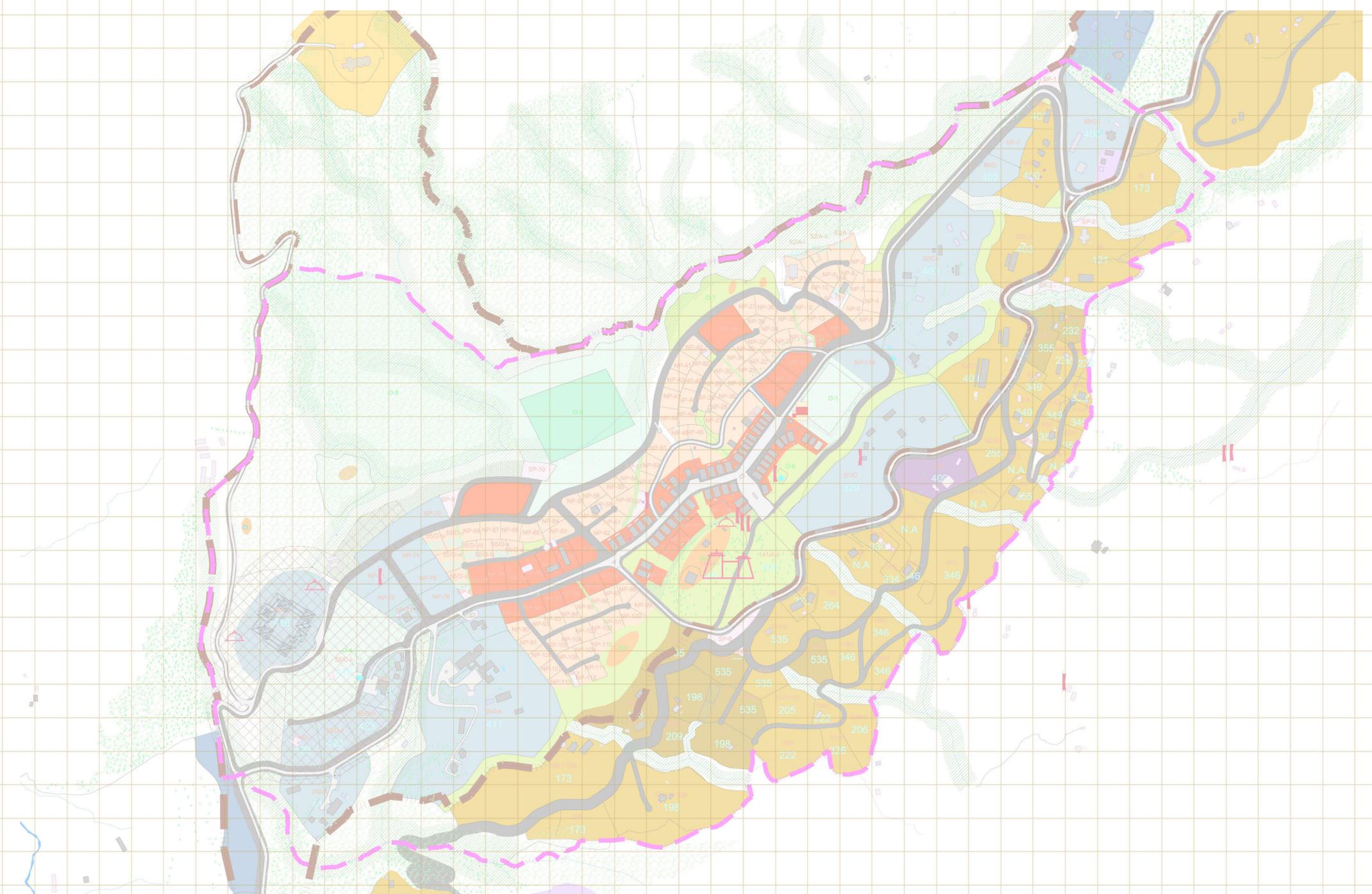


# DĀM P'HŪ STRUCTURE PLAN



**LOCAL AREA PLAN** Damphu Urban Core

**Benninger Architectonics USA Incorporated**

# **The Structure Plan for Damphu**

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## **Local Area Plan Damphu Urban Core**

**Submitted on: 26<sup>th</sup> January, 2005**

**B E N N I N G E R      A R C H I T E C T O N I C S      U S A   I N C O R P O R A T E D**  
**A r c h i t e c t s   a n d   U r b a n   P l a n n e r s**

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## LOCAL AREA PLANNING

This Local Area Plan for the Damphu Urban Core is based on an analytical assessment of the existing situation, looking into aspects such as the present land use pattern, existing buildings, land holdings and infrastructure layouts. Analyses of topography, surface hydrology and other environmental factors have also shaped the plan. The primary aim of this Local Area Plan is to ensure balanced and planned development within the town, achieving the vision of the tomorrow's Damphu.

The proposals and design solutions presented in this localized, contextual plan have been developed from the larger context by translating the Structure Plan of Damphu town to the local level. This has been done while addressing issues at the Urban Village level. The new layout for this local area plan considers efficient vehicular and pedestrian access to public amenities, located within a comfortable walking distance from all the parts of the Urban Village. Rationalization of the existing plots has been proposed, which draws on the principles of land pooling. Land Pooling is a democratic and equitable process, through which an equal proportion of land is taken from each plot, in return for the provision of modern infrastructure services, amenities, regular plot layouts, walkways and roads. The proportion of land to be deducted is so determined that it is sufficient to provide all the required roads, community facilities and services. It generates land resources for the establishment of the services. As a principle, the plan avoids the destruction of any permanent private structures.

A major consideration of this local area plan is to house its proportion of the total town population, which will have to be accommodated in the town as a whole over the coming decades. Should the town population reach 8,700 over the Structure Plan horizon time, the local area will have to house nearly 900 dwelling units to accommodate its proportionate share of inhabitants! At present there are only 115 dwelling units in the area. If we cannot accommodate increasing demands, these will shift to larger cities and Damphu will decline. The planned population of this local area is 4,283

Implementation of any local area plan is a consultative and collaborative process. It involves educating the stakeholders about the benefits of local level planning and the need for land pooling and other collaborative efforts. The attempt in this plan is to avoid land acquisition, so that the developmental activities envisioned, are equally shared by all the land owners of the local area. There must be a dialogue with the landowners regarding the "before" and "after" status of their land parcels, explaining the net benefits of the planning process. The local authority will have to carry out a series of community consultations and one-to-one meetings, to make the implementation of this local area plan a truly democratic process, supported by the citizens for whom it is developed. People must realize that their property values will increase dramatically due to local area planning, off-setting their proportionate loss of land.

## ACKNOWLEDGEMENT

His Excellency, Lyonpo Kinzang Dorji, Ministry of Works and Human Settlement, has been a guiding force, emphasizing the urgent requirement for an operational plan for Damphu. We thank him for his valuable guidance. He has taken a personal interest in reviewing all aspects of this plan and guiding the professional team. He is a continuous source of inspiration, guidance and constructive criticism.

We must place on record our indebtedness to Honorable Tshering Dorji, Secretary, Ministry of Works and Human Settlement, who was instrumental in the preparation of the Structure Plans for Gelephu, Damphu and Samtse. He has guided us in the preparation of this plan, taking an interest in all aspects of development.

We also thank Mr. Rinchen Dorji, Director, Department of Urban Development and Engineering Services, Ministry of Works and Human Settlement, for his support, guidance and insight at critical junctures during the planning process. Without his support this plan would not have emerged.

We thank the Chief Town Planner of Bhutan, Mr. Meghraj Adhikari, Department of Urban Development and Engineering Services, Ministry of Works and Human Settlement, who has taken time off of his busy schedule to guide us whenever needed. He has participated in field survey visits and meetings with local stake holders.

We would also like to specially thank Mr. Lhendup Wangchu, Dasho Dzongda, Tsirang Dzongkhag, for extending to us his considered ideas, valuable support and encouragement. He has proven to be a man of vision, constructive guidance and positive thinking. Many of the ideas within these pages have been culled from his observations. We would like to thank all the citizens of Damphu, Mr. Lapchu, District Engineer and all the staff of Engineering Sector, Dzongkhag Administration, and other departments for extending their kind cooperation and support during the entire process.

Our team is indebted to Mr. Ugyen Tenzin, Architect, Department of Urban Development and Engineering Services, Ministry of Works and Human Settlement, for his valuable support, ideas and enthusiastic participation.

A team of Urban Designers and Planners, including Mr. Kamesh S., Chief Planner, BAUSA, Mr. Harshad Rajadhyaksha, Urban Designer, BAUSA, and Mr. Ashish Lahoti, Urban Designer, BAUSA, has prepared this report. Mr. Jagadeesh Taluri, Mr. Navin Pradhan, Mr. Ranjit Wagh, Mr. Deepak Kaw, and Mr. Ashok Labade have been a source of constant encouragement.

**Christopher Charles Benninger**  
Benninger Architectonics USA Incorporated, Thimphu, January, 2005



## TABLE OF CONTENTS

Acknowledgements  
Table of Contents

### **Chapter 1 INTRODUCTION TO LOCAL AREA PLAN**

- 1.1 Philosophy of Urban Development Envisioned in the Town
- 1.2 What is a Local Area Plan?
- 1.3 Aims and Objectives of a Local Area Plan
- 1.4 Process involved in the Preparation of a Local Area Plan
- 1.5 Public Participation in the Preparation of a Local Area Plan

- 3.8.2 Circulation System and Road Network
- 3.8.3 Open Space System
- 3.8.4 Heritage Precincts
- 3.9 Proposed Utilities and Services Network
  - 3.9.1 Water Supply System
  - 3.9.2 Sewerage System
  - 3.9.3 Solid Waste Management System
  - 3.9.4 Street Lighting System
  - 3.9.5 Storm Water Drainage System
  - 3.9.6 Fire Fighting Facilities

### **Chapter 2 EXISTING SCENARIOS**

- 2.1 Introduction
- 2.2 Existing Land-Use Pattern
- 2.3 Existing Land Ownership Pattern
- 2.4 Existing Amenities and Facilities
  - 2.4.1 Road and Circulation Network
  - 2.4.2 Open Space System
  - 2.4.3 Health, Education, Shopping and other Community Facilities
  - 2.4.4 Heritage and Religious Facilities
- 2.5 Existing Housing and Density Pattern
- 2.6 Existing Utilities and Services
  - 2.6.1 Water Supply
  - 2.6.2 Sewerage System
  - 2.6.3 Storm Water Drainage
  - 2.6.4 Solid Waste Disposal
- 2.7 Special Features

### **LIST OF DRAWINGS**

- |             |   |
|-------------|---|
| Dwg No. 2.1 | Location of the Local Area Plan with respect to the Context of the Town |
| Dwg No. 2.2 | Base Plan   |
| Dwg No. 2.3 | Cadastral Plan of the Area  |
| Dwg No. 2.4 | Existing Land Use Plan  |
| Dwg No. 2.5 | Existing Ownership Plan   |
| Dwg No. 2.6 | Existing Amenities Plan   |
| Dwg No. 2.7 | Existing Infrastructure Plan  |
| Dwg No. 3.1 | Proposed Plot-Reconfiguration Plan                                      |
| Dwg No. 3.2 | Proposed Precinct Plan  |
| Dwg No. 3.3 | Proposed Road Network and Pedestrian Network                            |
| Dwg No. 3.4 | Proposed Open Space Network   |
| Dwg No. 3.5 | Proposed Amenities and Services Plan                                    |

### **LIST OF TABLES AND ANNEXURE**

### **Chapter 3 ANALYTICAL STUDY AND PROPOSALS FOR ACTION**

- 3.1 Land Suitability for Development in the Local Area
- 3.2 Population Accommodation and Density Distribution within the Local Area
- 3.3 Planning Standards
- 3.4 Concept of the Plan
- 3.5 Proposed Plot Re-Configuration
- 3.6 Proposed Precinct Plan
- 3.7 Proposed Density Distribution
- 3.8 Proposed Amenities and Facilities
  - 3.8.1 Urban Hub

- |               |   |
|---------------|---|
| Table No. 2.1 | Existing Land-use Distribution  |
| Table No. 2.2 | Existing Land Ownership Pattern   |
| Table No. 2.3 | Existing Built-up area and Building Height  |
| Table No. 2.4 | List of Existing Amenities and Facilities available in the Local Area   |
| Table No. 2.5 | Existing Land Holding Pattern in the Local Area   |
| Table No. 3.1 | Details of Land Not Considered for Future Development   |
| Table No. 3.2 | List of Amenities and Facilities as per Planning Standards for 4,283 Residential Population and 8,700 Town Population |
| Table No. 3.3 | Break-Up of Land Area in the Local Area Plan  |
| Table No. 3.4 | Areas under Different Precincts and their Related Population Accommodation  |
| Table No. 3.5 | List of Amenities and Facilities Proposed in the Urban Hub  |
| Table No. 3.6 | Details of the Proposed Sewerage Network  |
| Table No. 3.7 | Details of the Proposed Street lighting System in the local area  |
| Annexure - 1  | Plot Re-Configuration Tables  |
| Annexure - 2  | Precinct Schedules  |



## 1.0 INTRODUCTION TO LOCAL AREA PLAN

### 1.1 PHILOSOPHY OF URBAN DEVELOPMENT ENVISIONED IN THE TOWN

The manner of accommodating future population, its density distribution and the strategies for future urban growth within the town, all become crucial, given the potential for extensive growth in Damphu. One of the major challenges is to control future *urban sprawl* in the urban region. Towards achieving a sustainable density distribution strategy for the town, which would accommodate the future population without disturbing the eco-fragileness and biodiversity of the region, the Structure Plan strongly advocates a pattern of urban settlement, where development is concentrated at pockets called "Urban Villages." Extensive densification and development activities are envisioned in the identified Urban Villages to accommodate the future population and associated urban facilities. The existing town core must be restructured.

An Urban Village, as envisioned in the Structure Plan for Damphu will consist of three major components. They are the Village Square, (or the Urban Hub); the Village Core; and the Village Periphery. These three components vary from each other in terms of their density of population per hectare and their land-use distributions.

The Urban Village Core is essentially the high density residential sector of the Urban Village, characterized by walk-up apartments. These high-density residential sectors will be provided with basic amenities and services for self-sustenance in the form of a Village Square, located conceptually at the centre of the Urban Village. The Village Square, apart from accommodating basic amenities, will also be a high-density residential zone at specific locations. Thus, the Village Square and central area will form the main population concentration of an Urban Village. The Urban Village peripheries are essentially medium to low-density developments encircling the village core and are dominated by buildings like row-housing and individual bungalows. The Urban Hub is essentially a large Village Square, provided with additional facilities, which will cater to the needs of the entire town, and its larger service catchment area. Retail, hospitality and entertainment would characterize one hub, while another may be focused on wholesale markets.

The Village Square and the Village Core will accommodate a gross population density in a range of 200 to 250 persons per hectare, while the gross population density of the Village Periphery will be at a range of 100-150 people per hectare.

The Village Squares (and the Urban Hub), apart from accommodating amenities and services, will also function as a magnet to initiate and sustain the process of urbanization and settlement development in respective Urban Villages. The strategy put forth in this discussion is to establish Village Squares and an Urban Hub as precursors to initiate the development of surrounding urban settlements. While this may be debated, it is our proposition that major

planned development follows, and depends on, the availability of amenities and services. This can be understood looking at the history of urban development in the global context. Establishing an Urban Hub, followed by Village Squares of the respective Urban Villages, together with the provision of infrastructure for urban development, would be the priority for any urban development, and would be the **urban growth strategy** at a conceptual level, advocated in the Structure Plan for Damphu.

Considering the present density distribution, the land holding patterns, and the income generation of the Damphu Municipal Corporation, the Structure Plan also advocates re-densification and re-development of the existing urban fabric towards achieving an optimum density of population concentration. This includes horizontal and vertical in-fill of existing structures and the re-development of vacant government land within the municipal limit. The denser the urban fabric, the more households will share the costs of the same infrastructure investments!

Thus, Urban Villages become the basic unit of planning in the structure plan. Planning and development of every Urban Village in a rationalized and effective manner is the key for the success of the Structure Plan of Damphu. This assumes freezing of development in open lands, while development in new Urban Villages is facilitated and enhanced.

### 1.2 WHAT IS A LOCAL AREA PLAN?

A Local Area Plan is a planning tool, which focuses on a particular area at any given time, aiming toward translating broader objectives, organization and proposals of the Structure Plan to a localized and implementable level. The Local Area Plan prepared as a part of the Structure Plan for Damphu are seen as a tool to achieve a balance between the town level developmental needs, respecting the local needs. It is also seen as an effective means of translating of the Structure Plan proposals into a local level plan.

Each Local Area Plan proposed in the Structure Plan for Damphu focuses on an Urban Village identified in the structure plan. These are areas bound by major roads, using existing cadastral boundaries, natural landscape features like streams; major geographic "edges;" and forest lines. Within these defined areas, various developments are proposed considering the future town- and local-level needs. These typically include a high-density zone of walk-up apartments to house the future population of the town, with a Village Square catering to the basic needs of the Urban Village as described earlier. This Village Square is usually located at the centre of the Urban Village and along, or in close proximity with, the arterial roads, so that



the local area citizens can access these facilities easily from all the parts of the Urban Village and could easily be connected to the town core, Urban Hub and other nodes. The idea is to provide compact, walkable communities, surrounded by medium-density residential plots, which in turn are surrounded by low-density garden bungalows, usually with houses nestled into orchards, or privately developed green areas.

The roads are laid out in a hierarchy so that all plots are well served. Movement right-of-ways are also used for sidewalks, the water supply network, sewerage drains, storm water drainage, street lighting and solid waste collection. A system of green spaces is also proposed which will provide recreation options to the citizens of Urban Villages. Some higher level amenities and facilities like schools, community halls, or a library, are proposed in every Urban Village considering its respective population accommodation. As discussed earlier every Village Square will contain basic amenities like convenience shops, taxi stand, news and telephone kiosk, police station, a pavilion containing post boxes, a clinic, a crèche for working mothers, a toddler's park, small vegetable market, pub and ample parking areas. One of the arteries will have provision for future express bus link, linking the Urban Hub with other Urban Villages

### **1.3 AIMS AND OBJECTIVES OF A LOCAL AREA PLAN**

The Local Area Plans for Damphu are prepared with the overall aim to facilitate the implementation of Structure Plan proposals at the local level.

The plan attempts to achieve the following broad objectives:

- To facilitate a pattern of development, which can accommodate the area's share of projected population;
- To facilitate the provision of necessary infrastructure required for efficient Urban Development in a planned and sustainable manner;
- To provide for the required amenities within comfortable walking distance from all the parts of the proposed Urban Villages;
- To rationalize the land subdivision within the local area in a manner, which allows for the efficient introduction of urban infrastructure and services;
- To build up a local area layout, which addresses and respects the existing natural features of the area;
- To provide a development option for the area, which exists in balance with nature, while respecting the unique traditional values of the place, guiding future urban growth in a manner sensitive to the ecology of the town and its surroundings;
- To plan future development of the town in a balanced and sustainable manner, effectively integrating urban components of the town into the whole of the town;
- To introduce building typologies appropriate for the envisioned future development of the town; and,

- To assure that all the plots of the local area are facilitated through a road network, which provides access.

### **1.4 PROCESS INVOLVED IN THE PREPARATION OF A LOCAL AREA PLAN**

The preparation of a local area plan involves analytical rationalization of the land parcels situated in the local area. The method of land pooling has been adopted as a tool for the preparation of local area plans to make the planning process participatory and democratic.

#### **Land Pooling**

Land pooling is a method by which all the local citizens in an urban area, irrespective of their existing conditions, come together to share among themselves and to solve problems like insufficient services, no clearly laid out roads, plots with no access and properties with no potential for further development. In most existing situations no civic amenities like parks, solid waste collection bins, or basic health services are possible. Without a rational street network, fire engines and ambulances can never reach the sites. Without a street network no water supply system, storm water drainage, communication cables, or street lighting is possible.

In land pooling, at the start of the process, a hypothetical condition, in which all of the land is brought into one "Pool," is considered. A rational road layout, with all of the amenities and services required for the area, will be planned. These roads, amenities and services may, but not necessarily, take up to thirty percent of the land. To "create" this common land within the local area, the percentage of land needed for these common facilities is deducted from each plot. Now the original plots which were of odd shapes, are reconstituted into regular polygons and distributed rationally. These new plots, which are proportionately smaller than the original properties, are however marketable urban plots! Their value immediately increases! Over time, as the area is upgraded with services and roads, the value increases even more. On steep slopes where alignment of roads is impossible, because of physical slope constraints, the land is regularized in a manner that footpaths serve each plot, with common parking at entrance areas. These public walkways are wide enough to carry urban infrastructure also. In this model, about twenty percent of the land area is used for common facilities.

#### **The Planning Process**

In the planning process, each plot is measured through a total station survey, identifying all structures on it. It is correlated with the town's land records so that the owners know exactly where and how much land they own before the local area planning process. After the local area planning process every plot is located in an Urban Precinct (or functional area under the Structure Plan zoning) with respect to its size, which determines the allowable uses, plot coverage, set backs, building heights, etc. Structures cannot be constructed in sensitive environmental zones (like natural storm water drains, forest covers, on steep contours, etc.).



Thus, at the beginning of the planning process, each participant knows what their “starting condition is.” Next a professional planning team studies the area within the concerned urban villages, locating natural features, adjusting Urban Precinct zones from the Structure Plan to suit local conditions, noting water, electrical and other services and existing roads. The number and sizes of the existing plots are also studied.

### **Integration of the Local Area Plan with the Structure Plan**

There is a link between the Structure Plan and the Local Area Plan of an Urban Village. The Structure Plan includes the non-negotiable elements and components of land utilization, which rule over all the local area plans. These non-negotiable elements and components include; the sanctity of forest cover, the natural landscape of the area, natural storm water drainage courses, flood protection measures and setbacks for zones with possible flood risks and other sensitive environmental protection measures. These must be conserved in the local area plans. Next are the right-of-ways for primary and arterial roads, primary uses along these transportation corridors, and other major roads, which are “givens” in the local area plans. Each Urban Village requires a central service square and high-density housing around it to accommodate future population and their required facilities. This also adds population to share the costs of urban infrastructure amongst more users, bringing down the cost per household. All of this must be discussed openly with the population. They must be aware of all the parameters and concerns which are formative in plan making. Wherever they are affected, they must know why. There are costs, but there are also benefits. Both must be explained in detail. Dramatically higher land values of planned areas more than off-set the losses landowners experience in the thirty percent common land they loose.

### **Population and Economic Viability**

Local Area Plans are for the future, and not only for today. There must be adequate density in each Urban Village so that the households can share the costs of services and facilities, making these facilities economical in any given condition. Without a Village Square and high-density housing, the Urban Village will not have enough population to share the costs, and per household costs will go beyond the users’ ability to pay. This usually occurs in low-density, higher income group areas, where bungalows and cottages are spread over a large area, which becomes physically difficult and expensive to service. In such cases the rest of the town dwellers wind up subsidizing the costs of the low-density dwellers. To balance this inequity, fewer services are provided to low-density residents. They have to contribute more for roads, water supply, sewerage management, electric lines, telephone lines, etc.

Finally, the Structure Plan is for the coming generations. Each Urban Village will have to house its “fair share” of people as calculated from the population projection and should be correlated with the future population of the town in coming decades. From this viewpoint, also Village Squares and high-density houses will be needed in each local area.

### **1.5 PUBLIC PARTICIPATION IN THE PREPARATION OF A LOCAL AREA PLAN**

Explaining the local area plan in a positive and constructive manner plays a crucial role in the success of the plan. Each landowner should be given a detailed explanation of the costs and benefits of the process. They must be made aware of the entire process involved in the preparation of the plan and should be made a part of the plan preparation exercise. Their consensus regarding the development possibilities should be respected and addressed if found rational. A public meeting should be conducted at the end of every plan preparation stage, showing the proposed green areas, Village Square, low-density and high-density residential areas, road network and other urban facilities. Through a series of such meetings, where suggestions and complaints are integrated, the plan evolves.

To further the interaction, a small committee of four or five representatives from the respective Urban Village is selected and these representatives maintain contact with the professional planners and discuss important issues.



## 2.0 EXISTING SCENARIO

### 2.1 INTRODUCTION

The Damphu Urban Core Local Area Plan covers an area of 88 hectares, located at the geographical centre of the Damphu Municipal Limit. The northern boundary of the local area is defined by the existing Bhutan Oil Distributors fuel station and the forest vegetation line adjoining the fuel station, while the southern boundary is defined by the valley located along the existing Dzongkhag administration campus. The eastern and western boundaries are defined by the Damphu Municipal Limit which follows natural features like the existing irrigation canal and forest vegetation. Parts of the area on the eastern periphery of the local area were part of Kikorthnag and Bokrey Gewog before the extension of the municipal limits.

This local area comprises the Damphu town core which is the central focus of all the activities of the town and proposed to be developed as an Urban Hub in the Structure Plan for Damphu.

The existing Thimphu-Gelephu Highway physically divides the local area into two different zones in terms of land holding pattern, topographical character and the land use pattern. While the land ownership to the west of this road is predominantly of government, most of the land located to the east of this road is of private ownership. The topographical character also varies drastically with this road as the boundary.

The new Dzong under construction, Shedup Cholling Lhakhang and the existing town core are the prime guiding factors of this local area. The location of all the important institutions in the local area, the proposal of the structure plan to develop an Urban Hub in the local area and the availability of all basic amenities and facilities within this local area provides great opportunity for future development.

As described earlier the Damphu Urban Core Local Area Plan is perceived as a tool to translate the broader goals that are outlined in the Structure Plan for Damphu into practical urban settings. On the one hand, it facilitates the implementation of specific objectives proposed in the Damphu Structure Plan. These objectives include the accommodation of increased population over the coming decades, the distribution of population densities in a sustainable way, the realization of an efficient movement system, and the appropriate patterning of infrastructure services. On the other hand, the plan illustrates the implementation of precinct sanctions within local areas and at the individual plot level. The local area plan addresses local issues such as the provision of community amenities within a comfortable walking distance and the restructuring of land plots into a rational urban system provided with all the necessary urban facilities for its development.

### 2.2 EXISTING LAND USE PATTERN

Damphu Urban core, being the central focus for all the activities in the town as well as the entire Dzongkhag, is dominated by commercial and institutional activities. Presently, the local area contains the prime residential concentration of the town, housing almost two-thirds of the town's population. The periphery of the local area towards its north-east side is dominated by agriculture farms while the south-west periphery is of forest cover, which is highly eco-fragile in nature, forming a micro-watershed region from a few streams and rivulets originating in the town.

#### Residential and Commercial Land-use

The residential and commercial land-use of the local area is mainly distributed along the Thimphu-Gelephu highway, in the form of mixed-use building structures, following a ribbon typology. This area forms the central core of the local area. Few residential buildings are also found along the present town bye-pass, which was built in the recent past. Several institutional residential campuses belonging to Dzongkhag Veterinary Sector, Dzongkhag Agriculture Sector, Royal Bhutan Police and Damphu General Hospital also form a part of the local area, housing a considerable residential population.

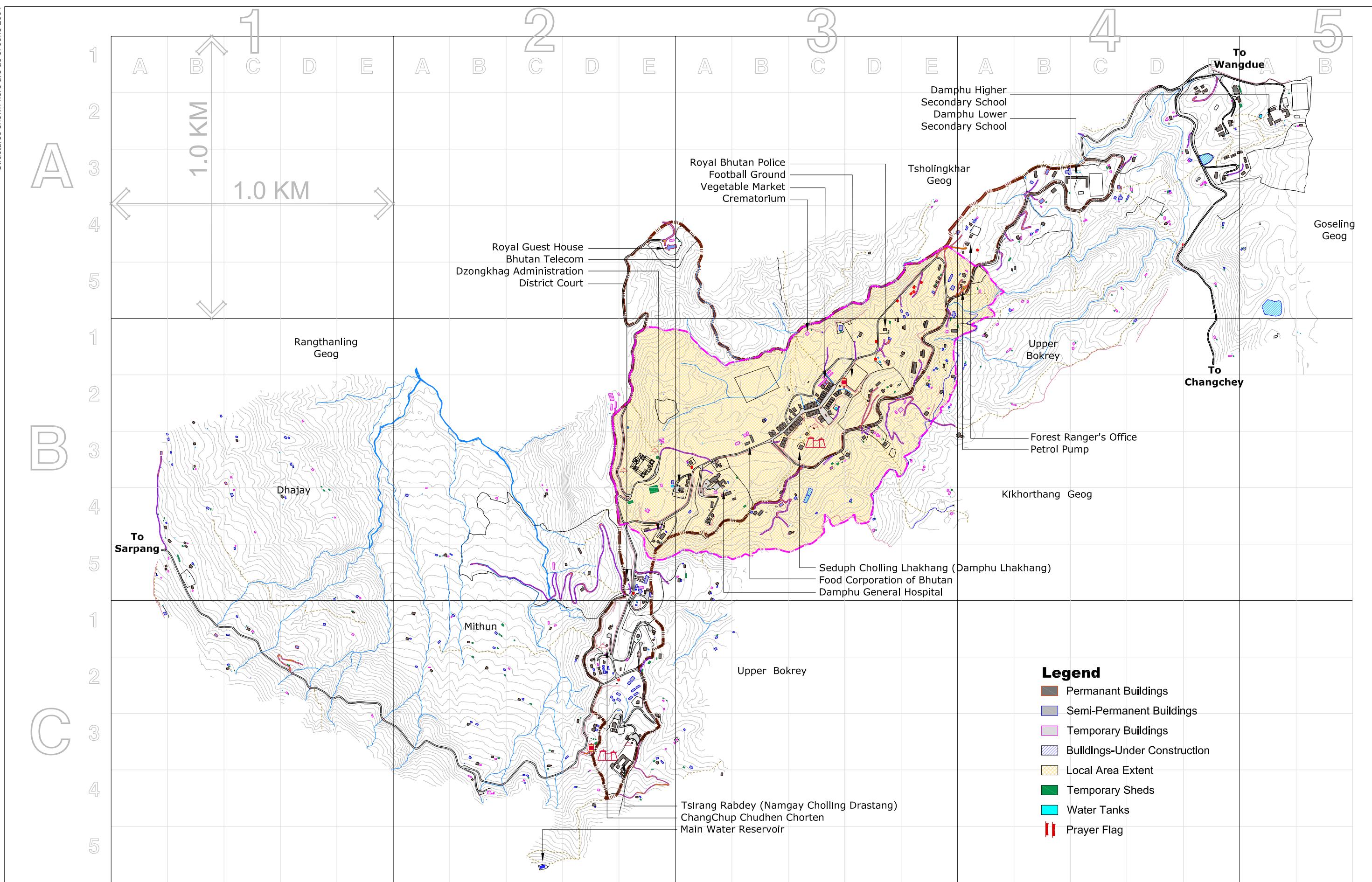
#### Agriculture and Orchard Land-use

Agriculture farms and Orchards occupy about 30 to 35 per cent of the local area. Only one third of these areas are presently used for cultivation. In the midst of these wetlands some land parcels were developed as residential areas and some are fenced as grazing grounds.

#### Institutional and Religious Land-use

The local area being the central focus of the entire Dzongkhag, houses all the major institutions of the Tsirang Dzongkhag. These include the Office of the Dzongkhag Administration, Royal Court of Justice, Royal Bhutan Police, Damphu General Hospital, Post-Office, Food Corporation of Bhutan, Bhutan Telecom, Bhutan Power Corporation and Bank of Bhutan. The Shedup Cholling Lhakhang (Damphu Lhakhang), the prayer wheel pavilion and the Crematorium, located to the west of the town core, are the religious institutions found within the local area. The new Dzong construction site also forms a part of the local area creating an identity and focus for the proposed new development in the local area.

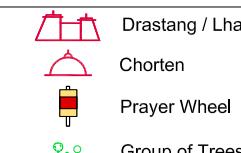




#### Sources

\* Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGob

\* Ground Verification, June 2004 by Benninger Architectonics USA Inc. DUD&ES and Damphu Municipal Corporation

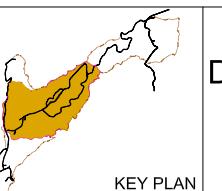


#### LOCATION OF LOCAL AREA PLAN

##### Damphu Structure Plan - Urban Core Local Area Plan

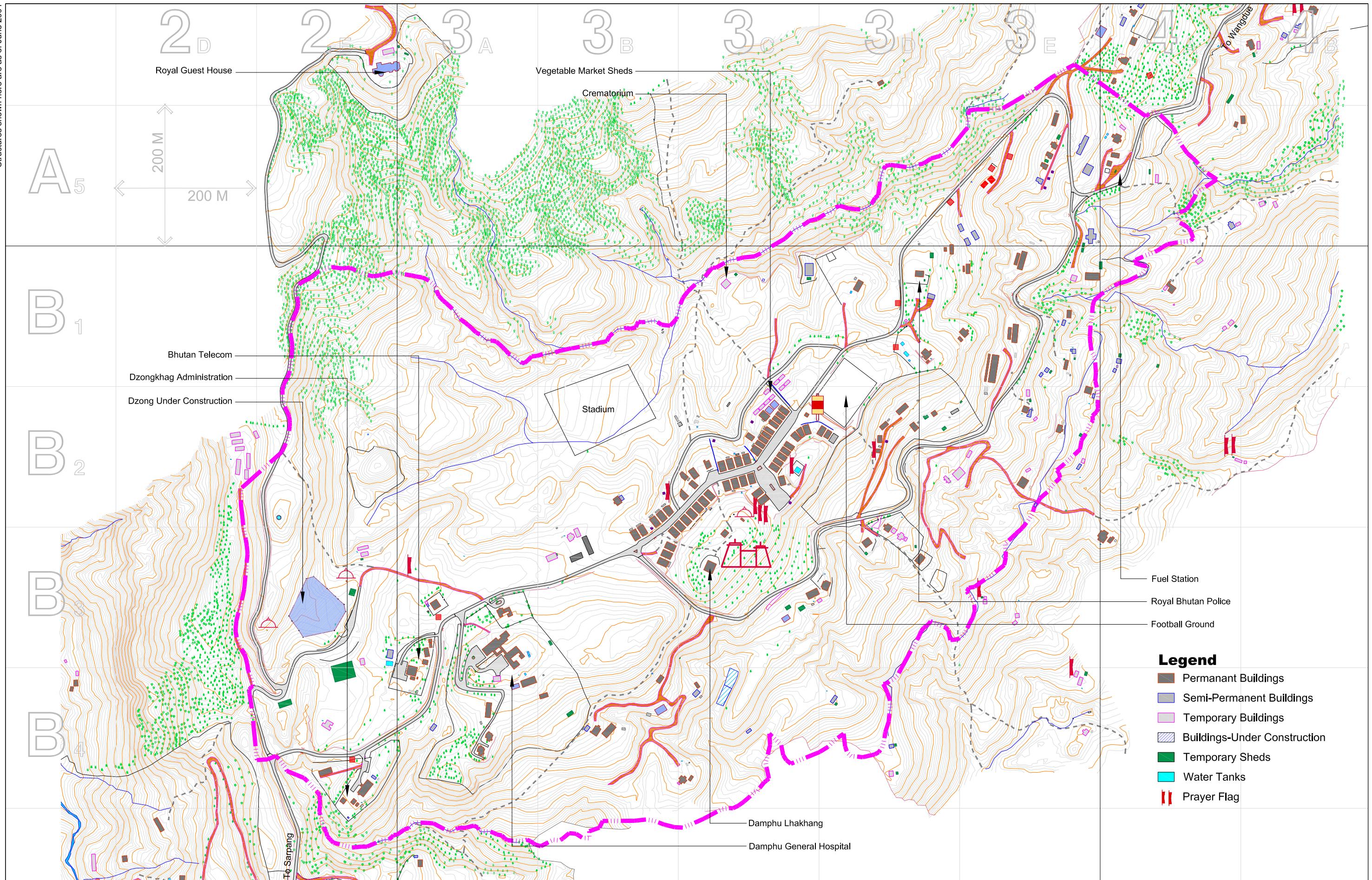
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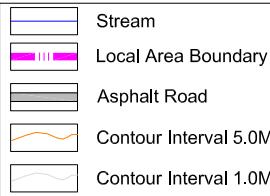
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Page No. 4A



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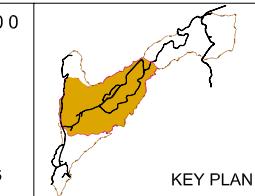


**BASE PLAN**  
**Damphu Structure Plan - Urban Core Local Area Plan**

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with the Department of Urban Development and Engineering Services, MoWHS, RGob

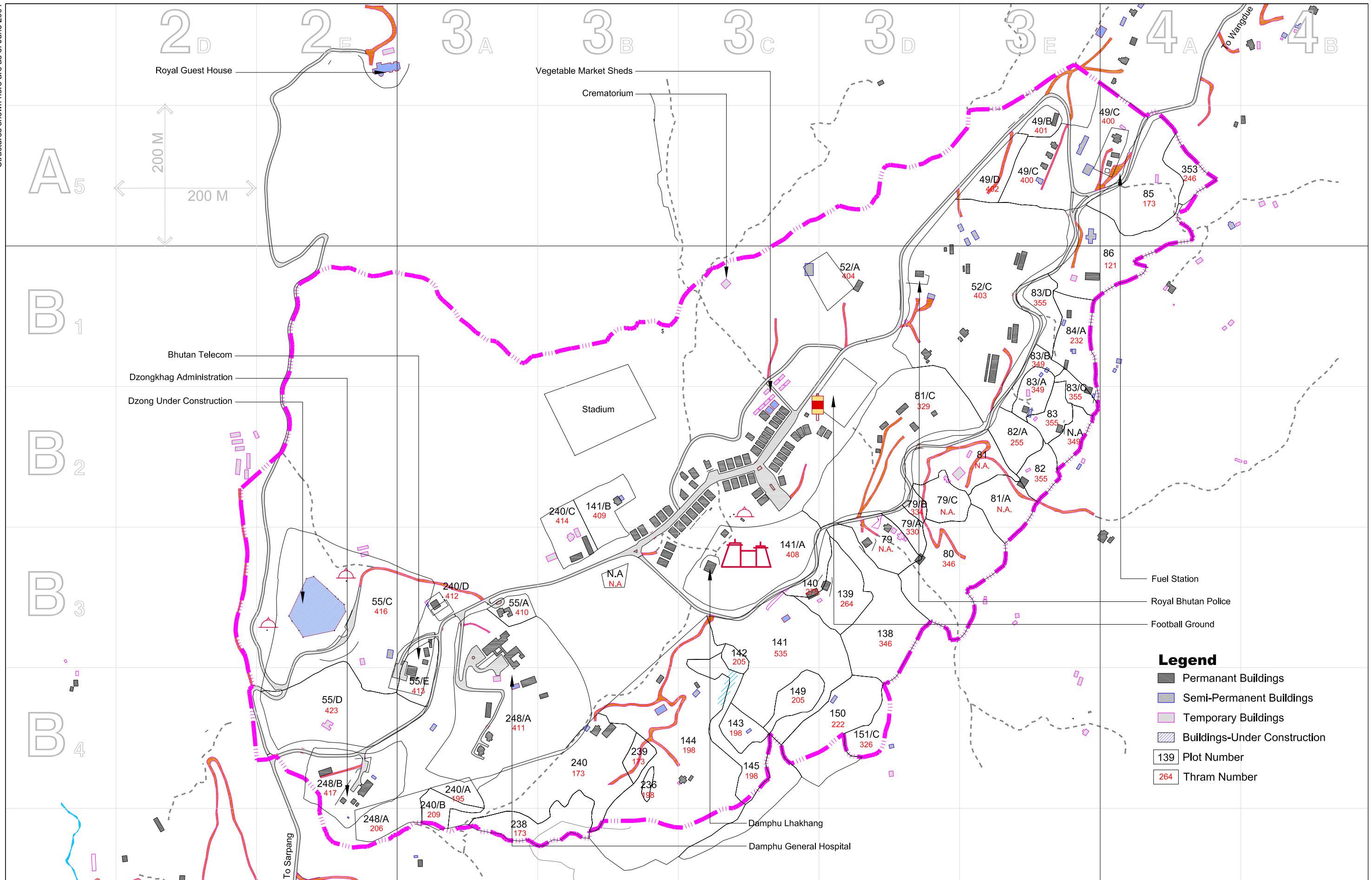
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**Drawing 2.2**

Page No. 4B

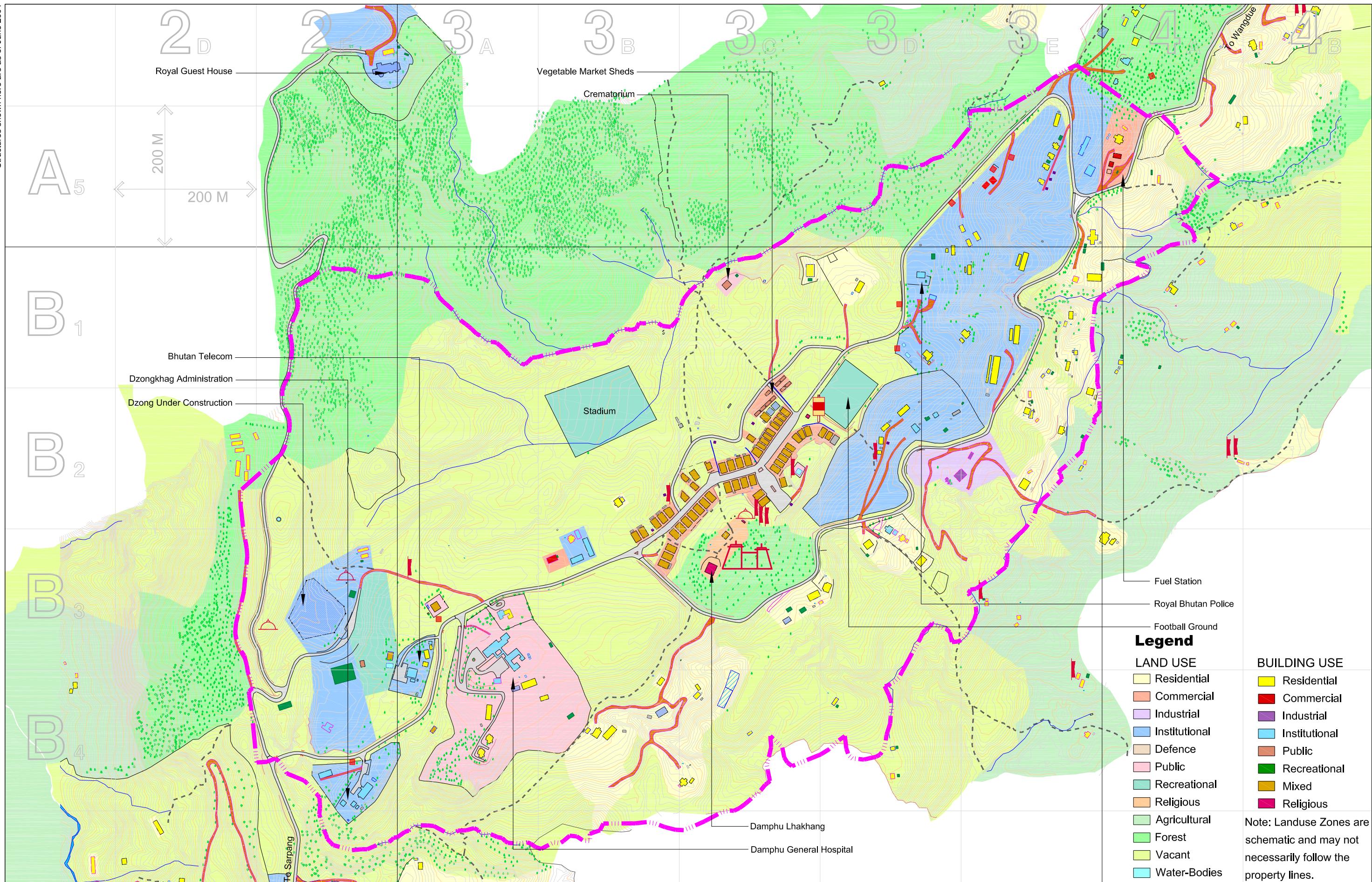


Stream	Drastang / Lhakhang
Local Area Boundary	Chorten
Asphalt Road	Prayer Wheel
Contour Interval 5.0M	
Contour Interval 1.0M	

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with the Department of Urban Development and Engineering Services, MoWHS, RGOb

Page No. 4C

Drawing 2.3



#### Sources

- Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGob
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- Stream
- Local Area Boundary
- Asphalt Road
- Contour Interval 5.0M
- Contour Interval 1.0M

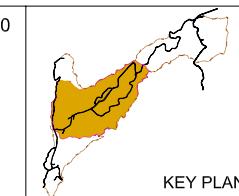
- Drastang / Lhakhang
- Chorten
- Prayer Wheel
- Group of Trees

#### EXISTING LANDUSE PLAN

##### Damphu Structure Plan - Urban Core Local Area Plan

Benninger Architectonics USA Inc.  
with the Department of Urban Development and Engineering Services, MoWHS, RGob

Scale: 1:5000  
January, 2005



Drawing 2.4

Page No. 4D

### Forest Cover

Forestlands are found only in the western and southwestern part of local area. These areas are highly eco-fragile in nature and form a micro-watershed region from a few small streams and rivulets originating in the town. A few perennial ground water springs could also be traced in this forest covered areas.

### Recreational Land-use

The football ground located to the north of the town core is the focus of all group recreational activities of the town, providing space for various sporting and gathering activities during occasions. Apart from this, a new playfield is under construction located on the western part of the local area. Open spaces surrounding the Shedup Cholling Lhakhang, and along the Thimphu-Gelephu Highway, also provide space for recreational activities within the local area.

**Table 2.1: Existing Land Use Distribution**

Land Use	Area (in Hectares)	Percentage to Total Area
Agriculture	0.28	0.32
Vacant	47.80	54.48
Institutional	12.95	14.76
Residential	8.29	9.45
Roads	2.34	2.66
Forest Cover	8.13	9.27
Recreational	2.81	3.21
Others	5.13	5.85
<b>Total</b>	<b>87.73</b>	<b>100</b>

Source: Visual Ground Verification conducted by Benninger Architectonics USA Incorporated in association with the Department of Urban Development and Engineering Services, MoW&HS, RGoB and the Damphu Municipal Corporation during May 2004

### 2.3 EXISTING LAND OWNERSHIP PATTERN

The land holding pattern of the Damphu Urban core local area is primarily dominated by government owned lands which form almost half the area of the entire local area. Though the majority of these government owned lands are rich in terms of eco-diversity and are highly eco-fragile in nature, most of the land which have high potential for urbanization activities are owned by the government. The comparatively flatter land located to the west of the existing town core is an area, which could effectively be used for intense urbanization activities. Apart from this area most of the institutional residential campuses located within the local area also have high potential for future development given the topographical constraints of the town.

All the lands to the east of the present town bye-pass are owned by private land owners. These areas have comparatively less potential for urbanization because of their topographical

conditions, which is primarily, dominated by slope percentages of more than 20 degrees. There are a few land parcels within the local area which are owned by government, but have been allotted to private owners for occupational activities.

The following table describes the private and government ownership of land as a percent of the total land recorded in the cadastral map of Damphu urban core local area. In addition to the total of government and private lands in the table, there are areas under road right-of-ways, water bodies and hillocks, which belong to the government per se.



*Private landholdings located to the west of the Town Core*

**Table 2.2: Existing Land Ownership Pattern**

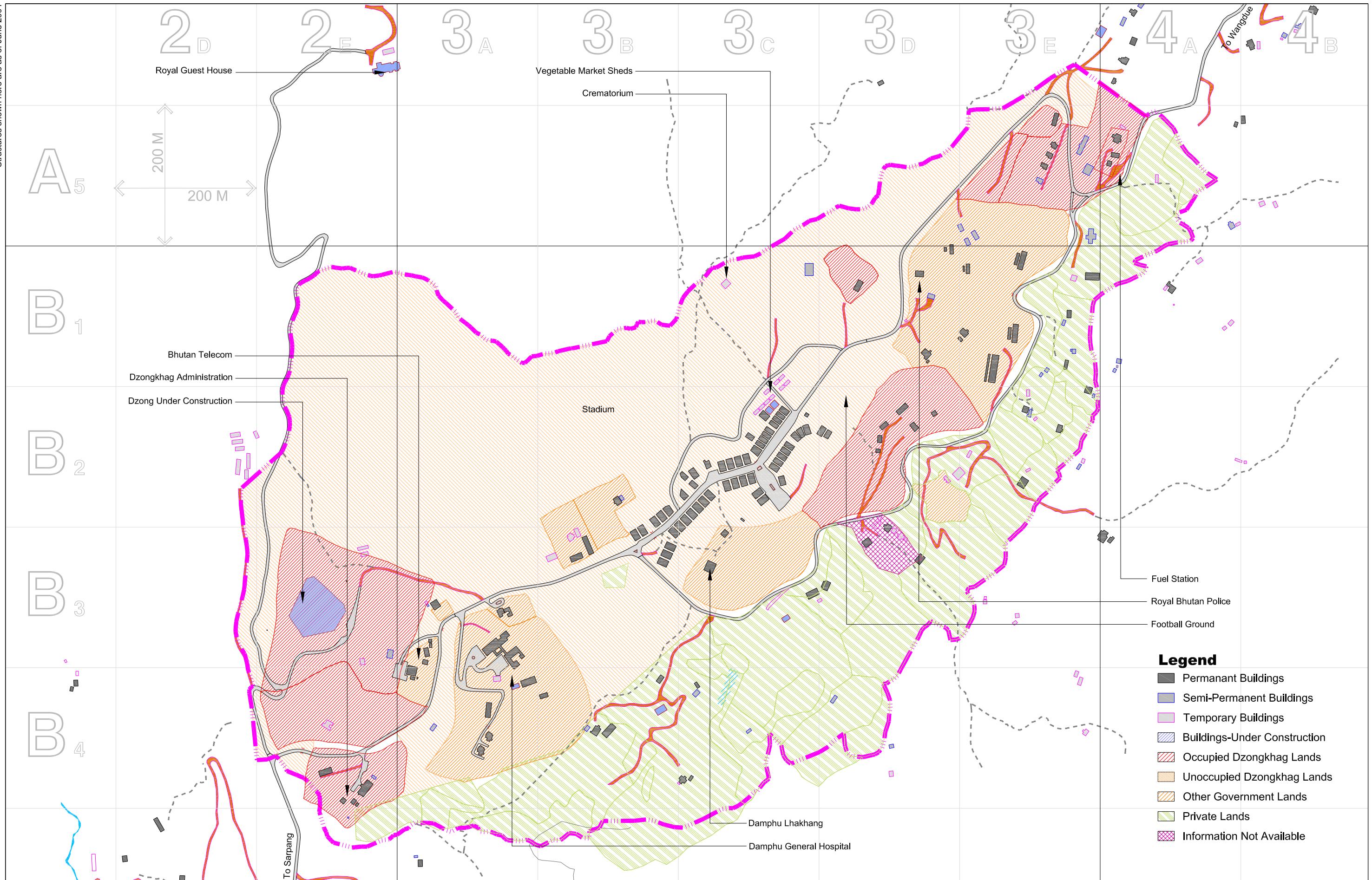
Ownership	Description	Area (in Hectare)	Percentage to Total Area
Private		20.75	23.65
Government	Dzongkhag Owned occupied lands	12.30	14.02
	Dzongkhag Owned un-occupied lands	40.34	45.98
	Other Government lands	12.00	13.69
Road Usage		2.34	2.66
<b>Total</b>		<b>87.73</b>	<b>100</b>

Source: Department of Land Records, Dzongkhag Administration, Tsirang and Damphu Municipal Corporation.

### 2.4 EXISTING AMENITIES AND FACILITIES

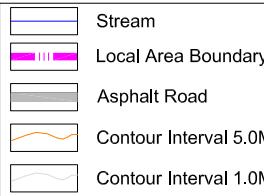
As described earlier, Damphu urban core (being the major population concentration of the town and the centre focus for all the needs of the entire Dzongkhag) is provided with all the primary amenities and facilities needed for the settlement's development. These include basic and advanced health facilities, social and community facilities like post office, banks, recreational facilities, shopping and religious facilities. The following section elaborates the amenities and facilities available in the local area in detail.





**Sources**

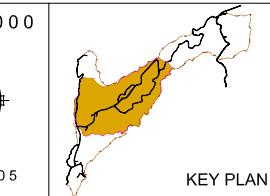
- Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGob
- Ground Verification, June 2004 by Benninger Architectonics USA Inc, DUD&ES and Damphu Municipal Corporation



**EXISTING LAND OWNERSHIP PLAN**  
Damphu Structure Plan - Urban Core Local Area Plan

Benninger Architectonics USA Inc.  
with the Department of Urban Development and Engineering Services, MoWHS, RGob

Scale: 1:5000  
January, 2005



Drawing 2.5

Page No. 5A

#### 2.4.1 Road and Circulation Network

The Thimphu-Gelephu Highway passing through the center of the local area forms the primary access and the backbone upon which the entire existing development is oriented upon. This road measures, on an average, a four meters wide tarred surface, and 1.75 kilometers length within the local area. This road widens up to nine meters when it passes through the town core, which approximates to a length of three hundred meters. As a measure to control heavy traffic movement passing through the town core, this road is presently used as a one-way traffic movement corridor inside the town core, allowing vehicular movement from north towards south. On-street parking facilities are provided in this road as a measure towards regulating the traffic movement by the local authorities.

The road connecting the Bhutan Oil Distributors fuel station and the town core is planned as a bye-pass for the Thimphu-Gelephu Highway and runs to the east of the town core along its periphery. This road measures on an average a 3.5 meters wide tarred surface and one kilometer in length.

A newly constructed road forms another bye-pass for the Thimphu-Gelephu Highway and runs to the west of the town core. This road measures on an average a 3.5 meters wide tarred surface and four hundred meters in length. Presently this road is used as a one-way traffic movement corridor allowing vehicular movement from south to north. These three roads form the main traffic movement corridor within the local area.



*Town Ring Road*



*Town Bye-Pass*

There are a few unpaved roads within the local area, which are in very poor condition due to lack of proper maintenance and design. These roads show a great variation in their widths ranging from 1.8 meters to 3 meters. The rest of the local area does not have any kind of vehicular access. In such cases, where development has taken place in paddy fields and orchards, foot trails are the most developed element of the circulation system. These foot trails are neither well defined nor surfaced or paved.

#### 2.4.2 Open Spaces System

Damphu, though being a settlement embedded in between forest landscape lacks an organized and defined open space system. Due to the lack of cluster level open spaces within

the local area, it is common to see children playing on streets and on roadsides. Normally vacant plots act as recreational sites for children. These “public domains” will be lost in the process of urbanization.

The most impressive of the open spaces in the local area is the football ground located to the north of the town core adjoining the Thimphu-Gelephu Highway. The location of a prayer wheel pavilion adjoining the ground makes the place special and provides an identity to the place. The football ground also provides space for public gatherings during important occasions of national importance.

Apart from the football ground, the open space surrounding the Shedup Cholling Lhakhang (Damphu Lhakhang) also plays a vital role in the creation of an open space system within the local area. The ambience created in the open space due to the presence of the various religious iconographies could be advantageously used towards creating an identity to the proposed open space system within the local area.

The new stadium under construction provides a great opportunity towards satisfying the active open space needs of the local area. The parking lot located to the north of the Shedup Cholling Lhakhang creates a view point, providing a panoramic view of the valleys in the region.

Apart from these defined open spaces the eco-fragile areas of the local area, and the higher altitude points located within the local area, provide a great opportunity towards creating an open space system.

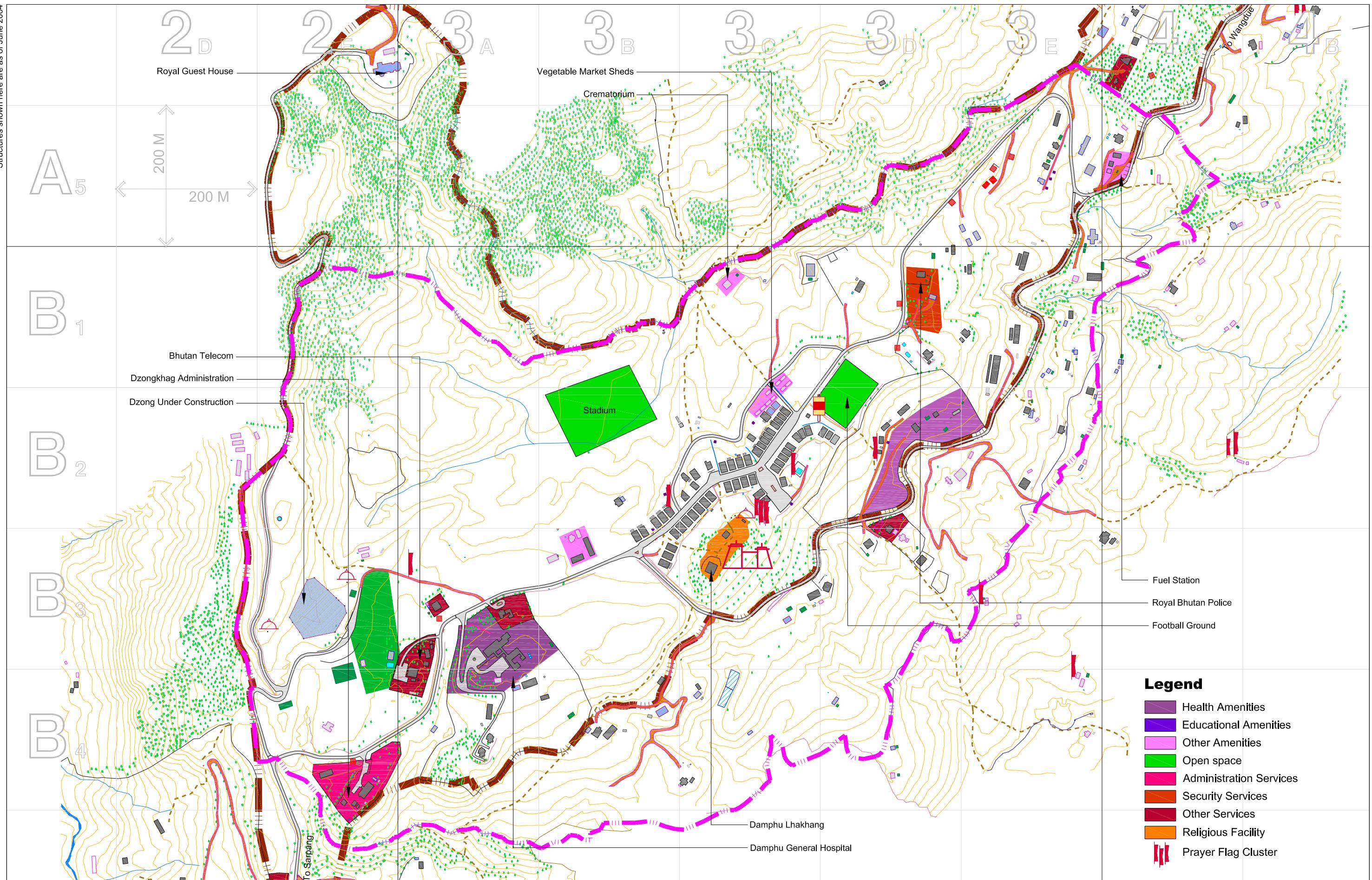
#### 2.4.3 Health, Education, Shopping and Other Community Facilities

The basic and advanced health facilities for the local area residents are provided by the Damphu General Hospital located within the local area. This twenty bedded hospital also caters to the needs of the entire Dzongkhag and has facilities such as OPD, emergency ward, X-ray unit, malaria section, operation theatre and testing laboratories.

There is no school, or any other educational institution, located within the Damphu Urban core local area. The Damphu primary and lower secondary school is located to the north of the local area at a distance of 1.3 kilometers from the town core along the Thimphu-Gelephu Highway. The Damphu Higher secondary school, which is the only higher secondary school of the region, is also located to the north of the local area at a distance of around 2.3 kilometers from the town core. These schools, apart from their distance from the local area, due to their location along the highway, possess serious danger to the school-going students, by exposing them to the heavy vehicle traffic corridor.

The Damphu urban core, which forms the central focus of the local area, caters to the day-to-day and week-long shopping needs of the local area and of the entire dzongkhag. A row of





**Sources**

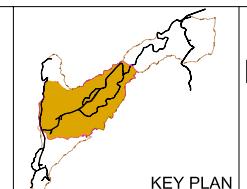
\* Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGob  
\* Ground Verification, June 2004 by Benninger Architectonics USA Inc, DUD&ES and Damphu Municipal Corporation

Stream	Drastang / Lhakhang
Local Area Boundary	Chorten
Asphalt Road	Prayer Wheel
Contour Interval 5.0M	Group of Trees

**EXISTING AMENITIES PLAN**  
**Damphu Structure Plan - Urban Core Local Area Plan**

Benninger Architectonics USA Inc.  
with the Department of Urban Development and Engineering Services, MoWHS, RGob

Scale: 1:5000  
January, 2005



**Drawing 2.6**

Page No. 6A

commercial development measuring to a length of four hundred meters along the Thimphu-Gelephu Highway, forms the heart of the Damphu town. A well established weekly vegetable market takes place in the town core every Sunday in the temporary sheds located to the west of the football ground. The town core consists of all kinds of commercial establishments ranging from hospitality to health, catering to all the needs of the town dwellers. Apart from these commercial establishments in the town core, a few such developments can also be seen along the town bye-passes.



New Dzong Construction Site located to the south of the Town Core



Crematorium located to the east of the Town Core

Apart from the above mentioned facilities the local area also acts as the center for various other community facilities catering to the needs of the entire town and the dzongkhag population. These facilities include the Post Office, Police Station, Bank of Bhutan, Bhutan Telecom, Food Corporation of Bhutan and Fuel Station.

#### 2.4.4 Heritage and Religious Structures

The presence of various religious structures and precincts located within the local area makes it more sacred and picturesque. There is one Lhakhang, one prayer wheel pavilion, one major Chorten and number of prayer flag sites giving a clear identity and importance to the local area with in the town's landscape.

##### Shedup Cholling Lhakhang

Shedup Cholling Lhakhang, locally known as Damphu Lhakhang, is located to the east of the Damphu town core on the peak of a hillock surrounded by thick forest vegetation with scenic views all around. The construction of this Lhakhang was completed in mid-1970. The Lhakhang holds separate praying spaces for Hindu and Buddhist devotees in a single structure.

Resum Khempo Chorten is located in front of the Lhakhang creating an axis with it. Another important religious structure within the local area is the prayer wheel pavilion located to the south of the football ground forming an entrance gate to the Damphu Town core. Apart from these built structures there also exist various prayer flag sites within the local area.



Resum Khempo Chorten in front of Damphu Lhakhang



Prayer Wheel Pavilion located to the north of the Town Core

#### 2.5 EXISTING HOUSING AND DENSITY PATTERN

The existing population of the Damphu urban core is estimated to be in the range of 1000 to 1250 persons. The population estimation is based on the ground verification of dwelling units located within the local area and with reference to the population survey conducted by the Department of Urban Development and Engineering Services during January, 2003 for the purpose of Urban Sector Programme Support.

The concentration of population is mainly within the existing Damphu town core area. The average net population density in this area is approximately 50 to 65 persons per hectare. All the structures located within the town core are mixed use by nature, with commercial establishments on the ground floor and residences on the upper floors. The predominant height of the buildings in this area is ground plus one floor. Building structures located to the west of the Thimphu-Gelephu Highway in the town core have basements taking the topographical advantage.



The Damphu Town Core

The residential structures located on the other parts of the local area are mostly permanent in nature with temporary structures for garages, or storage sheds, within their respective compounds. The primary typology of buildings in this area is single-family bungalows, with one or two households per dwelling unit. On an average the buildings are of two to three stories high in these areas (ground floor plus one upper floor, to ground floor plus two upper floors).

A few labour camps can be found near the Dzong construction site housing the construction labours involved in the construction of the new Dzong building. Other than this no other Bagos could be found in the local area. A few wooden houses of poor quality could be found within the local area along its periphery. Most of the houses are either farm houses or houses that are abandoned, which lack proper maintenance.

Construction activities with respect to restructuring and addition of the old buildings, as well as new constructions, can be seen within the local area, more specifically within the town core and some along the town bye-passes. Most of the existing building structures in the Damphu Urban core were constructed before the amendment of Bhutan Building Control Regulations-2002. This has resulted in insufficient setbacks and margins, between the building structures, thus resulting in an unhygienic situation, which is prevalent in most of the structures.

The existing built-up area in the Damphu Urban Core local area is 24,670 square meters, while the existing total ground coverage is 17,200 square meters.

**Table 2.3: Existing Built-up area and Building Height**

Building Heights	Built-up Area (in square meters)
Basement Floor	697.55
Ground Floor	17,199.55
Ground + 1 Floor	6188.68
Ground + 2 Floors	206.01
Attic Floor	378.63
<b>Total</b>	<b>24670.42</b>

Source: Visual Ground Verification conducted by Benninger Architectonics USA Incorporated in association with the Department of Urban Development and Engineering Services, MoW&HS, RGoB and the Damphu Municipal Corporation during May 2004



*Vegetable Market located along the Town ring road*



*Existing Construction with no response to the ecological sensitivity of the landscape*

## 2.6 EXISTING UTILITIES AND SERVICES

Damphu being the dzongkhag headquarters acts as the hub for services like telecommunications, electricity, etc. Though the town enjoys the status of dzongkhag headquarters in various aspects, one cannot overlook the acute shortages the town faces in

terms of availability of essential utilities and services. Potable water supply and electricity are lacking in a few areas, which needs immediate attention. The projected development in the town, and in the local area, mainly depends on how efficiently these essential utilities and services are planned for the town in its future.

### 2.6.1 Water Supply

Presently there are three sources for drinking water supply to the Damphu urban core. All these sources are basically streams originating on the hill to the south-east of Damphu town. Water from these sources is collected and purified by a sedimentation and purification tank located to the east of the Tsirang Rabdey. From here the water is supplied to the urban core. An intermediate water collection and distribution tank was recently constructed, near the existing taxi parking area.

The entire water supply system within the local area works on the gravity flow system and consists of 4 inch, 3 inch and 2 inch diameter galvanized iron pipes, arranged in a hierarchical manner with respect to the water supply requirements.

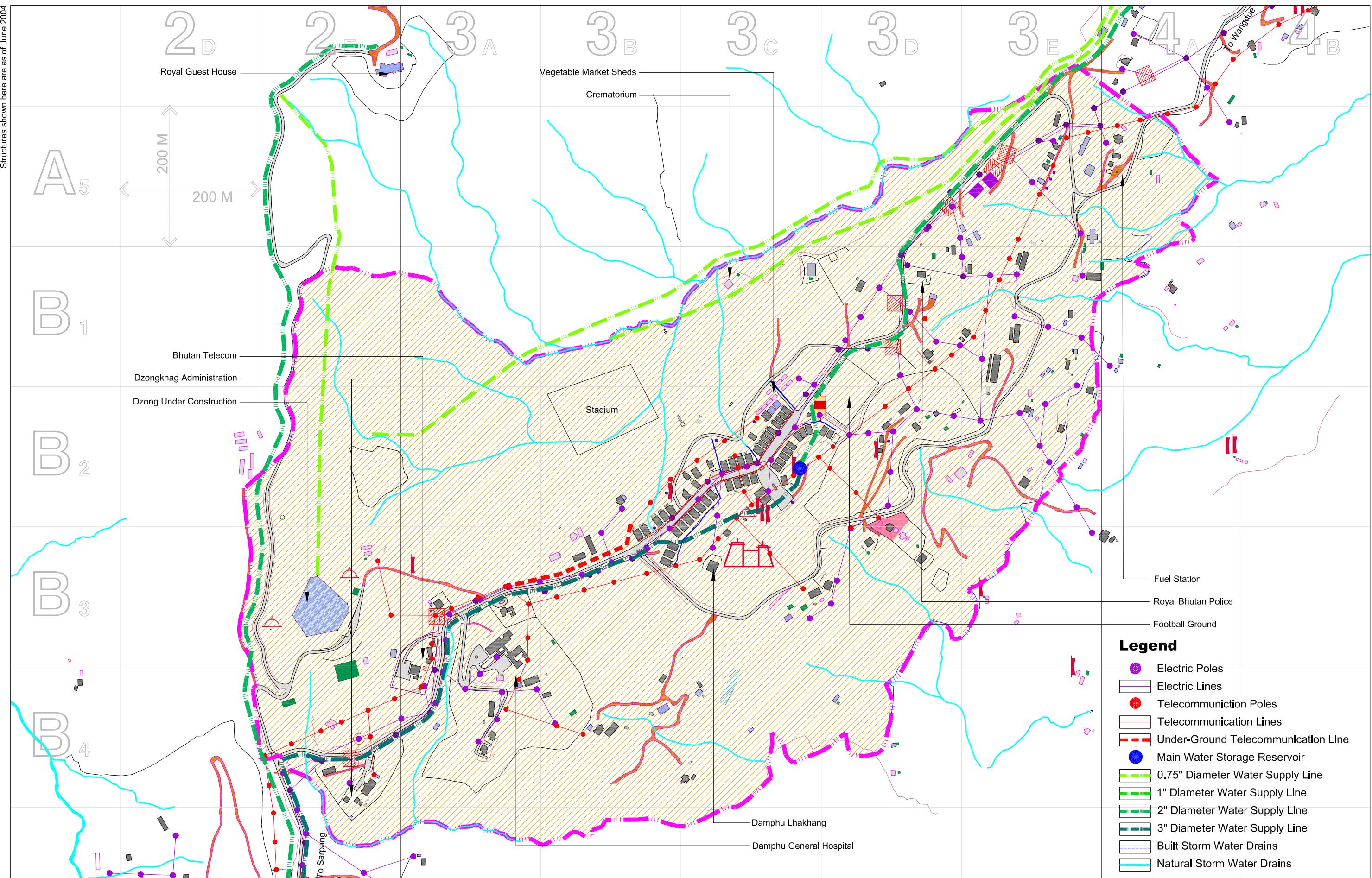
About 88% of the total households have water supply connections and are charged on a flat rate of about Nu. 65 per household per month. Water is supplied two to three times a day, for a duration of one hour each. Some of the developed pockets along the periphery of the local area are covered by the rural water supply scheme.

Considering the acute shortage of potable water in the town, as a part of the DANIDA supported town sanitation scheme, a water supply project is placed on the highest priority among all the development projects and is under conceptualization. As a part of the water supply scheme a new source for water at the Pawa Chhu has been identified which is located around eleven kilometers on the way to Sarpang.

### 2.6.2 Sewerage System

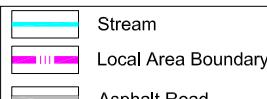
In the absence of any organized sewerage system in the local area, septic tanks are the most common method of sewerage disposal. The overflow of effluents from septic tanks is disposed of into surface drains, due to the non-availability of cesspool cleaners with the local authority. This causes a great threat to the hygienic conditions in the local area. It is observed that the septic tanks and the soak pits are full and rarely cleaned. For public convenience, the local authority in the past has constructed one public toilet near the vegetable market; however it is not under active use.

Out of the total population of the local area, 24% of the population depends on pit latrines as their sole sanitary facility, 74% of the population depends on in-house sanitation facilities and 2% depends on open toilets or public toilets. There is need for septic tank de-sludging equipment with the Damphu Municipal Corporation. Though the problem of sewerage management is not evident in the urban core, due to less population and low density, one



**SOURCES**

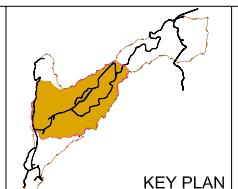
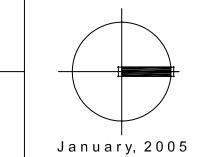
\* Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGob  
\* Ground Verification, June 2004 by Benninger Architeconics USA Inc, DUD&ES and Damphu Municipal Corporation



**EXISTING INFRASTRUCTURE PLAN**  
**Damphu Structure Plan - Urban Core Local Area Plan**

Benninger Architeconics USA Inc.  
with the Department of Urban Development and Engineering Services, MoWHS, RGob

Scale: 1:5000



**Drawing 2.7**

Page No. 8A

cannot totally discard this issue. There is a definite need to re-conceptualize the sewerage system in Damphu by construction of sewer lines and community septic tanks. DANIDA has already initiated a proposal which will help to improve the sanitation facilities and public hygiene within the local area.

### 2.6.3 Storm Water Drainage

The Damphu town core has a constructed storm water drainage system which runs along the both sides of the Thimphu-Gelephu Highway, within the market street. Beyond the street the storm water takes the course of the natural slope into the natural streams. Constructed in the past, the drainage system comprises of rectangular and trapezoidal lined main drains built along the natural drainage pattern with slopes in the range of one to four percent. Recently these drains have been covered by concrete slabs and have become footpaths. There is a need to build more storm water drains along the new roads.

Other than the town core, there is no proper drainage facility available within the local area. Storm and waste water from the developments along the periphery of the local area flows into the nearby irrigation channels, or into the natural streams and rivulets. Due to the topographical character of the local area, the problem of water logging is not a serious issue. However, due to the lack of a proper storm water drainage system, water flowing on the surface of the road results in deteriorating the surface of the roads.

### 2.6.4 Solid Waste Disposal

At present the solid waste from the urban core is collected once in a week, dumped in a site on the way to Sarpang and then burned. This has already resulted in a forest fire and the municipal corporation was advised by the Forest Department not to proceed with the method. This is an inappropriate location for the disposal of solid waste. Bio-degradable waste should be transported to a compost site and the fertilizer produced should be used for social forestry and in the greening of the town, in conjunction with a town nursery. An appropriate site must be found for non-degradable waste and this could supplement land fill activities related to river and stream training works. Recently an area has been identified for the disposal purpose. It is on the way to Wangdue about seven kilometers north from the urban core.

Presently there is no established mechanism available in the town for the purpose of solid waste collection and disposal. All the commercial establishments within the town core are provided with individual litterbins by the local authority. The hospital disposes its waste without an incinerator on its own. Government institutions burn their waste in the open air. Spilling of solid waste from the open bins is one of the common problems faced and creates a serious threat to the hygienic condition in the local area.

The existing system of waste disposal needs to be re-conceptualized by studying alternate disposal techniques and proper collection methods. It should be ensured that waste is collected from each and every place to keep Damphu clean and healthy.



*Solid Waste Disposal  
in eco-fragile area*



*Perennial Streams with its  
supporting eco-system*



*Natural Storm Water drains  
with in the local area*

**Table 2.4: List of Existing Amenities and Facilities available in the Local Area**

Amenities and Services	Physical Description	Location in the Local Area	Analytical Description
Circulation and Road Network	Tarred Roads	Gelephu-Thimphu Highway	1.95 Kms
		Town Bye-pass	1.15 Kms
		Town ring-road	0.40 Kms
	Un-Tarred Roads	Road to Royal Guest House	1.1 Kms
		All over the Local Area	1.40 Kms
		Off- Street Pathways	All Over the Local Area .85 Kms
Open Spaces	Football Ground	North of Town Core	Sports and Gathering
	Damphu Lhakhang area	West of Town Core	Community gathering
	Parking lots and Vacant Lands	In the Town Core	Social gathering
	New-Stadium	East of Town Core	Under Construction
Shops	Local and Regional shopping	In the Town Core	55
	Vegetable Market	West of Town Core along Town ring-road	9 temporary sheds
	Local shopping	Along Town Bye-pass and ring road	12
Community , Social, Religious and Heritage Facilities	Damphu Lhakhang	West of Town Core	
	Prayer Wheel Pavilion	North of Town Core	
	Damphu General Hospital	Along the Gelephu-Thimphu Highway	



Amenities and Services	Physical Description	Location in the Local Area	Analytical Description
	Fuel Station	At the junction of Gelephu-Thimphu Highway and Town Bye-Pass	
	General Post Office	Along the Gelephu-Thimphu Highway	
	Automobile Service Centers	Along the Gelephu-Thimphu Highway near to Town Core	
	Fair Price Shop	In the Town Core	
	Diesel Generator	Along the Gelephu-Thimphu Highway	
	Royal Bhutan Police	Along the Gelephu-Thimphu Highway	
	Veterinary Hospital	Along Town Bye-Pass	
	Bank of Bhutan	Along the Gelephu-Thimphu Highway	1
Water Supply Distribution System	Distribution through gravity flow	Water storage reservoir located to the north of parking lot	
Solid Waste Disposal Bins	Concrete Bins	In the Market Street	2
		Along the Town Ring Road	2
		Agriculture Residential campus	1
		Vegetable Market	1
		Veterinary Hospital Campus	1
	Door-to-Door Collection	In the Town Core	Twice in a week
Sewerage System	Septic Tank	In all the residential Buildings	
Storm Water Drainage	Constructed Drains	Along the Thimphu-Gelephu Highway in the Town Core	300 meters
	Un Constructed Drains	All over the local area	

Source : Total Station Survey Drawing provided by DUDES and Visual Ground Verification conducted by Benninger Architectonics USA Incorporated in association with the Department of Urban Development and Engineering Services, MoW&HS, RGoB and Damphu Municipal Corporation during April 2004

## 2.7 SPECIAL FEATURES

As mentioned earlier, part of the Damphu Urban Core local area has the most picturesque and scenic location within the town limits. The topographical character of the local area which creates splendid panoramic views of the distant valleys, paddy terraces, traditional settlements, the Lhakhang, the Chorten, and other traditional structures in the local area compliment each other to weave this beautiful landscape. The landscape can be appreciated at any period of the year, but it is at its best during the monsoon. The paddy terraces change their tone from lush emerald green in summer, to a golden yellow color just before harvest in late October. The eco-diversity of the place creates a serene environment.

The Damphu Lhakhang and its surroundings is the most important vantage point to get the best view of the hinterlands surrounding the town. Inside the local area various other view points provide panoramic views of the surrounding landscape and important landmarks of the town. These points and the view lines have to be conserved and enhanced as a part of the local area plan exercise.



Panoramic View of the Surrounding Landscape from the local area

Table 2.5: Existing Private Land Holding Pattern in the Local Area

Plot Area Range (in square meters)	Number of plots	Percent to Total Area
Less than 1000	3	8.11
1001-2000	3	8.11
2001-3000	8	21.62
3001-5000	10	27.03
5001-10,000	6	16.22
More than 10,001	7	18.91
<b>Total</b>	<b>37</b>	<b>100</b>

Source : Department of Land Records, Dzongkhag Administration, Tsirang and Damphu Municipal Corporation.



## 3.0 ANALYTICAL STUDY AND PROPOSAL FOR ACTION

### 3.1 LAND SUITABILITY FOR DEVELOPMENT IN THE LOCAL AREA

The main objective of land suitability analysis is to identify the developable land available within the local area. Lands covered by forests, environmentally fragile areas, protected areas, and steep slopes are not suitable for intense urban development, and hence not considered for calculating the amount of "developable land" within the local area.

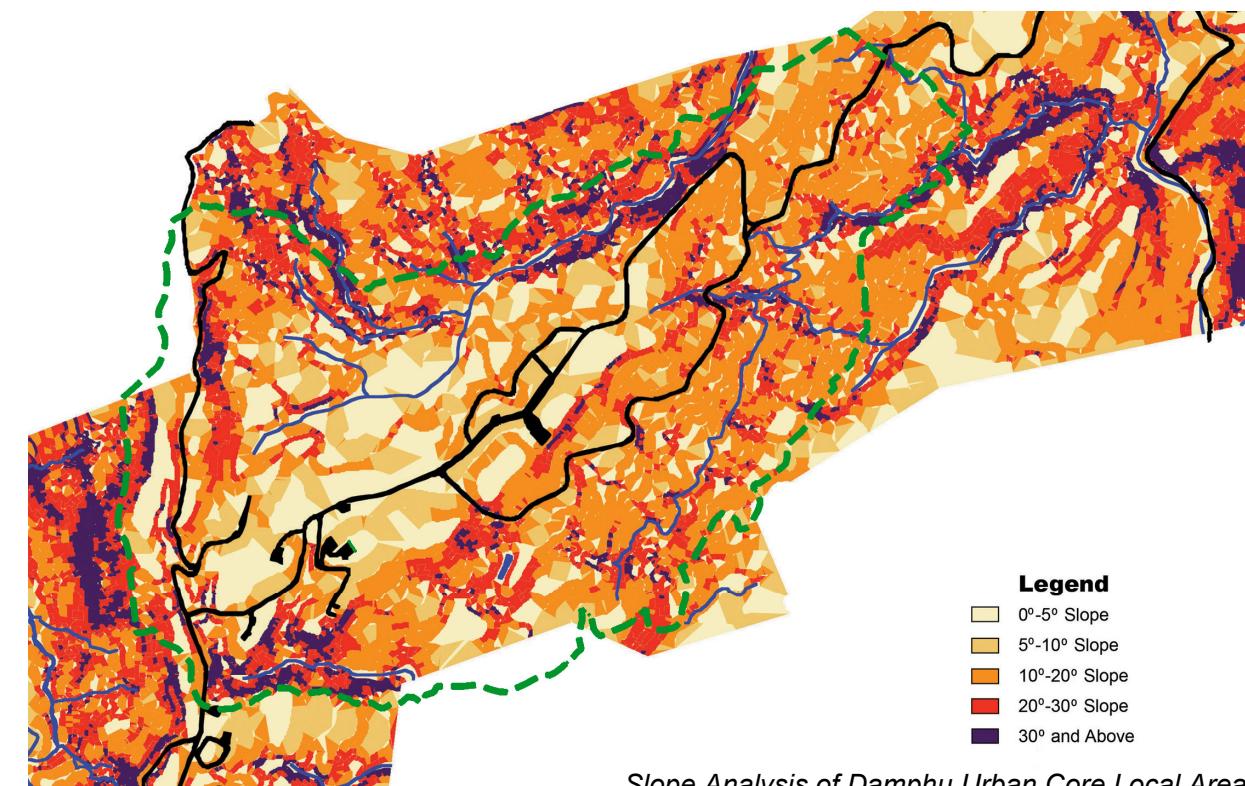
A thirty and fifteen meter wide protected green buffer zone is proposed on the either side of the perennial streams and a ten meter wide protected green buffer stretch is proposed on the sides of the natural surface storm water drains to protect the environment of these areas from urban development, as well to avoid any damage to development due to flash floods. This area would be a "no construction" zone. Over the long run, this is a public asset, which will enhance the land values and quality of life in the local area.

Areas with forest covers and areas identified to be watershed regions for the streams originating from the town, will be restricted for urban development and would be conserved and protected as passive open spaces for the town.

All the very steep slope areas (Slope more than 30° derived from the angle of soil repose) are highly non-suitable for urban development due to the risk of land slides. These areas would be marked as a restricted development zone where the development approval will be given for the construction only after carrying out a detailed study of the geology of the site. In cases where the ownership of such land areas are with government, no development will be allowed in these areas and they will be reserved for plantation purpose. All the steep slope areas (Slope more than 20° but less than 30°) would be allowed only for low density development.

The area to the west of the existing town core, bounded by the existing crematorium and new stadium construction site, is most suitable for urban development within the town. On an average the whole of this area has a slope category of five to ten degrees (5°-10°) slope, which is the most suitable slope range for any urban development and is proposed to be developed as a high-density residential neighborhood.

The area to the east of the town core has a dominant slope category of ten to twenty degree (10°-20°) and is suitable for medium to low-density residential and institutional development.



Slope Analysis of Damphu Urban Core Local Area

Apart from the slope analysis, elevation mapping, slope aspect analysis and climatic data analysis were also carried out as a part of the land suitability analysis to derive a suitable planning layout respecting the orientation needs.

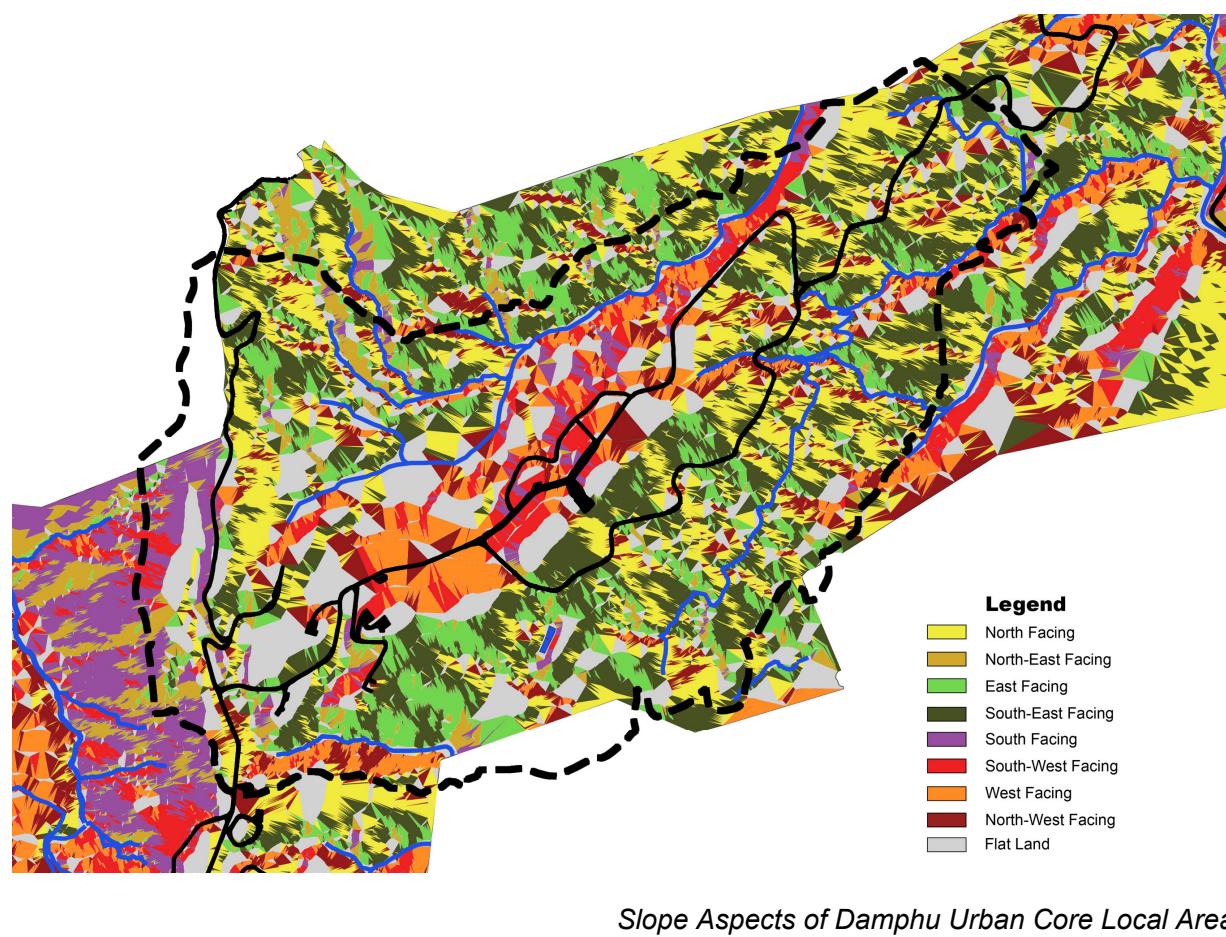
The slope aspect analysis demonstrates that most of the local area has predominant slope facing the east and north-east directions. These slope facings would receive relatively lesser winter sun due to their topographical character. This indicates the need to have a layout, which provides an opportunity to orient the longer side of the plots towards south and southwest direction so that the longer sides of the buildings could face this direction and receive the winter sun during the longer part of the day.

**Table 3.1: Details of the Land Not Considered for Future Development**

Land Under	Area (in Hectare)	Percentage to Total Area of the Local Area (87.73)
Environmental Conservation areas	6.8	7.75
Forest Environments	15.23	17.36
Agriculture Environments	3.57	4.06
Steep Slopes (Area with predominant slope range more than 30°)	0.95	1.09
<b>Total</b>	<b>26.55</b>	<b>30.26</b>

Source: Proposed Precinct Plan, Structure Plan for Damphu, BAUSA.inc





### 3.2 POPULATION ACCOMMODATION AND DENSITY DISTRIBUTION WITHIN THE LOCAL AREA

The Structure Plan for Damphu estimates that the current population of Damphu town would increase to about 8,700 in the coming two decades. Strategies and phasing to accommodate this additional population within the municipal limits, as well as in the contiguous region, is proposed as a part of the Structure Plan in the form of Urban Villages.

Local Area Plans, development of Village Squares surrounded by high- and medium-density population concentrations are proposed as a vital tool to accommodate the additional population, to facilitate provision of infrastructure, and other utility services. This will also fulfill the housing requirements for the people from various economic classes.

The Damphu Urban Core Local Area Plan, developed on these premises, attempts to fulfill its share of the projected population, the housing requirements, and the provision of infrastructure and utility services. Such a strategy will create economic viability over a range of urban services.

The Urban Village core with high-density housing and the proposal for developing the existing town core into an Urban Hub will make the Damphu Urban Core a self-sufficient urban node,

with a range of amenities and services at a walkable distance from all the future dwelling units.

As a part of the Damphu Structure Plan, areas were identified within the municipal limits which are suitable for urban development, for housing in-fill, and for the expansion of existing housing, across the entire Damphu town. Based on the proportion of the "developable area" each identified Urban Village possesses, the total projected population for the town is distributed. With respect to the developable area available in the Damphu Urban Core local area, to that of the entire town, a planned population of 4,283 needs to be accommodated in the local area.

*The total net developable area in the Damphu Municipal Corporation limits is 121.32 hectares, while the net developable area in the Damphu Urban Core Local Area is 53.16 hectares. Towards calculating the net residential developable area in the town which will house the future population, residential development coefficients were assumed for various precincts with respect to its proportion of residential development to its net development. From the calculation the total net residential developable area in the Damphu Municipal Corporation is calculated to be 54.52 hectares. The net developable area in the Damphu Urban Core Local Area Plan is 26.84 hectares (excluding the eco-fragile areas, conserved and protected areas). The percentage of net residential developable area in the Damphu Urban Core Local Area Plan to the total of the town is around 49.23%. The estimated population of Damphu by the year 2025 is 8,700,<sup>1</sup> which are proposed to be accommodated in the total net residential developable land available within the Damphu Municipal Corporation limit!*

*Based on the proportion of total net residential developable area in the Damphu Urban Core local area, to the town's total net residential developable area, the population accommodation share of Damphu Urban Core Local Area Plan is 4,283 people!*

*Assuming an average household size of five persons, the number of dwelling units required to house the estimated population in the local area is around 860.*

The existing population of local area is largely concentrated in the existing town core area. A few houses located along the town bye-passes and on the periphery of the local area accommodate a very marginal additional population. The residents of the local area are mainly of the middle-income group, concentrated on the town core and in the institutional residential campuses. A few high-income group residential plots with larger land holdings can be found along the town bye-pass.

<sup>1</sup> Estimated at 6% annual compound growth rate, derived from the population growth analysis, considering various growth scenarios for development, with a base population of 2,400 people for the year 2003, as per the Urban Sector Programme Support, pre-feasibility study conducted by the Department of Urban Development and Engineering Services during January, 2003.



Since, most of the high potential areas for future urban development, located to the west of the existing town core, are under government land holding, as parts of the local area plan this area is proposed to be developed as high density residential area under the National Housing Development Corporation assistance. The location and proximity of this area to the proposed Urban Hub will support the high-residential density development envisioned in the Structure Plan for Damphu. Predominantly, this area is plotted with plot sizes which would accommodate residential typologies like walk-up apartments and studio type apartments and could be sold to the private entrepreneurs for development in future.

Though, the areas to the east of the town core, have bigger plot sizes in terms of land holding pattern, considering its topographical and predominant slope characters, this area is proposed to be developed as a medium- to low-density residential neighborhoods.

### 3.3 PLANNING STANDARDS

The study on planning standards is carried out to identify the amount and number of facilities and amenities needed to be provided within the Urban Village for its self-sustenance. These are calculated by estimating how many people live within the Urban Village and how many people visit the Urban Village in a day. These “populations” which generate requirements for amenities are called “population thresholds”. One of the main factors which influence the use of these amenities and facilities is the travel distance. If people can walk to a basic service its use would increase and therefore the “population threshold” required to establish the service would come down. Higher densities of population therefore not only augment more efficient utilization of infrastructure but also more use, and more efficient use of social services.

The basic objective of suggesting various norms and standards for the Local Area Plans is to provide a basis for taking decisions regarding correct distribution of various social amenities in the town's landscape. For the purpose of Damphu Urban Core Local Area Plan, planning standards are extracted from two sources. The first document being 'Urban Development Plans Formulation and Implementation Guidelines, 1996' (U.D.P.F.I. Guidelines) by the Institute of Town Planners, India, The second document is 'Planning Standards for Urban Settlements in Bhutan, 1999, by the Urban Development and Housing Division, Ministry of Communications, RGoB. The data extracted is tabulated and compared with the existing facilities in Damphu. Proposals made are on the basis of the shortfalls observed in the existing scenario when compared with these planning standards.

These suggested norms and standards for various facilities and amenities within the Damphu Urban Core local area are indicated in the form of the following table. The standards drawn below are considering a “conservative” threshold envisioned due to the Service Center catchment area.

**Table 3.2: List of Amenities and Facilities as per the Planning Standards for 4,283 Residential Population and 8700 town population**

Amenities and Services	Physical Description	Location in the Local Area	Analytical Description
Open Spaces	Toddler Play Area / Group Open Space	At every residential neighborhoods	Minimum of 500 Square meters per play area
	Park/Play ground	Within the Urban Village	0.5 hectare per 1000 residents
	Stadium	Within the Urban Hub	1 per town serving the regional needs with a population threshold of 50,000
Community and Social Facilities	Recreational / Health Club	At a walking distance from the residential areas	One at town level serving the regional needs
	Spiritual Centre	At a walking distance from the residential areas	
	Weekly Vegetable Market	At a walking distance from the residential areas	One at town level also serving the local needs
	Postal Facility	At a walking distance from the residential areas	One at town level also serving the local needs
	Transit Stop	At a walking distance from the residential areas	
	Taxi Stand	At a walking distance from the residential areas	One at Urban Village level
	Police and Fire protection facility	Within the residential neighborhood	One at town level also serving the local needs
	Fuel station	At a walking distance from the residential areas	One at town level also serving the local needs
	Community / Town Hall	Within the residential neighborhood	One at town level
	Other essential Community and Social Facilities catering to the daily needs of the residents like telephone booth, pub, internet café etc.	At a walking distance from the residential areas	
Shopping Facilities	Convenience Shopping	At a walking distance from the residential areas	
	Community Shopping area	Within the Urban Hub	One at town level
Education Facility	Nursery cum Primary school	At a walking distance from the High-Density Residential Area	One for the local area
Health Facility	Basic and advanced health facilities	At a walking distance from the residential areas	



Amenities and Services	Physical Description	Location in the Local Area	Analytical Description
Physical Infrastructure	Electric Transformer	Within the residential area	One per 6000 population located at a site area of minimum 25 Sq.Mtr
	Bill Collection Centre	At a walking distance from the residential areas	

Source : U.D.P.F.I Guidelines and Planning Standards for Urban Settlements in Bhutan 1999

### 3.4 CONCEPT OF THE PLAN

The design aspects of the Damphu Urban Core Local Area Plan basically evolve from the existing topographical conditions and the land ownership patterns overlaid above the town's landscape. The main objective of the local area plan as mentioned in the earlier chapter is to provide basic amenities and services for all the plots available within the local area, so that these plots can be used for future urban development. Apart from this the local area plan also addresses various other issues like future population accommodation, development of an Urban Hub, and creating an institutional core for the entire dzongkhag as Damphu shall emerge as a Service center.

The local area plan proposes restricted vehicular movement and pedestrianization of the Thimphu-Gelephu highway within the proposed Urban Hub and development of it into a town central Path of Wisdom, by proposing institutional development distributed along its edge. A system of ring roads is developed surrounding this central spine which will function as bypass for the vehicular movement and will provide parallel entry into the pedestrianized spine at regular intervals. Apart from this central spine, a system of open spaces and pedestrian system connecting all the important destinations is also developed within the local area, creating a pedestrian dominated living environment. The following sections explain the basic considerations and concepts of the local area in brief.

### 3.5 PROPOSED PLOT RE-CONFIGURATION

A major focus of the Damphu Urban Core Local Area Plan is to reconfigure the existing developable land within the local area limit in such a manner that each plot is provided with proper access, amenities and services, so that these areas could be used for urban development and to accommodate future population. By reconfiguring the layout of land, the plots shall be regular in size and shape, allowing for efficient development. This is essential because the land has been subdivided and sold in a haphazard manner, with no provision for the inclusion of modern infrastructure, which will assure hygiene, health, communications, electricity, drainage and access. The process is thus mostly an operation of corrective surgery!

Most of the lands in the entire local area are owned by government (about 72%), which are dominantly eco-fragile in nature. Other developable areas which are under government

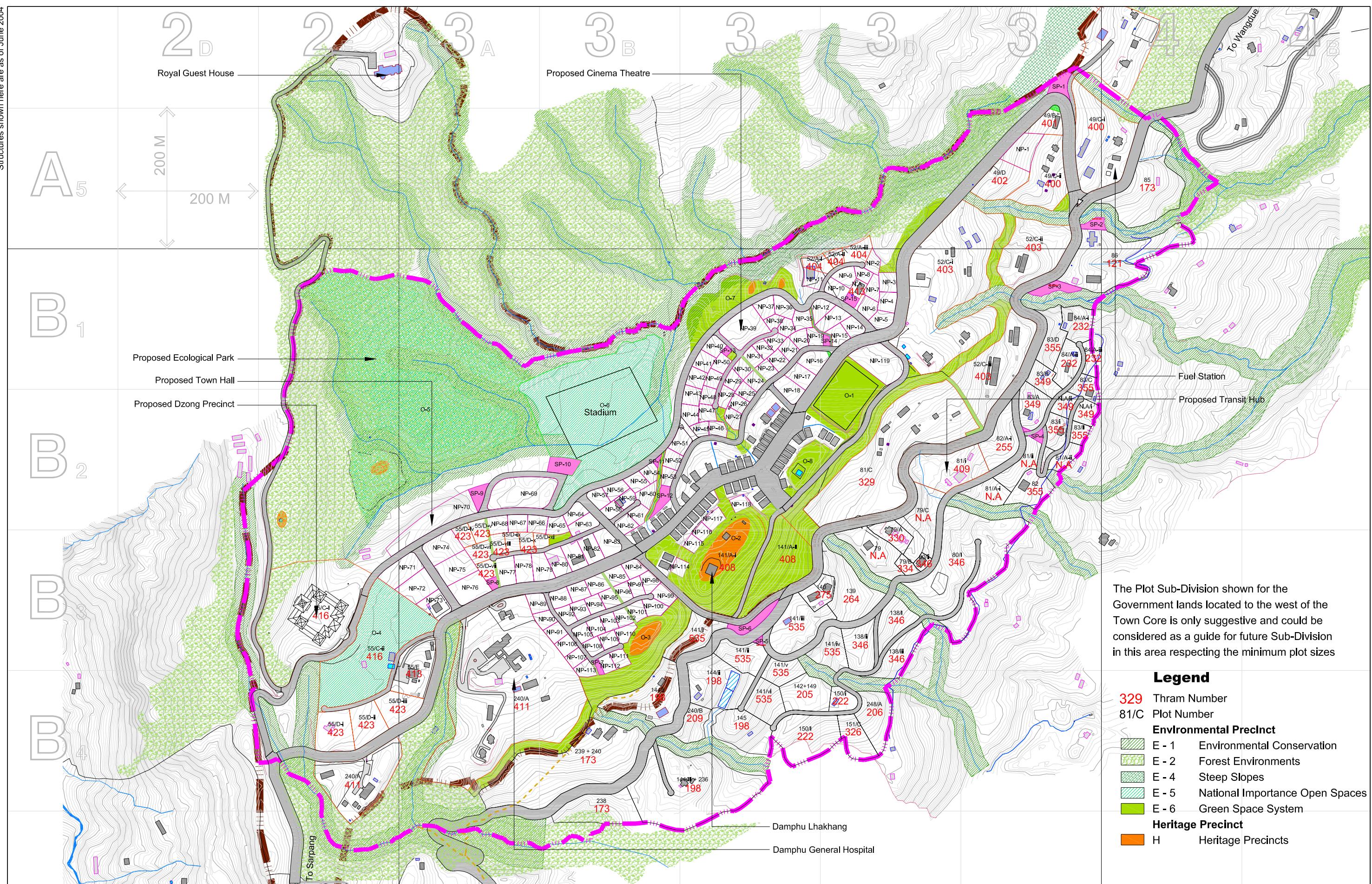
ownership vary from other parts of the local area in terms of topographical and slope characteristics and are practically separated from the other parts by strong physical features. Most of these lands which are already developed like the Damphu General Hospital, Bhutan Post campus, Bank of Bhutan campus, Veterinary Hospital campus, Bhutan Telecom, Royal Bhutan Police campus, Dzongkhag Administration campus, New Dzong construction site and New Stadium construction site, function as essential amenities and service providers for the town, towards fulfilling the basic needs of the town dwellers. As per the decision taken during the meeting with the Ministry of Works and Human Settlement and Department of Urban Development and Engineering Services officials, these areas are not considered in the land pooling process and are proposed as a part of the guided land development area. Areas from these lands are deducted as per the requirement towards the provision of amenities, facilities and open spaces for the local area plan residents.

The remaining government owned lands, to the west of the existing town core, after deducting the required area for the provision of town level amenities and services are plotted and are proposed to be developed as a high density residential neighborhood surrounding the proposed Urban Hub. This area could also be seen as a housing development project where National Housing Development Corporation could facilitate the development by involving private entrepreneurs. The land needed for the provision of roads, open spaces and other utilities in this area is consolidated from the available government owned lands.

The existing town core plots, which are privately owned and are fully developed to their saturation are proposed to be serviced under Guided Land Development method. In these areas physically pooling land for other development purpose is practically impossible. In these areas it is proposed that, an equitable proportion, with respect to the land area involved in pooling on other parts of the local area, is charged to the land owners as a "development fee," or a Development Tax to cover their fair share of the cost of improving the area. This Development Tax must be reinvested into the local area fund for infrastructure improvement by the municipal corporation. Each Local Area Plan in the town thus requires its own account, with complete transparency as to the operation of that account. In other parts of the local area where it becomes difficult to physically pool land, a similar structure is proposed. At places where, the individual plot size is less than the minimum allowable plot size for urban development (i.e. less than 300 square meters of land area), the plot is consolidated with other plots of same nature to achieve the minimum allowable plot size requirement.

The reconfiguration of plots within the local area involves designing a new layout for the entire area under consideration and the redistribution of area's into regular plot sizes, with access roads of a minimum width. This will also allow for the provision of adequate storm water drainage and the laying of underground infrastructure. This process is carried out in a consultative process, where the owners are kept informed about the process of restructuring and redistribution of the plots. After equitably deducting common areas from every plot for new roads, existing road widening and extension, public open spaces and amenities, the new rationalized plots will be "reissued."





#### Sources

\* Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGob

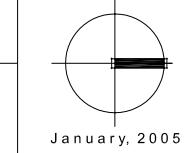
\* Ground Verification, June 2004 by Benninger Architectonics USA Inc.

Architectonics USA, Inc., DUD&ES and Damphu Municipal Corporation

- Stream
- Local Area Boundary
- Asphalt Road
- Contour Interval 5.0M
- Contour Interval 1.0M

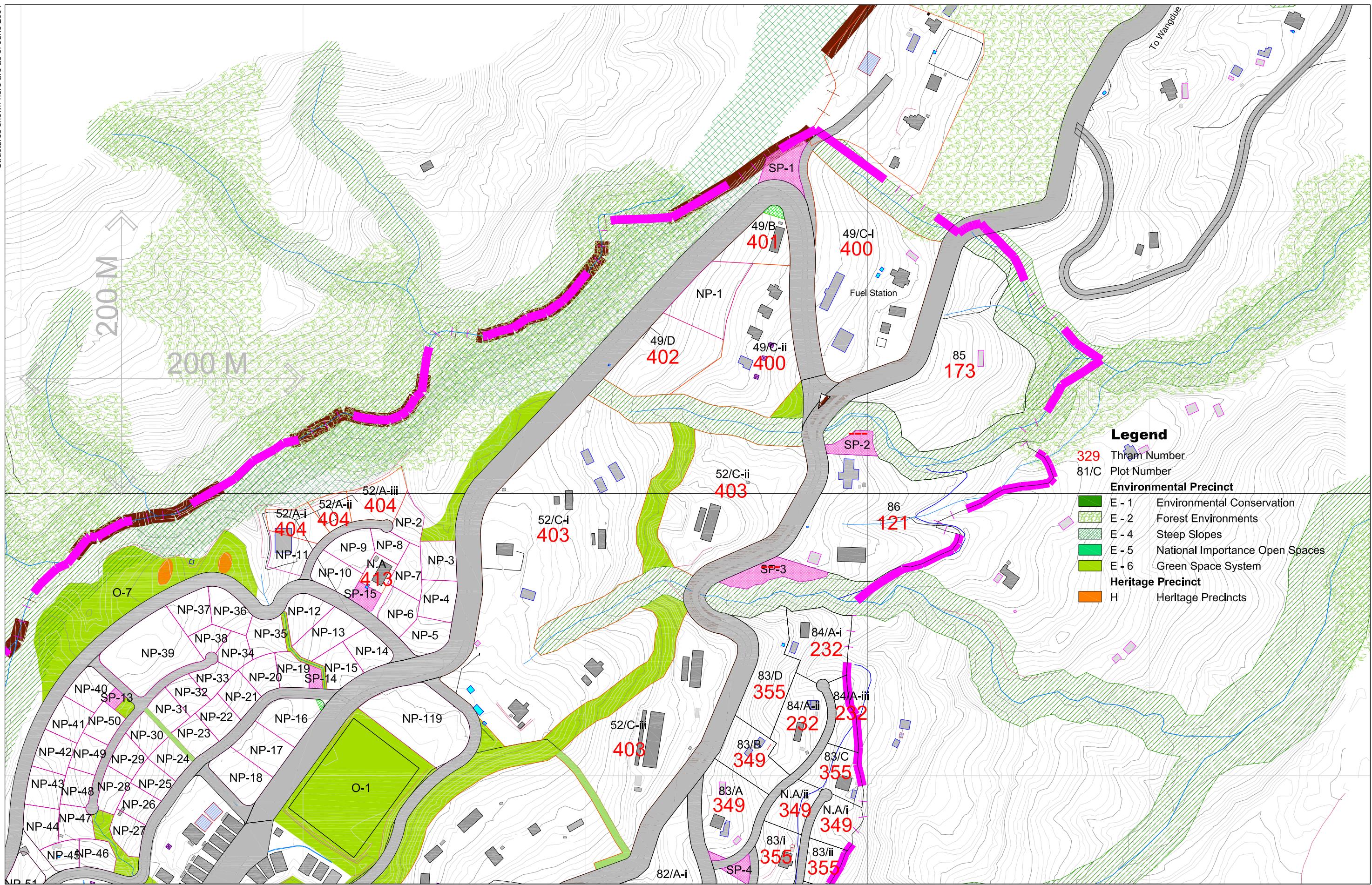
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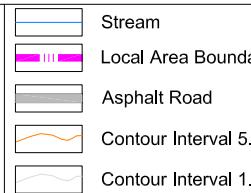
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#### Sources

- Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGob
- Ground Verification, June 2004 by Benninger Architectonics USA Inc, DUD&ES and Damphu Municipal Corporation

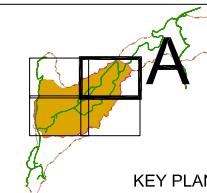
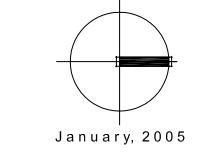


#### PROPOSED PLOT CONFIGURATION

Damphu Structure Plan - Urban Core Local Area Plan

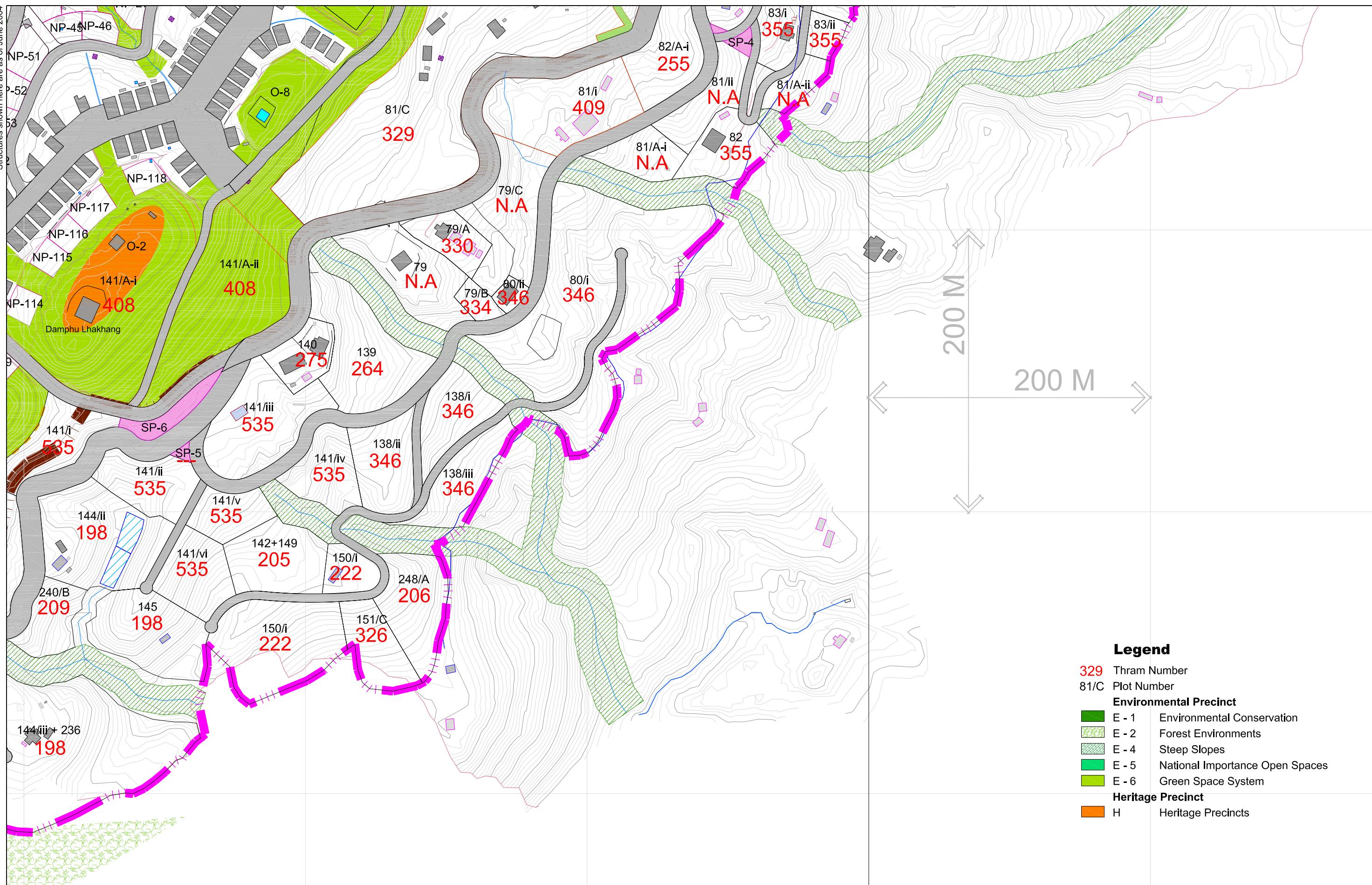
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Drawing 3.1A

Page No. 14B



#### Sources

\* Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGob

\* Ground Verification, June 2004 by Benninger

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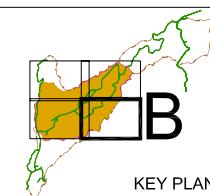
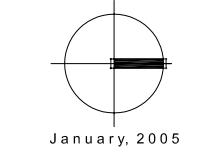
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Local Area Boundary
Asphalt Road
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Contour Interval 1.0M

#### PROPOSED PLOT CONFIGURATION

Damphu Structure Plan - Urban Core Local Area Plan

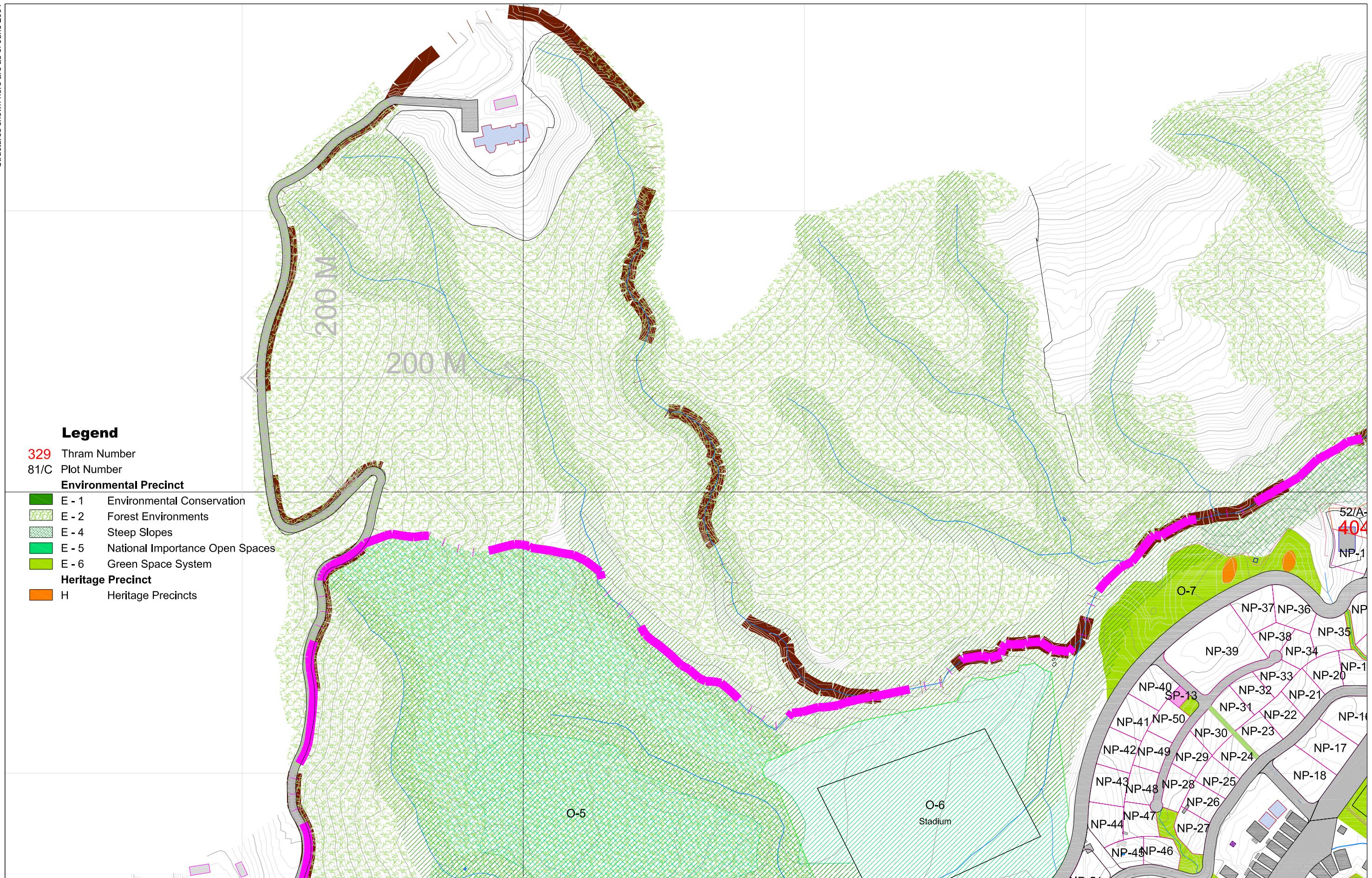
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Drawing 3.1B

Page No. 14C



Stream
Local Area Boundary
Asphalt Road
Contour Interval 5.0M
Contour Interval 1.0M

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January, 2005



In this process, the land values are enhanced and the value of property goes up. Generally, the landowners end up with a property package of much higher value than when they began! The value of the land acquired for civic improvement at the time of acquisition is far less than the “value added” to the property at the time of redistribution. The amount of land deducted from parcels, is a percentage derived by calculating the total land required for new roads, existing roads widening and extension, open spaces, common infrastructure and community amenities in the new layout, distributed equally over the entire land area.

Besides these objectives and modalities, the accommodation of the estimated future population and its appropriate distribution through variable densities, has also governed the reconfiguration of land in the Damphu Urban Core Local Area Plan.

**Table 3.3: Break-up of Land Area in the Local Area Plan**

Description	Area (in hectare)	Percentage to the total LAP Area
Total Land Area of the Local Area Plan	87.73	100
Total Government Land Under Plotting	9.95	11.35
Total Area Under Guided Land Development and Conservation Areas	Government Lands	19.80
	Private Lands	2.65
Area Under road widening and extension in the Guided Development Area	6.35	7.23
Area Under Amenities and Facilities in Guided Development Area (Active and Passive Recreational Open Spaces, Vegetable Market, Town Hall, Transit stop etc)	9.15	10.43
Total Area Considered for land Pooling Process	20.97	23.9
<b>Break-up for the Land Pooled area and Pooling Percentage</b>		
Description	Area (in hectare)	Percentage to the Total Land Pooled Area
Total Land Pooled for Roads and Footpaths	3.09	14.74
Total Land Pooled for Open Space Systems and Environmental Conservation Buffers	2.511	11.96
Total Land Pooled for Amenities and Facilities Provision	0.27	1.30
<b>Total Pooling Area</b>	<b>5.87</b>	<b>28</b>

Based on the proposed layout and plot redistribution, 28 percent of the land will be deducted from each plot, while the remaining land shall be returned to the landowner. Where there is an

occupied, habitable structure on a plot, that same plot, will be returned to the original owner deducting the pooling percentage land. The plot-wise reconfiguration and reallocation details are attached in the table at the end of this chapter.

### 3.6 PROPOSED PRECINCT PLAN

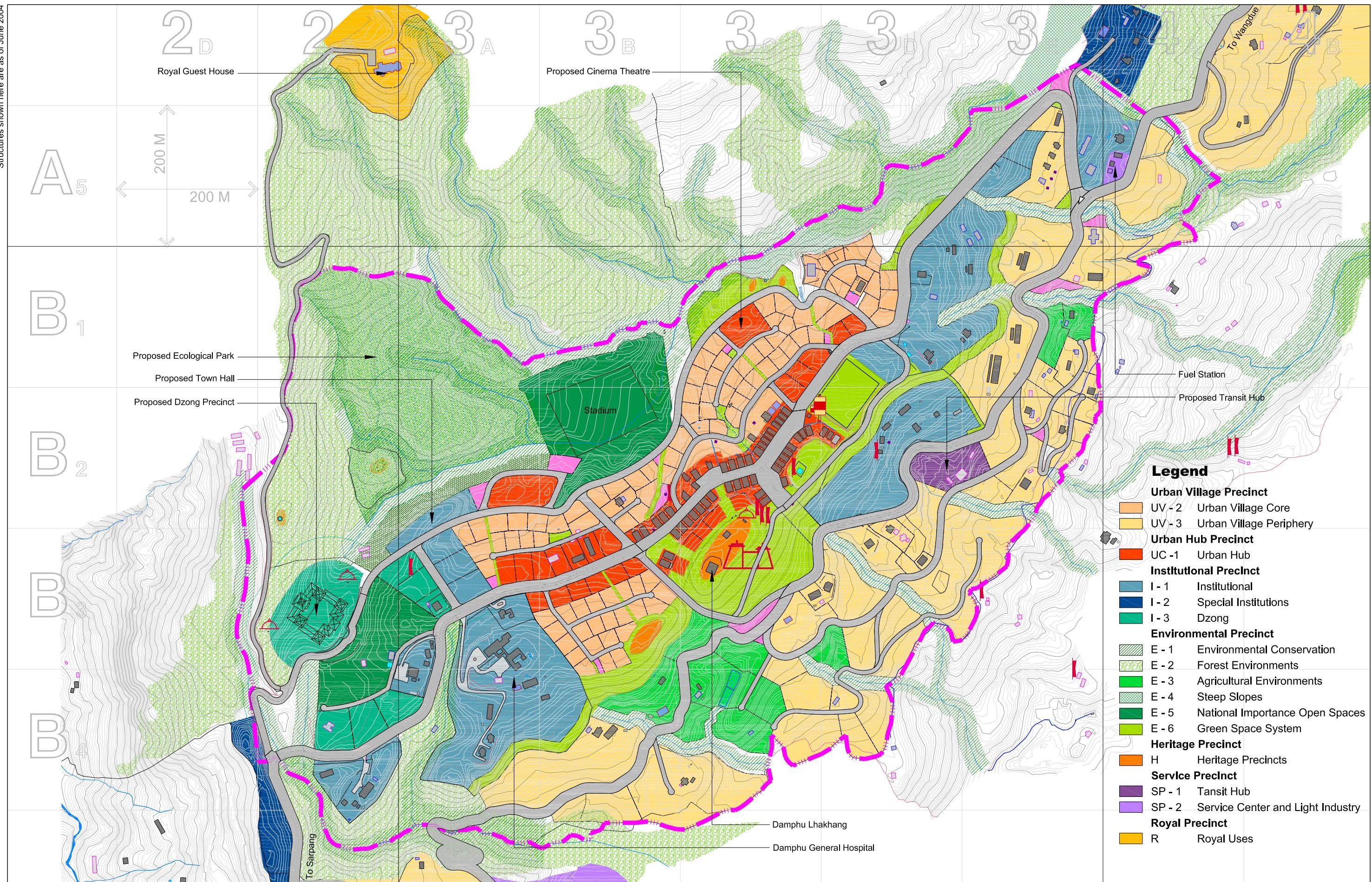
Though the precincts proposed in the Damphu Urban Core Local Area Plan are derived from the Structure Plan, the concept evolved for this local area, and the issues related to this local area, have necessitated some local level changes.

The predominant precinct schedule of the proposal is the residential areas divided across two precincts, namely, Urban Village-Core (UV-2) and Urban Village–Periphery (UV-3). According to the main permitted uses in these two precincts, allowed building heights and plot coverage regulations proposed in the Development Control Regulations, UV-2 is envisioned to be a high-density residential precinct, while UV-3 is a medium- to low-density residential precinct. Ground floor level commercial activities, local level retail shopping, service establishments, and small restaurants are permissible in these predominantly residential precincts, based on which a mix of residential and commercial development is envisioned to be developed in these areas. The development envisioned in UV-2 will provide housing for middle income and lower income level groups. The Existing government lands located to the west of the existing town core is proposed as Urban Village Core (UV-2) Precinct surrounding the Proposed Urban Hub.

The Urban Village Periphery (UV-3) Precinct is proposed towards the east of the existing town core and constitutes areas with predominant slope ranging from 5 to 20 degrees. These areas will allow medium- to low-density development catering to middle and high-income group population of the town. Areas with predominant slope ranging above 20 degrees but less than 30 degrees are classified under Agriculture Environment Precinct (E-3), which will allow very low density development.

The existing town core and its immediate surroundings are classified under Urban Hub (UC-1) Precinct. This proposal will facilitate the establishment of commercial and public dominated uses within the precinct, which will cater to the needs of the entire town as well as entire dzongkhag residents. The Urban Hub Precinct will house higher level shopping facilities, dzongkhag level Hospital, Post Office, Vegetable Market, Town Hall, Financial and other service oriented institutions, Higher level entertainment and recreational facilities, Transit Hub etc,. Apart from these town and dzongkhag level facilities the Urban Hub will also have convenience shopping facilities, a crèche cum primary school, automobile service station and other facilities which will fulfill the essential daily needs of the local area residents. As described earlier high-density residential development (UV-2) will surround the Urban Hub Precinct.





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January, 2005



Drawing 3.2

Page No. 15A

Protection, as well as enhancement, of environment resources is a major theme and concern of the Structure Plan. Implementation of these concerns is ensured through various environmental, open spaces and agriculture related precincts. The Environmental Conservation (E-1), Forest Environments (E-2) and Steep slope (E-4) precincts, proposed in the local area, provide protection by prohibiting development activities in the areas rich in environmental resources and are highly eco-fragile in nature.

Under the provisions of the Environmental Conservation Precinct (E-1), no development is allowed within a thirty and fifteen meters wide strip along the perennial and major streams and in a ten-meter strip along natural storm water drains and minor streams. The forest cover on the hill surrounding the local area forming its periphery are protected under the provisions of the E-2 precinct, which allows only those activities undertaken on behalf of, or permitted by, the Forest Department.

Open spaces, recreation grounds and parks are provided under the National Important Open Spaces (E-5) and Local Green Space System (E-6) Precinct. The New stadium under construction is proposed as a part of the E-5 precinct. A series of common open spaces, which can be developed as small plazas, squares or toddler's playing areas is provided within the residential areas, and along the proposed pedestrian links.

The New Dzong Construction Site is proposed as a part of the Dzong Precinct (I-2) where activities related to enhancing the image and iconography of the Dzong will be allowed.

The Damphu Lhakhang, its immediate surroundings, the prayer wheel pavilion along the Thimphu-Gelephu Highway, and various identified high altitude locations within the local area are proposed to be under the Heritage Precinct (H). This precinct will provide provisions for protection, development, enhancement of religious and heritage sites. Approval for any modification to the structure, or development within the heritage precinct has to be obtained from the National Commission of Cultural Affairs.

For details on the uses sanctioned and the uses permissible on appeal to competent authority in these precincts, refer to the "Precinct Schedule" in Annexure.

**Table 3.4: Areas Under Different Precinct Schedule and Their related Population Accommodation**

Precinct	Area (in hectares)	Percentage to Total LAP Area	Minimum Number of required Dwelling Units (Considering 5 person per household)	Minimum Population Accommodation Envisioned
<b>Urban Village Precinct</b>				
Urban Village Core (UV-2)	6.09	6.94	250	1,250
Urban Village Periphery (medium-density) (UV-3)	15.31	17.48	282	1,406
<b>Urban Hub Precinct</b>				
Urban Hub (UC-1)	3.80	4.33	122	610
<b>Institutional Precincts</b>				
Local level Institutions (I-1)	10.70	12.19	138	687
Dzong Precinct (I-2)	9.37	10.68	-	-
<b>Environmental Precinct</b>				
Environmental Conservation Precinct (E-1), Forest Environments (E-2) and Steep Slope Zones (E-4)	20.24	23.07	-	-
Agriculture Environments (E-3)	3.57	4.07	66	330
National Important Open Spaces (E-5) (including part of Forest Environment (E-2) located to the west of Dzong Precinct)	11.40	12.99	-	-
Local Green Space System (E-6) (including part of steep slope (E-4) zones as a part of pedestrian system)	6.1	6.95	-	-
<b>Service Precincts</b>				
Transit Hub (SP-1)	0.50	0.56	-	-
Service Centers (SP-2)	0.12	0.14	-	-

Precinct	Area (in hectares)	Percentage to Total LAP Area	Minimum Number of required Dwelling Units (Considering 5 person per household)	Minimum Population Accommodation Envisioned
<b>Heritage Precinct</b>				
Heritage (H)	0.53	0.60	-	-
<b>Total</b>	<b>87.73</b>	<b>100</b>	<b>858</b>	<b>4,283</b>

### 3.7 PROPOSED DENSITY DISTRIBUTION

Population density, being a function of number of the dwelling units per unit area, is regulated by plot sizes, building heights and plot coverages prescribed in the proposed Development Control Regulations.

#### High-Density Development

A typical plot configuration (using plots of area above 750 square meters) could be developed with 50% percent ground coverage and a maximum of three floors high, as prescribed in the proposed Development Control Regulations. Development as apartments and other high-density residential typologies would result in an optimum net developable area density of 150-175 persons per hectare, and a maximum net developable area density of 425-450 persons per hectare with a gross density of 80-90 <sup>2</sup> persons per hectare.

Such a configuration of plots is desirable around the Urban Hub, which will bring a larger proportion of population within a comfortable walking distance of the community services and amenities. Provisions of the proposed Urban Village Core (UV-2) precinct around the Urban Hub will facilitate such high-density development within the local area.

#### Medium-Density Development

Another development scenario proposed in the local area uses a typical plot configuration with a minimum developable plot size of 300 square meters. As described earlier, areas to the east of the existing town core with predominant slope characteristics between 5 to 20 degrees are proposed to be developed under this envisioned condition. Development with a plot configuration ranging above 300 square meters, with 50% percent ground coverage, a maximum of two floors high, as prescribed in the proposed Development Control Regulations,

and as low-rise apartments, bungalows or row houses would result in a net developable area density of 85-115 persons per hectare.

Such medium-density development will be suitable for the middle-class to upper middle-class population. Pedestrian connections linking these areas with the Urban Hub and open spaces would be provided. Provisions of the Urban Village-Periphery, Medium Density Development Sub-Precinct (UV-3a) will facilitate such medium-density development.

#### Low-Density Development

The Damphu Urban Core Local Area Plan consists of several areas which are predominantly with slope characteristics more than 20 degrees, but less than 30 degrees. Though these steep slope categories should not be allowed for any kind of intensive urban development, due to the risk of landslides, because of the greater proportion of such kind of lands available within the municipal limit, and the lack of other developable lands within the municipal limit, these areas are proposed to be developed as very low-density residential area, or hospitality centers. These areas will suit the higher-income group housing with bungalows and farm house typologies.

The investment required to serve these areas by water supply, sewerage and other services will be affordable to these higher-income group residents. It is proposed that the ratable values for the purposes of taxation need to be studied and assessed carefully to correlate tax burden more closely with the costs of supplying services.

The provisions of the Agriculture Environments Precinct (E-3) will facilitate the envisioned development with typologies dominated by farmhouses and bungalows which will reduce the development pressure on steep slopes and orchards. The minimum plot size in such developments would be 1000 square meters and the allowed plot coverage would be 20% plinth area.

### 3.8 PROPOSED AMENITIES AND FACILITIES

The proposed amenities and facilities in the local area is a direct outcome of the planning standard studies described in the earlier section of the report. The proposal also considers the provision of facilities and amenities, which will help in establishing the Damphu Urban Core Urban Village as an Urban Hub catering to the needs of the entire Damphu town and Tsirang Dzongkhag.

#### 3.8.1 Urban Hub

##### Urban Hub as an important Town Level Facility

The basic idea of an Urban Hub is to create a commercial center with all the public facilities. The Urban Hub envisioned in the Damphu Urban Core will not only serve the population of the

<sup>2</sup> Gross density is calculated assuming 35% of the total land to be under roads, common open spaces, Environmental conservation areas and amenities



local area but also the population of the town and the entire Dzongkhag. The commercial areas and Public facilities will also help in creating the needed urbaneness in Damphu town.

#### **Urban Hub as an important element in the transit oriented development**

The Urban Hub can act either as a destination, or a transit node, with facilities for 'modal split' within the entire framework of transport suggested for Damphu town in the Structure Plan. Thus, transport facilities in the future, like an inter-town bus terminus; local level public transports and a large taxi stand will connect the Urban Hub with the rest of the town and the Dzongkhag. Public parking will be accommodated within the Hub. People in other parts of the town, can drive to the Hub acting as a workplace and as a center for commercial, recreational facilities, and enjoy the pedestrian oriented environment proposed within the Urban Hub. At a smaller scale an Urban Hub in Damphu could be compared with a "district center" in other developing countries.

#### **Components of the Urban Hub:**

The Urban Hub can be split into the following three components:

- 1) Commercial component.
- 2) Recreational component
- 3) Public conveniences component.

#### **Commercial Component**

This will include the town level and local level commercial activities like shopping arcades, departmental stores, bookshops, net cafés, bars, restaurants and cafeterias. It would also house private and public office spaces required for the growing business community in the town. Based upon the development control regulations, there can be separate guidelines to control the ground coverage and height of these commercial buildings. There should be urban design controls for the massing and facades of these buildings. There should be provisions to accommodate plot level parking either in, basements or under stilts. Apart from this, every commercial building should have off-street parking in the front to accommodate the visitor's vehicle parking.

#### **Recreational Component**

This will include town level recreational facilities like cinema theatre, auditorium, bowling alleys, etc. These facilities can be under private ownership. The recreational component also includes town level sports facilities like the existing stadium under construction, indoor sporting facilities, tennis and basketball courts, archery field, etc. A system of open spaces connecting all the sporting facilities is also proposed within the Urban Hub as a part of the Environmental Conservation Precinct.

#### **Public Conveniences Component**

This includes the public facilities provided by the government like hospital, post office, banks, fire station, fuel service, etc. The existing vegetable market is proposed to be up-grades and shifted to a new location with the provision of additional facilities. A new town hall is proposed as a part of the Urban Hub. Most of the public conveniences at present are provided and maintained by the government and are proposed to be up-graded considering the future needs. All these public buildings are distributed along the proposed town central Path of Wisdom which will help in visually organizing the central spine by controlling the visual massing and facades of these public buildings through Urban Design guidelines.

The Damphu Urban Core Urban Hub provides for the following amenities:

**Table 3.5: List of Amenities and Facilities Proposed in the Urban Hub**

Amenity	Details
Commercial Plots (private ownership)	Department stores, clinics, crèches, private hospitals, general merchandise, hardware stores, variety of shops, restaurants, bars, discos, libraries, bowling alleys, net cafés, ATM centre etc.
Offices	Offices, professional suites, studios, agencies.
Nursery cum Primary school	One (Area level Amenity).
Intra-town Bus Terminus	Bus parking, Waiting area for passengers, Refreshment facilities, Public toilets, Repair and maintenance yard, Fuel pumping facilities, Entrance plaza. Office spaces on the upper floors with separate access from a parallel street, parking facilities.
Hospital and Urban Village Level Clinic	Up-gradation of the existing Damphu General Hospital with additional facilities.
Vegetable Market	Shifting of the Vegetable Market from the existing location with additional facilities like, Parking area, Vegetable stalls, cold storage facilities, other storage facilities, waste disposal and public toilet facilities.
Taxi Stand	To accommodate about 30 taxis.
Police Station	Up-gradation of the existing Royal Bhutan Police campus with adequate parking space for vehicles and a temporary jail.
Post Office and Telecommunications Center.	Up-gradation of the existing post office and telecommunication centre with facilities like, post boxes, telephone booths, telephone billing center, internet facilities, parking facilities.
Town Hall	Seating area for 500 people, parking , lounges, green rooms, transformer and generator facilities, public toilets etc.



Amenity	Details
Cinema Hall	Seating area for 500 people, parking, lounges, refreshment facilities, entertainment facilities, public toilets etc.
Sports Complex	Sport facilities like archery, basketball, table tennis, swimming, tennis, badminton, squash etc in close proximity with the new stadium construction site.
Recreation	Facilities for pool tables, caroms, cards, bowling alley, wedding hall, clubs, etc. which could be developed as apart of the commercial plots.
Fire Station	Proposed as a part of the Royal Bhutan Police campus with parking and maneuvering areas for at least three 4000-gallon fire tender trucks. Facilities for water storage of at least 30000 gallons capacity tanks.
Service and fuel station	Up-gradation of the existing BOD fuel station with additional storage facilities for petroleum products, basic service facilities, telephone and fire fighting facilities and automobile work shops, recyclable waste store room.
Parking	Parking lots at strategic locations, road side parking facilities and plot level parking.
Public and Government Institutions	Plots for the establishment of future government and public institutions including the proposed <b>Dzong Precinct</b> .
Spiritual and Heritage	Up-gradation of the Damphu Lhakhang and its surroundings, reservation of high altitude areas for the establishment of future heritage structures.
Plazas and green areas	Includes open spaces, plazas, green areas, open space in front of the Dzong, Ecological park.

### 3.8.2 Circulation System and Road Network

The Primary objectives of the proposed circulation system are:

- to provide access to each plot;
- to facilitate uninterrupted vehicular movement;
- to prevent vehicular-pedestrian conflicts;
- to provide easy off -street pedestrian movement; and,
- to provide emergency vehicle access.

The proposed circulation system is composed of a series of roads arranged in a hierarchical order. The existing Thimphu-Gelephu Highway passing through the centre of the local area, bisecting it, is proposed to be up-graded into a town central spine. This will be a four lane, divided road with wide foot paths on either side. This road will reserve a minimum right-of-way

of 18 meters outside the existing town core and will primarily cater to in-town traffic. The existing town bye-pass passing to the east of the existing town core will be up-graded into an Urban Corridor, and will be extended to join the town central spine near the Tsirang Rabdey. This road will also be a four lane divided road with footpath on at least one side of the road. This road will reserve a right-of-way equal to the urban spine and will primarily cater to the intra-town passer-by traffic. The right-of-way of this road and the number of traffic lanes will vary according to the degree of eco-fragileness of the area which the road passes through at specific identified places. Connection between the Urban Corridor and the Urban Spine will be established at regular intervals. The proposed collector roads of the local area will originate from these two main traffic corridors, further connecting to the access streets. A typical collector road will reserve a right of way of 10 to 12 meters as per the terrain conditions and a typical access street will reserve a 6 meter right-of-way with footpath on one side of the road.

Prioritizing the pedestrian movement system is one of the prime objectives of the plan. Apart from road side footpaths, a three meter wide off-street footpath is proposed along the sides of the stream side Environmental Conservation Precinct and along the open space system criss-crossing each other at regular intervals, connecting the destination points of the local area. These proposed footpaths roughly follow the existing foot trails, which would serve the local area.

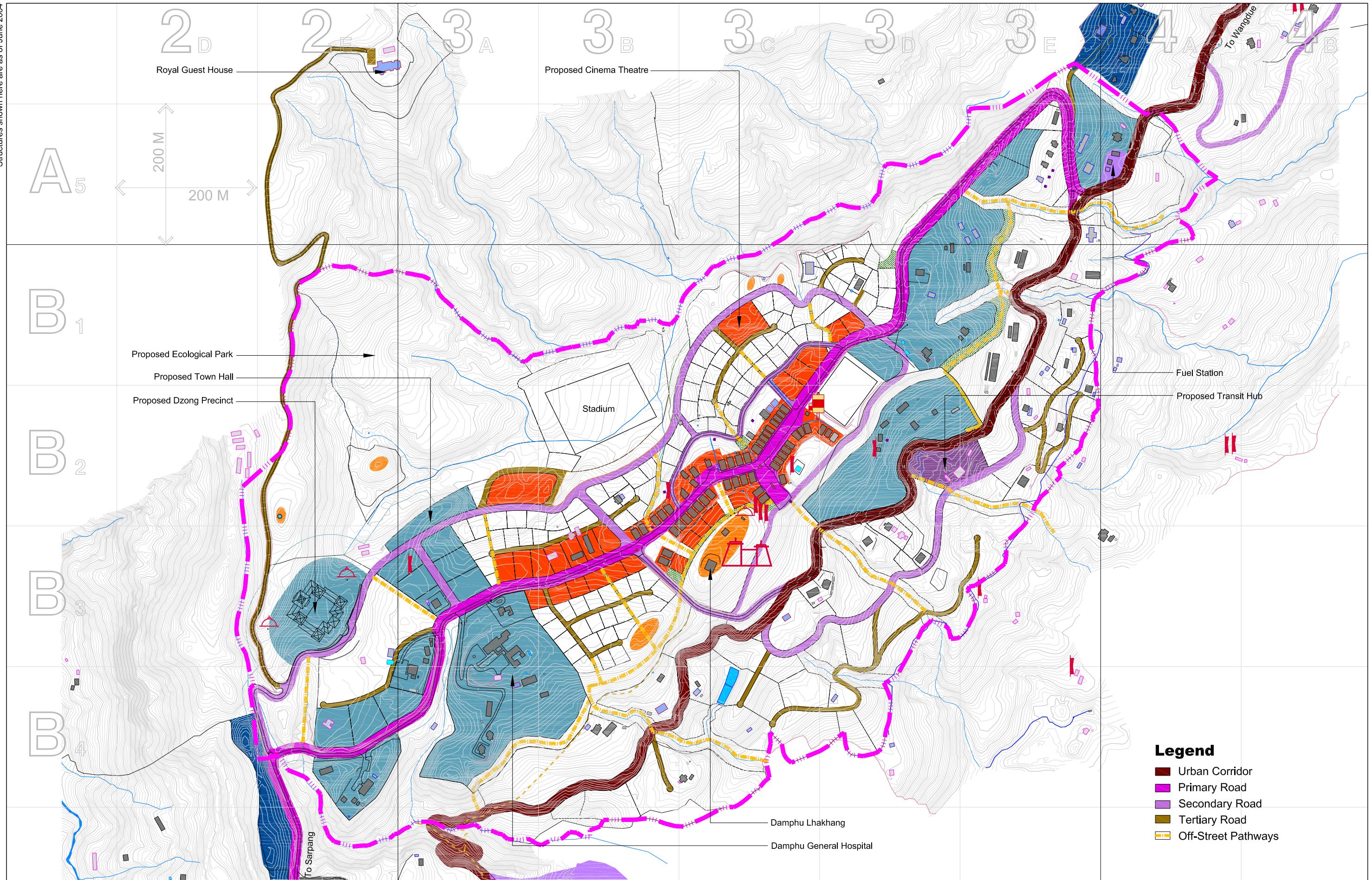
### 3.8.3 Open Space System

A system of open spaces is proposed within the Damphu Urban Core Local Area Plan in the form of a Local Green Space System (E-6) and National Importance Open Space (E-5). The proposed Environment Conservation green buffer (E-1) along the streams, rivulets and the natural drains, and the Steep Slope areas (E-4), and the open spaces which would fall under the Heritage Precincts (H) will also form a part of the proposed open space system in the local area. The community parks proposed at every residential neighborhood would be an active recreational space with sports facilities, while the green buffer along the streams would act as passive recreational spaces. The proposed footpath system would connect all the proposed open spaces together, thus facilitating the pedestrians to access the open spaces easily. Apart from the proposed open spaces, the forest environment would also act as a passive recreational open space.

The proposed open space located in front of the Dzong (a part of the Dzong Precinct) will act as the town central green space. This park will have amphi-theatre, stroll gardens and water bodies. The character of this park in terms of landscape elements and features will be subtle, when compared to other recreational open spaces and would be designed to enhance the Dzong Precinct. This park will provide a serene atmosphere and will act as a place of retreat within the proposed Urban Hub.

The proposed open spaces along the ridges and on the peaks of the hillocks, which are a part of the Damphu Urban Core local area and at vantage points, which provide panoramic views





**Sources**

- Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGob
- Ground Verification, June 2004 by Benninger Architectonics USA Inc, DUD&ES and Damphu Municipal Corporation

Stream	Drastang / Lhakhang
Local Area Boundary	Chorten
Asphalt Road	Prayer Wheel
Contour Interval 5.0M	
Contour Interval 1.0M	

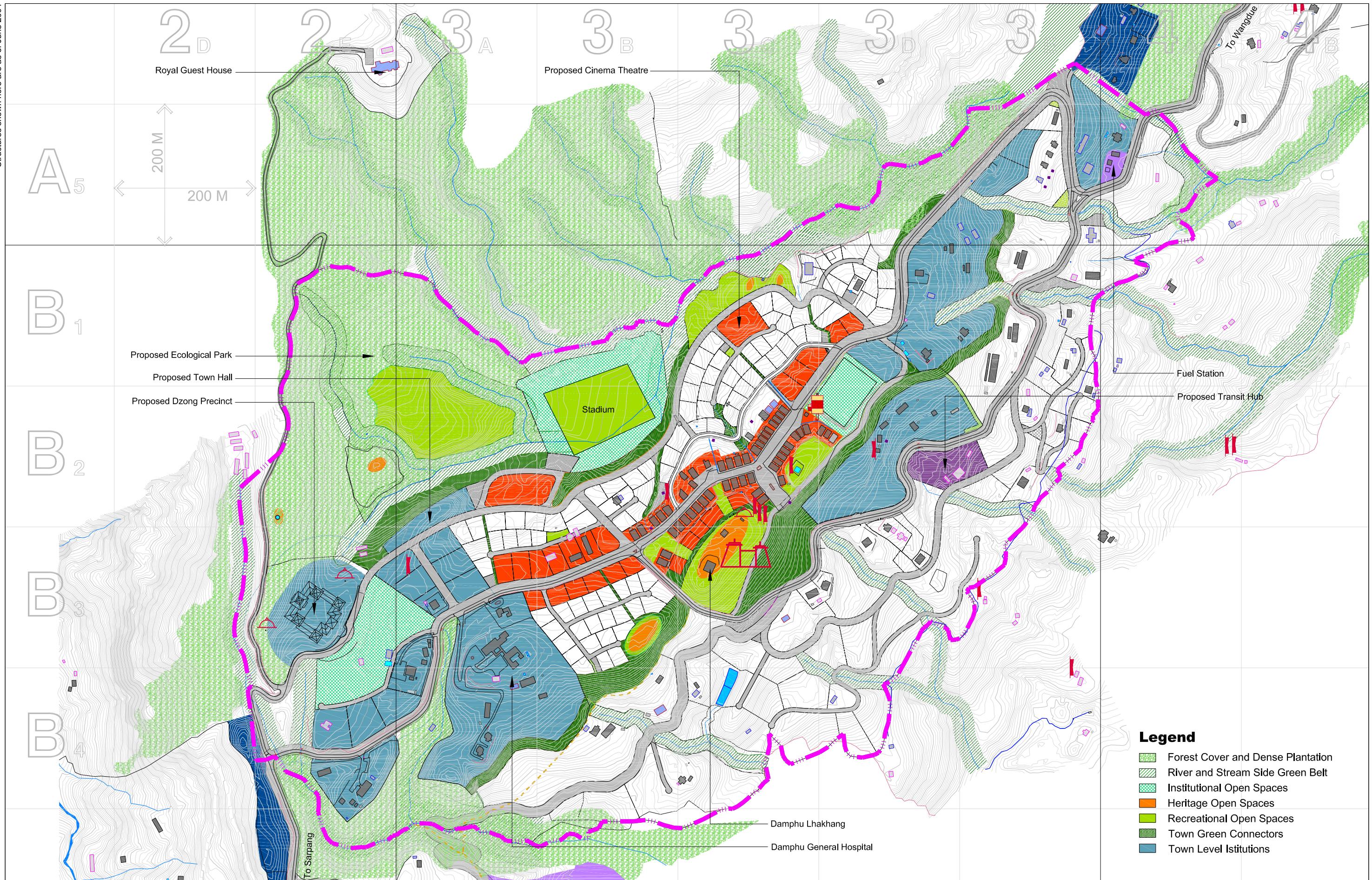
**PROPOSED CIRCULATION NETWORK**  
**Damphu Structure Plan - Urban Core Local Area Plan**

Benninger Architectonics USA Inc.  
with the Department of Urban Development and Engineering Services, MoWHS, RGob

Scale: 1:5000  
January, 2005  
KEY PLAN

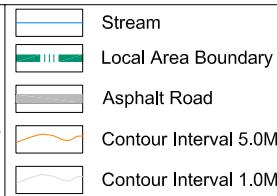
Drawing 3.3

Page No. 19A



**Sources**

- Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGob
- Ground Verification, June 2004 by Benninger Architectonics USA Inc, DUD&ES and Damphu Municipal Corporation



**PROPOSED OPEN SPACE NETWORK**  
**Damphu Structure Plan - Urban Core Local Area Plan**

Benninger Architectonics USA Inc.  
with the Department of Urban Development and Engineering Services, MoWHS, RGob

Scale: 1:5000  
January, 2005



**Drawing 3.4**

Page No. 19B

of the surrounding hinterlands and valleys, are an inseparable part and another set off major open spaces proposed in the local area. These open spaces will enhance the quality of the Open Space System proposed in the local area and will reserve spaces of visual importance in the town for the future generations. These open spaces, apart from accommodating facilities for active recreational use, will also reserve spaces for accommodating traditional and religious features like Prayer Flags, Chortens, Prayer Wheels in the towns landscape.

#### **Proposed Recreational and Sports Facilities**

The long awaited higher level sporting facility in the town will come to fruition by the proposed stadium located to the west of the existing Damphu town core. The locational advantage of the stadium in close proximity to the proposed Urban Hub will further strengthen the use. As a part of the local area plan accessibility level to the stadium from all parts of the town will be increased. The inbuilt advantage of government owned lands surrounding the stadium would give high flexibility for the expansion of the stadium in the future to accommodate various growing sporting needs. This sub-regional level stadium will house a great variety of sporting facilities including a football field, lawn tennis courts, archery fields and a swimming pool. The indoor games facilities would accommodate a gymnastic center, space for volleyball court and basketball court along with other games, like table tennis, etc.. The existing football ground will also form an inseparable aspect of the proposed recreational open space system. This regional sports facility is an important Service Center facility.

#### **3.8.4 Proposed Heritage Precinct**

As mentioned earlier there are few important religious and heritage structures within the local area. Conservation and enhancement of these religious and heritage structures and their surroundings form an integral part of the local area plan proposals. Enhancement of the Shedup Cholling Lhakhang's surroundings is one of the important heritage proposals. The proposal includes establishing and highlighting the axis of the Lhakhang by the proposed footpath and open spaces, which descends the mound to join the Urban Spine. The prayer wheel pavilion and the chorten in front of the lhakhang would be enhanced and conserved and would be categorized as Heritage Precinct.

Apart, from the conservation and enhancement of existing religious structures, the local area plan reserves the higher altitude points available within the local area as heritage precincts which could be used for accommodating traditional and religious features like Prayer Flags, Chortens and Prayer Wheels in the town's landscape. The open spaces around these religious and heritage structures would be converted into formal gardens and would also act as a part of the open space system. Night lighting and monumental lighting of the existing and proposed heritage structures would be a part of the proposal.

### **3.9 PROPOSED UTILITIES AND SERVICE NETWORKS**

Planning for Utilities and Services is crucial for both the future development envisioned within the local area and to ensure a better living condition in the town. While planning the Utilities and Services for the local area, it is necessary that the factor of floating population should be given due consideration, because of the envisioned nature of development in the local area as an Urban Hub for the town as well as for the entire Dzongkhag. It must also be noted that the selection of appropriate utilities system and their design should be done by qualified public health engineers. In this report a conceptual network of these systems is envisioned so that a network right-of-ways can be reserved and a preliminary estimate can be done.

#### **3.9.1 Water Supply System**

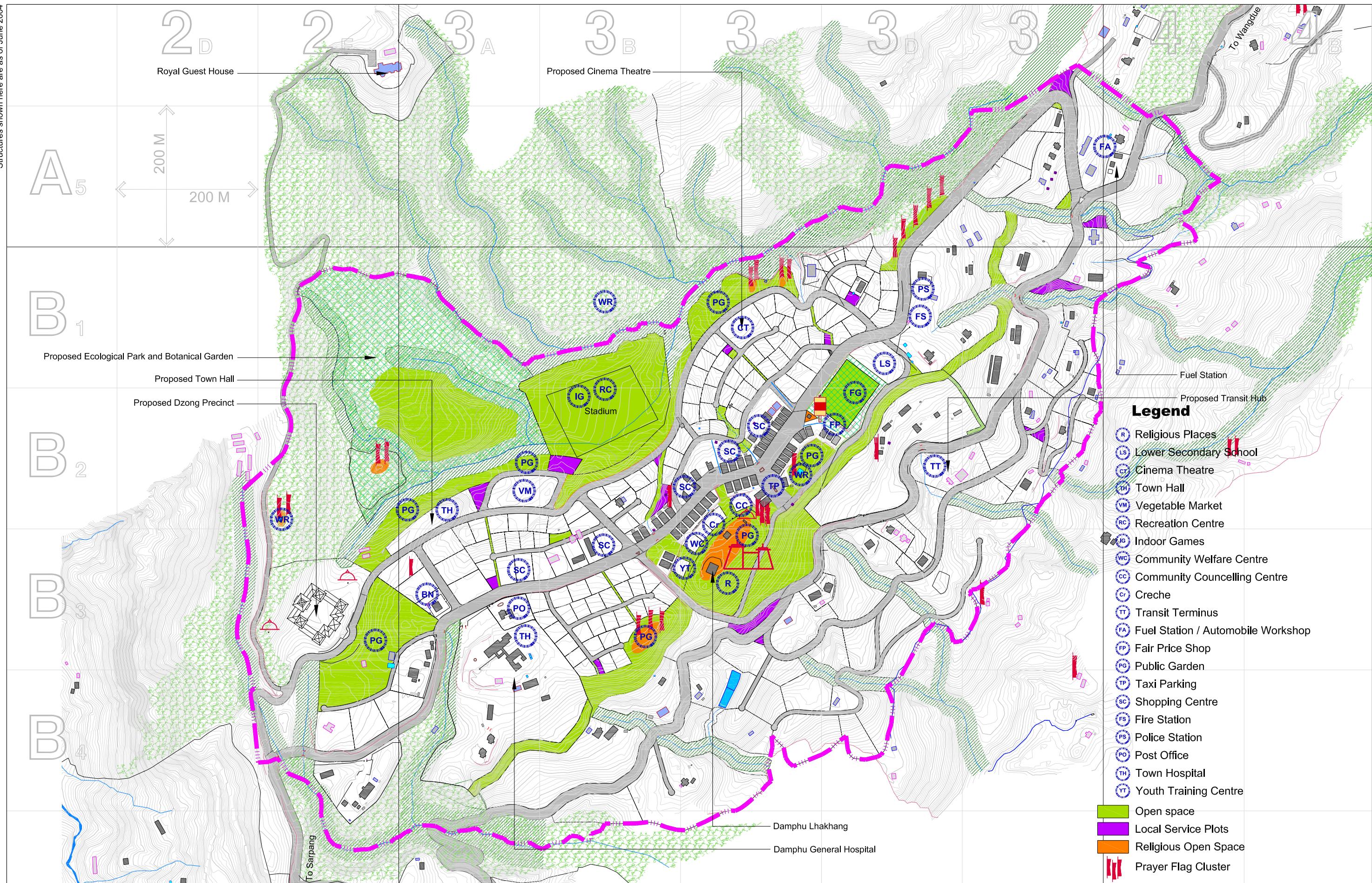
Water Supply demand for the residential population of the Damphu Urban Core local area is estimated to be 4,50,000 liters per day, considering an average of 100 liters per person per day as per planning standards. Apart from this residential population, since the Damphu Urban Core is envisioned to function as an Urban Hub, fulfilling the needs of the town and entire Dzongkhag, would invite a considerable floating population at any point of the day, which needs to be planned for. As mentioned in the earlier chapter, provision of a new water supply network in Damphu town is under conceptualization, with DANIDA funding. The Powa Chhu is considered as the primary source of water for Damphu town under the new water supply scheme. A new filtration tank for the purification purposes will be required before the water is supplied to the residents in the town. The favorable topography of the town facilitates a gravity based water supply network system.

Considering, the future needs and the topographical conditions, three water storage reservoirs are proposed within the Damphu Urban Core local area. The existing water storage reservoir located to the north of the Damphu Lhakhang is proposed to be redesigned, and two new water reservoirs are proposed to be constructed as a part of the system. The water reservoir proposed to be located on the southern part of the local area is envisioned to exclusively serve the institutional development and the Dzong Precinct, while the water reservoir proposed to be located near the new stadium under construction, and the existing water reservoir will serve the Urban Hub and the residential neighborhoods of the local area. The storage reservoir will be at ground level and will be located at a higher altitude area. Water will be either pumped through a pressurized pumping system or gravity supplied to these reservoirs from the water treatment plant. The distribution system will be designed as a gravity-flow system. The distribution network is proposed to be of Galvanized Iron / Ductile Iron pipes.

#### **3.9.2 Sewerage System**

Installation of a conventional sewerage network in Damphu is both uneconomical and non-workable, more specifically given the topographical character of the town. At the same time





**Sources**

- Total Station Survey Drawings provided by Department of Urban Development and Engineering Services, MoWHS, RGOb
- Ground Verification, June 2004 by Benninger Architectonics USA Inc, DUD&ES and Damphu Municipal Corporation

Stream	Drastang / Lhakhang
Local Area Boundary	Chorten
Asphalt Road	Prayer Wheel
Contour Interval 5.0M	
Contour Interval 1.0M	



**PROPOSED AMENITIES AND SERVICES PLAN**  
Damphu Structure Plan - Urban Core Local Area Plan

Benninger Architectonics USA Inc.  
with the Department of Urban Development and Engineering Services, MoWHS, RGOb

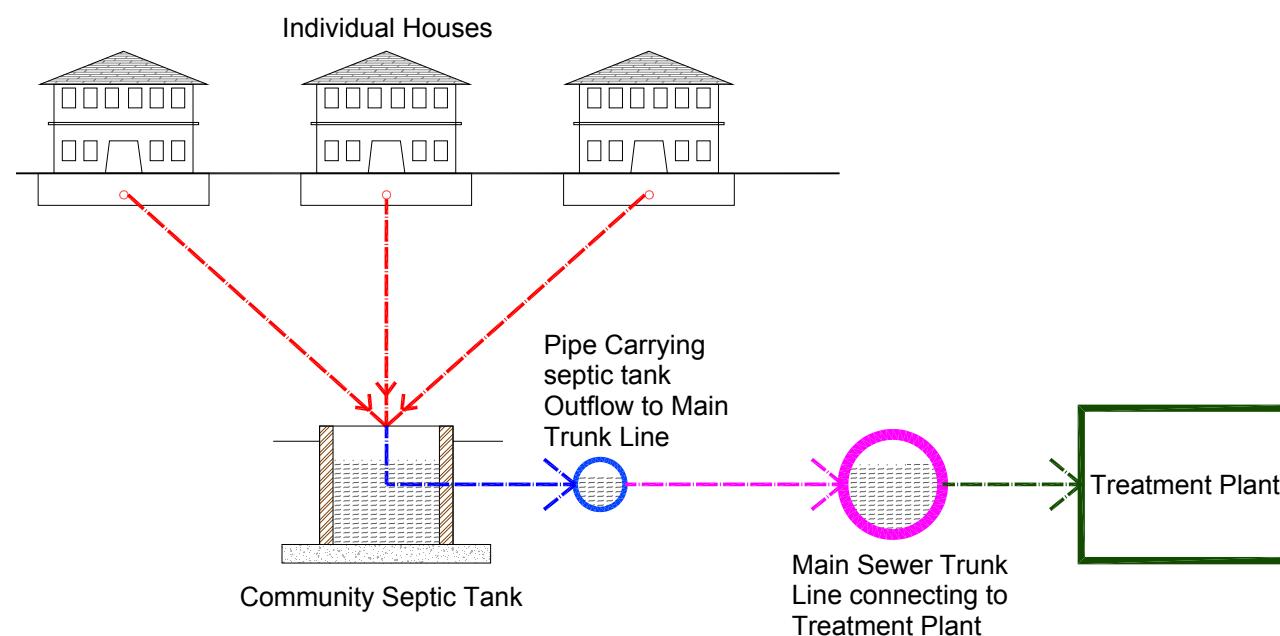
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January, 2005



Drawing 3.5

Page No. 20A

the present method of individual septic tanks, for sewerage disposal, poses serious threat to the hygienic level and living standards and proves to be inefficient to manage and maintain. Considering the present conditions and future requirements, a system of community septic tanks is proposed in the Damphu Urban Core local area. These septic tanks will be provided with an overflow trunk disposal pipe, (primary network) to carry the overflow water from the septic tank, which will connect to the treatment plant. These community septic tanks will be cleaned at regular intervals by the local authority and will be maintained with community participation. The location of these septic tanks must be in the lower plot areas compared to the settlement they serve, with adequate water overflow space, and should have proper access to insure that septic tank cleaning trucks will have an easy access. Within the medium-density area and adjacent low-density areas there will be a secondary and tertiary network, as noted in the chart below.



#### Community Septic Tank System

*Individual house sewerage gets connected to the community level septic tank. The outflow from the septic tank gets connected to the main sewer trunk line further to the treatment plant*

#### Advantages of the proposed system:

- More cost effective than the conventional system of sewerage treatment, where the cost of laying infrastructure is costly in the mountainous terrain.
- Treating sewerage in a decentralized manner reduces the diameter and size of the entire sewerage system since it is only the outflow from the septic tanks which needs to be carried to the main sewerage treatment plant. This further reduces the load over the sewerage treatment plant since partial treatment of the waste takes place in the community septic tank.
- There is more control over a decentralized system of treating sewerage because the community septic tanks can be built according to the requirement of the community. Based upon the number of users, the capacity can be upgraded in due course of time.

- A community level septic tank system is a good model to catalyze community participation in maintaining and managing the hygienic level of the town through private-public partnership. The community will be involved in the building of these septic tanks according to their requirements and the municipal corporation will be involved in maintaining them.

#### Disadvantages:

- Each community level septic tank cannot exceed beyond a certain threshold capacity. Hence, the number of community septic tanks will increase with the increase in population.
- The Municipal Corporation will have to arrange for a workforce involving in regular maintenance of these community septic tanks – i.e. cleaning them when they are filled.

**Table 3.6: Details of the Proposed Sewerage Network**

Sewer Network category	Pipe Diameter
Primary Network	750-450 mm
Secondary Network	450-300 mm
Tertiary Network	225 mm

*Note: The local area plan limits itself to proposing a conceptual sewerage system and its components. Pipe diameters should be calculated and designed by the related experts after detailed calculation of the capacities and detailed analysis. The proposals given above are to initiate the process and to allow for the preliminary cost estimates.*

#### 3.9.3 Solid Waste Management System

Efficient management of solid waste requires a proper collection and disposal system within the local area networked with the entire town system.

Damphu, with its small scale and a society with strong community relationship, provides great flexibility to propose the system of segregating the waste at the source itself. This will greatly help in minimizing the volume of solid waste disposed at the disposal site. It is proposed that public participation in solid waste management should be encouraged in the town by decentralizing the collection and disposal process. The solid waste can be segregated into recyclable ad non-recyclable wastes which could be re-cycled, or disposed of appropriately. The Urban Hub will be provided with a recyclable and reusable waste collection store, which will be cleaned at regular intervals and transported to a waste re-cycling plant.

It is proposed that the Urban Hub and the proposed High-Density residential development located to the west of the Urban Hub be served by a door-to-door solid waste collection system. The envisioned medium- and low-density residential development areas, located to the east of the Urban Hub, will be provided with community bins, at regular intervals and at strategic points where the household will dispose of wastes. Under this system, the community will hire the services of the Municipal Corporation trained workers to collect the



waste from each household and the Community Garbage Bins. The workers will be trained to segregate the waste into recyclable and non-recyclable categories and will dump the non-recyclable wastes in the main garbage bins located along the primary roads at regular intervals. Disposal of this waste from these bins will be carried out by the municipal corporation on a regular basis, by trucking the waste to the identified land-fill sites. The recyclable waste would be stored in the recyclable and reusable waste store proposed in the Urban Hub for transporting it to the waste re-cycling plant.

### 3.9.4 Street Lighting System

An adequate street lighting system is proposed along the road network in the Damphu Urban Core local area. Since there is no existing street lighting system available in the local area, the entire system needs to be installed. Details of the proposed street lighting system are as follows:

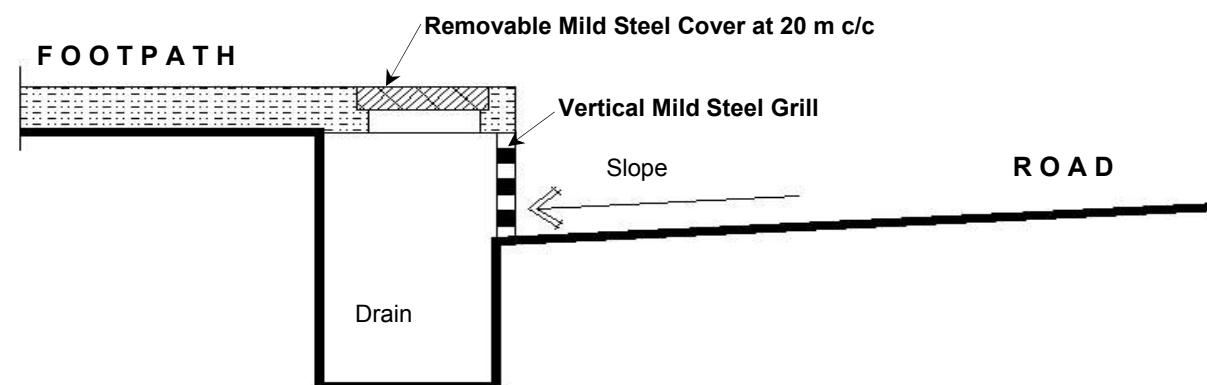
**Table 3.7: Details of the Proposed Street Lighting System in the local area**

Road Hierarchy	Location	c/c Distance	Type
Urban Spine Connecting the Urban Villages	Along the footpath	30 meters	400W Mercury / Sodium Vapor or 35W Low Pressure Sodium Vapor
Urban Spine in the Market Street	Along the Median	30 meters	150W Mercury/Sodium Vapor
	Along the Foot Path	20 meters	150 W Decorative Lamps
Arterial Roads / Urban Bye-Pass	Along the median	30 meters	400W Mercury / Sodium Vapor or 35W Low Pressure Sodium Vapor
Collector Roads (Secondary Roads)	Along the footpath, on either sides of the road, in a staggered manner	30 meters	150W Mercury / Sodium Vapor
Access Streets inside the Residential Neighborhoods	Along the footpath, on one side of the road	20 meters	75W sodium vapor / 125 W Mercury Vapor
Foot Paths	On either side of the Foot Path in a Staggered Manner	20 meters	150W Decorative Lamps / 75 W Sodium Vapor / 125W Mercury Vapor

### 3.9.5 Storm Water Drainage System

The favorable topography of the local area creating a well established natural surface storm water drainage pattern, allows for a smooth drainage of storm water into the streams and rivulets. In the absence of a sewerage network, the existing drains carry gray water also. This results in pollution of the streams and rivulets of the town. Installation of an appropriate sewerage management system and treatment facility for the town will alleviate this situation. The storm-water drainage network proposed for the local area runs primarily along the roads and underneath footpaths. A typical drain laid under the footpath, will have vertical grills as

part of the level-difference between the footpath and the carriageway. This arrangement is suitable to prevent blockage of the drains due to garbage and other waste being accumulated on the horizontal grills. These drains will open out into the natural streams and rivulets at appropriate location provided with storm water drain purification ponds. These storm water drain purification ponds will filter and purify the organic and suspended particles carried by the surface run-off before joining the streams. These ponds will also act as a recreational feature along the stream side green belt.



**Typical Section: Storm Water Drainage**

### 3.9.6 Fire Fighting Facilities

To satisfy and safeguard the fire fighting requirements of the Damphu Urban Core local area, it is proposed that there should be a reservoir of approximately 20cum (20,000 Liters) capacity. This recommendation has been adopted from the recommendations of the Draft Planning Standards for Urban Settlements in Bhutan, by the Department of Urban Development and Housing, MoC, 1999.

It is proposed that this reservoir be established within the Damphu Urban Hub to satisfy the fire safety requirements. It is proposed that from the storage reservoir a pressurized network of Water Supply be established to enable the setting up of on street "Fire-Hydrants" within the Urban Hub and high-density residential areas, at an interval of 120 meters. It is proposed that medium- and low-density residential areas be served by fire engines. A fire engine station is proposed to be located within the campus of Royal Bhutan Police, to cater to this need. It is also proposed that, a "village volunteer fire-fighting force", be created within the local area, which will carry out preventive inspections of each house annually, run community functional education classes on fire prevention and fire fighting recommend the types and placement locations of extinguishers and train selected youth in rapid action fire fighting.

**Annexure - 1 PLOT - RECONFIGURATION TABLES**



**Table 3.7 a : Plot Re-Configuration Table for Private Owned Plots**

No.	Owner's Name	Thram No.	Current Plot No.	Registered Area		28% Land Pooling Area (Sq.M)	Ownership Area after Land Pooling (Sq.M)	Final Allotted Area (Sq.M)	New Plot No.	Sub-Divided Plot Areas (Sq.M)	Land Ownership	Precinct Usage	Remarks	
				Decimal	Sq.M									
1	Dolma Drukpeni	121	86	319	12,909.37	3,614.62	9,294.75	9,295.00	86		Private	UV-3a		
2	N.A	N.A	81	67	2,711.37	759.18	1,952.19	1,953.00	81/ii		Un-Known	SP-1	From Land of Thram No-150	
3	N.A	N.A	81/A	90	3,642.14	1,019.80	2,622.34	2,633.00		81/A-i 81/A-ii	1,630.00 993.00	Private Private	UV-3a UV-3a	From Land of Thram No-150 Splitted into two plots
4	Tshering Dolma	173	85	270	10,926.43	3,059.40	7,867.03	8331	85		Private	UV-3a	Remaining Part Land Pooling Area Deducted from Plot.No-240	
			238	163	6,596.32	1,846.97	4,749.35	4750	238		Private	UV-3a		
			239	45	1,821.07	509.90	1,311.17	1311	-		Private	UV-3a	Consolidated with Plot No-240	
			240	477	19,303.36	5,404.94	13,898.42	13435	240		Private	UV-3a		
5	Bishnu Bhakta Dahal	195	240/A	41	1,659.20	464.58	1,194.62		-		Un-Known	E-1	Khar land in Ecofragile zone hence non urbanisable	
6	Prabakhar Dhimal	196	79	123	4,977.59	1,393.73	3,583.87	3,584.00	79		Dzongkhag	UV-3a		
		196	79/C	137	5,544.15	1,552.36	3,991.79	3,992.00	79/C		BDFC	UV-3a	Mortgaged to BDFC	
7	Kaushila Mongarne	198	143	69	2,792.31	781.85	2,010.46	2,011.00	-				Consolidated with Plot No-145	
		198	144	769	31,120.08	8,713.62	22,406.46	22,407.00		144/i 144/ii 144/iii	5,444.00 5,370.00 14,430.00	Private Private Private	UV-3b UV-3b UV-3a	
			198	145	153	6,191.64	1,733.66	4,457.98	4,458.00	145	3,984.00	Private	UV-3b	Splittered into three plots
			198	236	12	485.62	135.97	349.65	350.00	236	-	Private		Consolidated with Plot No-144/iii
8	Sangay Phuntsho	205	142	22	890.30	249.28	641.02	641.00	142		Private	UV-3a	Two Plots Consolidated in to one plot	
		205	149	85	3,439.80	963.14	2,476.66	2,477.00	149		Private	UV-3a		
9	Rup Narayan Koirala	206	248/A	107	4,330.10	1,212.43	3,117.67	3,118.00	248/A		Private	UV-3a	Shifted to new location	
10	Raghu Bir Pithakotey	209	240/B	61	2,468.56	691.20	1,777.37	1,778.00	240/B		Private	UV-3b	Shifted to new location	
11	Ratna Bdr. Pokwal	222	150	214	8,660.21	2,424.86	6,235.35	6,236.00		150/i 150/ii	1,113.00 5,123.00	Private Private	UV-3a UV-3a	Splittered into two plots Part of land below boundary line not included in land pooling
12	Lal Bdr. Darjee	232	84/A	157	6,353.52	1,778.98	4,574.53	4,575.00	84/A			UV-3a		
13	Dawa Namdrue Sherpa	246	353	77	3,116.06	872.50	2,243.56	2,244.00	-		Un-Known	E-1	Sokzhing land in Ecofragile zone hence non urbanisable	
14	Lal Bdr. Basnet	255	82/A	100	4,046.83	1,133.11	2,913.71	2,914.00	82/A		Private	UV-3a	Splittered into two plots	
15	Til Bdr. Tamang	264	139	165	6,677.26	1,869.63	4,807.63	4,808.00	139		Private	UV-3a		
16	Mon Maya Tamang	275	140	55	2,225.75	623.21	1,602.54	1,603.00	140		Private	UV-3a		



No	Owner's Name	Thram No.	Current Plot No.	Registered Area		28% Land Pooling Area (Sq.M)	Ownership Area after Land Pooling (Sq.M)	Final Allotted Area (Sq.M)	New Plot No.	Sub-Divided Plot Areas (Sq.M)	Land Ownership	Precinct Usage	Remarks
				Decimal	Sq.M								
17	Hemlal Chamlagai	326	151/C	75	3,035.12	849.83	2,185.29	2,186.00	151/C		Private	UV-3a	
18	Purna Prasad Basnet	330	79/A	53	2,144.82	600.55	1,544.27	1,545.00	79/A		Private	UV-3a	
19	Mon Maya Chhetrini	334	79/B	20	809.37	226.62	582.74	583.00	79/B		Private	UV-3a	Shifted to new location
20	Ran Bdr. Basnet	346	80	408	16,511.05	4,623.09	11,887.95	11,888.00					Splitted into two plots
									80/i	14,073.00	Private	UV-3a	Remaining Part Land Pooling Area Deducted from Plot.No-240
									80/ii	396.00	Private	UV-3a	
		346	138	349	14,123.42	3,954.56	10,168.86	10,169.00					Splitted into three plots
									138/i	2,413.00	Private	UV-3a	
									138/ii	2,662.00	Private	UV-3a	
									138/iii	2,513.00	Private	UV-3a	
21	Bal Bdr. Subba	349	83/B	50	2,023.41	566.56	1,456.86	1,457.00	83/B		Private	UV-3a	
		349	83/A	75	3,035.12	849.83	2,185.29	2,186.00	83/A		Private	UV-3a	
		349	N.A	63	2,549.50	713.86	1,835.64	1,836.00					Splitted into two plots
									N.A-i	870.00	Private	UV-3a	
									N.A-ii	965.00	Private	UV-3a	
24	Padam Lal. Kalikotey	355	83/D	79	3,196.99	895.16	2,301.83	2,302.00	83/D	2,300.00	Private	UV-3b	
		355	83/C	40	1,618.73	453.24	1,165.49	1,166.00	83/C	1,165.00	Private	UV-3a	
		355	83	70	2,832.78	793.18	2,039.60	2,040.00	83				Splitted into two plots
									83/i	1,335.00	Private	UV-3a	
									83/ii	705.00	Private	UV-3a	
		355	82	76	3,075.59	861.16	2,214.42	2,215.00	82		Private	UV-3a	
25	Tshering	535	141	544	22,014.73	6,164.12	15,850.60	15,851.00					Splitted into six plots
									141/i	2,637.00	Private	UV-3b	
									141/ii	2,445.00	Private	UV-3b	
									141/iii	4,403.00	Private	UV-3b	
									141/iv	2,270.00	Private	UV-3b	
									141/v	1,649.00	Private	UV-3a	
									141/vi	2,445.00	Private	UV-3b	



**Table 3.7 b : Plot Re-Configuration Table for Government Owned Plots**

No.	Owner	Thram No.	Current Plot No.	Registered Area Decimal	Registered Area Sq.M	Land Pooling Area (Sq.M)	Final Allotted Area (Sq.M)	New Plot No.	Sub-Divided Plot Areas (Sq.M)	Precinct Usage	Remarks	
1	Veterinary Hospital	329	81/C	640.00	25,899.68	5,934.68	19,965.00	81/C		I-1		
2	Agriculture Colony	400	49/C	500.00	20,234.13	5,664.13	14,570.00		49/C-i 49/C-ii	9,285.00 5,285.00	I-1, SP-2 UV-3a	Plot divided into two parts
3	Irrigation Colony	401	49/B	44.00	1,780.60	500.60	1,280.00	49/B		UV-3a		
4	Hydel colony	402	49/D	100.00	4,046.83	1,131.83	2,915.00	49/D		I-1, SP-2		
5	RBP colony	403	52/C	1,157.00	46,821.77	9,015.77	37,806.00		52/C-i 52/C-ii 52/C-iii	22,598.00 6,904.00 8,304.00	I-1 UV-3a UV-3a	Plot divided into three parts
6	Hydrology	404	52/A	80.00	3,237.46	837.46	2,400.00		52/A-i 52/A-ii 52/A-iii	800.00 550.00 1,050.00	UV-2 UV-2 UV-2	Plot divided into three parts
7	Bazaar Lhangkhang	408	141/A	424.00	17,158.54	0.00	17,158.54		141/A-i 141/A-ii	10,393.54 6,765.00		
8	RSTA	409	141/B	127.00	5,139.47	181.47	4,958.00	81		SP-1	Shifted to a plot along highway	
9	Post Office	410	55/A	51.00	2,063.88	0.00	2,063.88	55/A		I-2		
10	Hospital	411	240/A	958.00	38,768.58	2,332.58	36,436.00	240/A				
11	Bank area	412	240/D	13.00	526.09	0.00	526.09	240/D		I-2	More plot to be acquired for future expansion	
12a.	Bhutan Telecom Corporation	413	55/E	97.00	3,925.42	100.42	3,825.00	55/E		I-2		
b.		413	N.A	14.90	602.98	167.98	435.00			UV-2		
13	Food Corporation of Bhutan	414	240/C	111.00	4,491.98	-	-				To be shifted in the Service Center Precinct SP-2 as per Structure Plan	
14	New Dzong Const. Area	416	55/C	957.00	38,728.12	5,470.12	33,258.00	55/C-i 55/C-ii	18,725.00 14,533.00	I-2	Splittered into 2 plots	
15	Dzongkhag Administration	417	248/B	311.00	12,585.63	4,785.63	7,800.00	248/B		I-2		
17	New Thrimkhang area	423	55/D	441.00	17,846.50	5,396.50	12,450.00		55/D-i 55/D-ii 55/D-iii 55/D-iv 55/D-v 55/D-vi 55/D-vii 55/D-viii 55/D-ix 55/D-x 55/D-xi	2,950.00 2,413.00 2,250.00 700.00 700.00 837.00 550.00 550.00 550.00 500.00 450.00	I-2 I-2 I-2 UV-2 UV-2 UV-2 UV-2 UV-2 UV-2 UV-2 UV-2	Splittered into 11 plots



**Table 3.7 c : Plot Configuration Table for New Plots Plotted from Government Owned Lands located to the West of the Town Core**

<b>Plot No.</b>	<b>Area in (Sq.M)</b>	<b>Precinct Usage</b>	<b>Remarks / Recommendation</b>
NP 1	1,785.00	I-1	Reserved for Government Institutions like BPC
NP 2	530.00	UV-2	
NP 3	700.00	UV-2	
NP 4	700.00	UV-2	
NP 5	700.00	UV-2	
NP 6	650.00	UV-2	
NP 7	600.00	UV-2	
NP 8	421.00	UV-2	
NP 9	700.00	UV-2	
NP 10	700.00	UV-2	
NP 11	700.00	UV-2	
NP 12	700.00	UV-2	
NP 13	932.00	UV-2	
NP 14	650.00	UC-1	
NP 15	650.00	UC-1	
NP 16	1,000.00	UC-1	
NP 17	900.00	UC-1	
NP 18	1,000.00	UC-1	
NP 19	500.00	UV-2	
NP 20	550.00	UV-2	
NP 21	550.00	UV-2	
NP 22	550.00	UV-2	
NP 23	550.00	UV-2	
NP 24	500.00	UV-2	
NP 25	500.00	UV-2	
NP 26	550.00	UV-2	
NP 27	550.00	UV-2	
NP 28	500.00	UV-2	
NP 29	500.00	UV-2	
NP 30	500.00	UV-2	
NP 31	500.00	UV-2	
NP 32	500.00	UV-2	
NP 33	450.00	UV-2	
NP 34	477.00	UV-2	
NP 35	650.00	UV-2	
NP 36	700.00	UV-2	
NP 37	700.00	UV-2	
NP 38	400.00	UV-2	
NP 39	2,500.00	UC-1	Reserved for Cinema Theatre / Auditorium
NP 40	650.00	UV-2	
NP 41	650.00	UV-2	
NP 42	650.00	UV-2	
NP 43	650.00	UV-2	
NP 44	650.00	UV-2	
NP 45	450.00	UV-2	
NP 46	500.00	UV-2	
NP 47	560.00	UV-2	
NP 48	500.00	UV-2	
NP 49	500.00	UV-2	
NP 50	500.00	UV-2	
NP 51	776.00	UV-2	
NP 52	600.00	UV-2	
NP 53	450.00	UV-2	
NP 54	500.00	UV-2	
NP 55	650.00	UV-2	
NP 56	650.00	UV-2	

<b>Plot No.</b>	<b>Area in (Sq.M)</b>	<b>Precinct Usage</b>	<b>Remarks / Recommendation</b>
NP 57	650.00	UV-2	
NP 58	500.00	UV-2	
NP 59	535.00	UV-2	
NP 60	700.00	UV-2	
NP 61	530.00	UV-2	
NP 62	600.00	UV-2	
NP 63	820.00	UV-2	
NP 64	650.00	UV-2	
NP 65	700.00	UV-2	
NP 66	700.00	UV-2	
NP 67	700.00	UV-2	
NP 68	700.00	UV-2	
NP 69	3,776.00	UC-1	Reserved for Haat Sheds and Open market
NP 70	3,500.00	I-2	Reserved for Town Hall
NP 71	1,750.00	I-2	Reserved for GovernmentInstitutions
NP 72	1,650.00	I-2	Reserved for GovernmentInstitutions
NP 73	1,200.00	I-2	Reserved for GovernmentInstitutions
NP 74	1,750.00	I-2	Reserved for GovernmentInstitutions
NP 75	1,740.00	I-2	Reserved for GovernmentInstitutions
NP 76	1,750.00	I-2	Reserved for GovernmentInstitutions
NP 77	1,000.00	UC-1	
NP 78	1,000.00	UC-1	
NP 79	1,000.00	UC-1	
NP 80	1,000.00	UC-1	
NP 81	1,000.00	UC-1	
NP 82	1,000.00	UC-1	
NP 83	1,000.00	UC-1	
NP 84	654.00	UC-1	
NP 85	670.00	UC-1	Ownership Nor Clear
NP 86	700.00	UC-1	
NP 87	700.00	UC-1	
NP 88	700.00	UC-1	
NP 89	700.00	UC-1	
NP 90	600.00	UV-2	
NP 91	600.00	UV-2	
NP 92	550.00	UV-2	
NP 93	550.00	UV-2	
NP 94	550.00	UV-2	
NP 95	578.00	UV-2	
NP 96	500.00	UV-2	
NP 97	500.00	UV-2	
NP 98	600.00	UV-2	
NP 99	700.00	UV-2	
NP 100	650.00	UV-2	
NP 101	550.00	UV-2	
NP 102	500.00	UV-2	
NP 103	500.00	UV-2	
NP 104	500.00	UV-2	
NP 105	550.00	UV-2	
NP 106	600.00	UV-2	
NP 107	500.00	UV-2	



Plot No.		Area in (Sq.M)	Precinct Usage	Remarks / Recommendation
NP	108	550.00	UV-2	
NP	109	550.00	UV-2	
NP	110	550.00	UV-2	
NP	111	550.00	UV-2	
NP	112	450.00	UV-2	
NP	113	550.00	UV-2	
NP	114	450.00	UC-1	Town Library
NP	115	442.00	UC-1	
NP	116	442.00	UC-1	
NP	117	600.00	UC-1	Public Welfare oriented N.G.O's and small scale institutions.
NP	118	500.00	UC-1	
NP	119	2,750.00	I -1	Primary School, with ground to be shared with town people

**Table 3.7 d : Plot Configuration Details for Service Plots**

No.	Plot Name	Area in (Sq.M)	Remarks / Recommendation
1	SP-1	680.00	
2	SP-2	98.00	
3	SP-3	820.00	
4	SP-4	398.00	
5	SP-5	101.00	
6	SP-6	887.00	
7	SP-7	168.00	
8	SP-8	216.00	
9	SP-9	574.00	For Parking
10	SP-10	960.00	For Parking
11	SP-11	97.00	
12	SP-12	529.00	
13	SP-13	125.00	
14	SP-14	136.00	
15	SP-15	269.00	

**Table 3.7 e : Plot Configuration Details for Areas Reserved for Open Space Development**

No.	Plot Name	Minimum Area (Sq.M)	Remarks / Recommendation
1	O-1	7,000.00	Active Recreation area. Ownership of Dzongkhag to be shared by proposed primary school. Not to be enclosed by wall or high fences.
2	O-2	4,000.00	Passive recreation area, landscaping to be proposed to enhance the serenity created by Damphu Lhakhang and Chorten
3	O-3	1,500.00	Cluster level Open space.Place to put prayer flags, etc
4	O-4	14,500.00	Active Recreation area. Landscaping to be proposed to enhance the beauty of the Dzong Precinct
5	O-5	65,000.00	Passive recreation area, activities like botanical gardens, walkways, etc to be encouraged to maintain the ecological balance of the area
6	O-6	30,000.00	Active Recreation area, specially for sports activity.
7	O-7	5,000.00	Part Active Recreation area, like park, garden, etc for town people. If possible this area should be made serene by using Religious elements like prayer flag, chortens, mani walls, etc.
8	O-8	1,500.00	Cluster level Open space.Place to put prayer flags, etc



**Annexure - 2 PRECINCT SCHEDULE**



The 'precinct' plan gives more flexibility than the conventional 'landuse' plan, however it is to be understood that every precinct has a dominant activity and the other activities are supportive to it. So the supportive activities are governed by the main activity, and within a precinct only a limited number of supportive activities are allowed. Thus, if an activity though secondary in nature is not compatible to the main activity they should not be allowed. The proposed precincts have been marked and defined with a scientific temperament and rational logistics with due consideration to the Bhutanese lifestyle, however if need arises in future to change the precinct definition the local authority after consultation with the Town Committee, and the DUDE&S, MOW&HS, can make the necessary modifications.

**Table 5.1 : Precinct Schedule showing Uses Permissible in Designated Precincts**

Sr. No.	Designated Urban Precinct	Uses Sanctioned	Uses Permissible On Appeal To Competent Authority / Special Conditions
1.0	<b>URBAN VILLAGE PRECINCT</b> This Precinct takes into cognizance the residential use and its immediate needs.		
1.1	UV – 1 Village Square	<b>Convenience Shopping / Basic Amenities</b> All uses permitted in UV – 2, UV – 3 and UV - 4 Retail commercial use such as Retail Shops, Restaurants, Hostels, Maternity Homes, Clinics, Convenience Shopping, Professional Offices and Establishments (of less than 15 employees), ATMs, Crèche / Children's Day Care Center, Kindergartens, Primary Schools, Dispensaries, Clinics, Health Centers, Pathological Laboratories, Maternity Homes, Nursing Homes, Local Hospitals, Public Facilities, Public Utilities, Public Transportation Stops, Parks, Gardens, Playgrounds, Apartments, Service Establishments (residential), Light Home Workshops etc., Local Libraries, , Club Houses, Community Halls , Petrol Pumps with or without Service Stations, Kiosks, Taxi Stands, Vegetable Vendors, Display Areas, Neighborhood Pub ( one only ), Outdoor Cafes.	Firewood and Timber Stock Yard, High School, Boarding and Lodging.
1.2	UV – 2 Urban Village Core	<b>High Density, Residential Precinct</b> All uses allowed in UV - 3 and UV - 4 a) All types of residential dwellings including apartments and group housing, professional services, commercial only on ground floors, household economic activity, light home workshops, and cottage industries not involving use of, or installation of, any machinery driven by more than 10 KW power and which do not create noise, vibrations, fumes and dust provided that such home occupations and cottage industries and other non - residential uses shall not be permissible in the tenement dwellings or flats. Play fields, gardens, gymnasium, swimming pool, etc. b) Ubiquitous local level retail shops and services establishments, small restaurant, pre - primary and primary school, dispensary, clinic. c) Public facilities and utilities, club house, local community hall.	All permissible non-residential uses in residential area may be permitted in a residential dwelling only on the ground floor or any other floor with separate means of access/staircase from within the building or outside the building, but not within the prescribed marginal space. Such development shall only be permitted beyond 150 Mts. from the boundary of the building unit of existing school, or heritage place.
1.3	UV – 3 Urban Village Periphery	<b>Medium and Low Density Residential Precinct</b> (Plots with predominant slope less than 20 Degree) All uses allowed in UV - 4 Apartments and group housing with more than 10 units shall not be permitted.	L.P.G., Cylinder delivery center for the domestic consumption only if on a separate plot of at least 1000 sq m with no other use on the premises. All other conditions as listed in UV – 4.



Sr. No.	Designated Urban Precinct	Uses Sanctioned	Uses Permissible On Appeal To Competent Authority / Special Conditions
1.4	<b>UV – 4</b> Urban Village Enclave	<b>Unplanned Settlements Precincts and Bagos</b> Residential, ubiquitous local level retail shops and services, household economic activity and cottage industries not involving use of, or installation of, any machinery driven by more than 1KW power and which do not create noise, vibrations, fumes and dust provided that such home occupations and cottage industries shall not be permissible in the tenement dwellings or flats. Bagos Improvement Schemes, Bagos Redevelopment Schemes, Site and Services Schemes, Construction of Community WC's and Bathing Places.	All permissible non-residential uses in residential area may be permitted in a residential dwelling only on ground floor or any other floor with separate means of access/staircase from within the building or outside the building, but not within the prescribed marginal space.  Bagos may be shifted from UV-1 and UV-2 areas.
<b>2.0</b>	<b>URBAN HUB PRECINCT</b> This Precinct takes into cognizance the commercial, institutional and recreational uses and their immediate needs at town level.		
2.1	<b>UC – 1</b> Urban Hub	<b>Entertainment and Shopping Centers</b> All uses permitted in UV-1 and UV-2 Government and semi government buildings and their activities, Autonomous Bodies and Public Sector Undertaking Buildings and activities, Non Governmental Organization (NGO) buildings. Registered Charitable Trust Buildings and Educational, Medical, Health, Religious and Public Welfare Activities, Tourist units as recommended by the Tourism Corporation, Bars, Cinema Hall, Multiplexes, Shopping Centers, Food Courts, Bowling Alleys, Pool and Billiard Halls, Lodging and Boarding Houses, Hotels, Tourism and Recreation based facilities. Commercial Center, Public Buildings, Auditorium, Petrol Pumps, Transport Terminal for passengers, Nursing Home, Hospitals, Office Buildings, Public Facilities, Public Utilities, Banks, Professional Offices, Parks, Gardens, Playgrounds, Schools, Colleges, Educational Buildings, Training Institutes Research Institutions, Hostels, Boarding Houses, Staff Quarters, Canteens, Sports Complex Gymnasium, Library, Assembly Buildings including Swimming Pool, Club, Stadium, Theatre, Open Space proposed for Party & Marriage Ceremony and Amusement and Recreation Activities, Art Galleries, Exhibition Halls, Discotheques, Bars (in association with eating establishments of forty seats and over).	Small printing press  Residential incidental to and limited to 25 % of predominant institutional use on plot > 4000 sq m.
<b>3.0</b>	<b>INSTITUTIONAL PRECINCT</b> This Precinct takes into cognizance the institutional use and its immediate needs.		
3.1	<b>I - 1</b> Institutional Precinct	<b>Local, National and International Institutions</b> Educational, Training, Cultural and Government Institutions, Public Libraries, Museums, Art galleries, Government Offices, Community Halls, Town Hall, Public Facilities.	Residential and other activities incidental to the main institutional use, provided only 20 % of the site should be used for such activities.
3.2	<b>I - 2</b> Dzong Precinct	<b>Dzong Complex</b> Activities related to and which enhance the image, use and iconography of the Dzong.	All the buildings shall strictly comply with the Urban Design Controls and Traditional Bhutanese Architecture and should get approvals from the competent authorities.
3.3	<b>I - 3</b> Special Institutions Zone	<b>Institutions located at Eco-Fragile areas</b> Educational, Training, Cultural and Government Institutions.	Applicable in special designated areas with slopes more than 30°, can accommodate only low intensity activities and should get approvals from the competent authorities.



Sr. No.	Designated Urban Precinct	Uses Sanctioned	Uses Permissible On Appeal To Competent Authority / Special Conditions
4.0	<b>ENVIRONMENTAL PRECINCT</b> This Precinct takes into cognizance the environmental aspects related to a town at various levels and related concerns.		
4.1	<b>E - 1</b> Environmental Conservation	<b>Natural Reserve and Sanctuaries, the Streams and Rivulets, Natural Storm Water Drainage Systems, Avifauna, Fauna Habitats, unique Flora and Bio - mass preserves.</b> Activities related to environmental enhancement / protection and permitted / undertaken by or on behalf of the National Environment Commission.	To be cleared by the National Environment Commission (NEC) No access road or any service installations to private lots to be permitted through this zone.
4.2	<b>E - 2</b> Forest Environments	All uses permitted in E - 1 Activities related to and permitted / undertaken by or on behalf of the Forest Department.	To be cleared by the Forest Department and the National Environment Commission (NEC) No access road or any service installations to private lots to be permitted through this zone.
4.3	<b>E - 3</b> Agricultural Environments	<b>Agriculture</b> (Plots with predominant slope less than 30 Degree but more than 20 Degree) Only individual bungalows, hospitality sectors with low built areas like eco-resorts, etc All uses permitted in E - 1 and E - 2 Agriculture, Horticulture, poultry keeping (subject to the N.O.C./approval and conditions laid down by the Department of Agriculture), Dairy Development, fisheries, animal rearing and breeding, Open Storage of Drying Manure. Farm House located in land of area not less than 4000 sq. Mts., Camp for recreation of any type Natural Reserves and Sanctuaries, Athletic Track, Archery Range, Zoo, Nursery, Botanical Garden, Wayside Shops, Restaurant, Hospitality Centers.	Tourist information centers / kiosks, museum for the history of the site, region, public conveniences such as toilets, cultural center, parks, gardens. Traditional architectural guidelines to be applicable. More than one farmhouse shall be permitted provided the minimum plot area per farm house is 1000 sq.m. Building to be constructed at a distance of not less than 8 meters from the road, on which it abuts. For other activities for this precinct regulation, ground coverage shall not exceed 5% of the land area. In case of public and semi - public uses and buildings of charitable & religious purposes the competent authority may permit development activities to the extent of 10% of the land area. Education, Hospital for infectious and contagious disease, Mental hospital, Sanatorium. With a ground coverage not exceeding 15% of land area... Only basement, Ground floor, and first floor structure may be permitted, however, the structure for storage of inflammable material and explosive goods shall be single storied only. For poultry farm, maximum 25% ground coverage shall be permitted. No sub - division of land below minimum plot of 4000 Sq.Mts allowed



Sr. No.	Designated Urban Precinct	Uses Sanctioned	Uses Permissible On Appeal To Competent Authority / Special Conditions
4.4	E - 4 Steep Slope Zone	<p><b>Zones with above 30° slope</b>  <b>Development will be permitted in this zone only under the condition that necessary Soil Stabilization and Erosion Prevention Measures for the zone are implemented and certified by competent authorities.</b></p> <p>All uses permitted in E - 1, E - 2 and E - 3</p> <p>Tourist attractions and Facilities, Tourist information centers / kiosks, Horticulture, Orchards, Floriculture, Vegetable Gardens, Botanical Garden, Facilities for Plant Tissue - culture, Mushroom Culture, Green Houses, Herbal based Health Center, Health Clubs and Resorts.</p>	<p>Museum for the history of the site, region, cultural center, parks, gardens. Traditional architectural guidelines to be applicable.</p> <p>More than one farmhouse shall be permitted provided the minimum plot area per farm house is 1000 sq.m.</p> <p>Building to be constructed at a distance of not less than 8 meters from the road, on which it abuts.</p> <p>For all activities for this precinct regulation, ground coverage shall not exceed 5% of the land area, with only basement, Ground floor, and first floor structure may be permitted.</p>
4.5	E - 5 National Importance Open Spaces	<p><b>Precincts of National Importance</b></p> <p>National Sports Complex, Aquarium, Race Track, Shooting Range, Zoo, Nursery, Stadium, Botanical Garden, Planetarium, Amusement Park, Swimming Pool, Exhibition and Fair grounds, Recreational use of water.</p>	To be cleared by the National Environment Commission (NEC). Uses like Drive In Cinema, Restaurants, etc. shall be permitted by special permissions.
4.6	E - 6 Local Green Space System	<p><b>Public Assets</b></p> <p>Parks, Gardens, Playgrounds, Recreation of any type, Club House, Small Stadium, Heritage related Structures.</p>	Cremation and burial grounds.
4.7	E - 7 Endowment for the Future	Precincts of land whose use determination is differed to future generations	
5.0	<p><b>HERITAGE PRECINCT</b></p> <p>This Precinct takes into cognizance the historic, religious and spiritual uses and their immediate needs.</p>		
5.1	H Heritage	<p><b>Cultural and Religious Heritage</b></p> <p>Spiritual and Religious Artifacts and Places, Chortens, Mani Walls, Lhakhangs, Prayer Wheels, Statues, Monasteries and Activities related to Enhancement / Protection / Conservation of the Heritage Structures and/or Precincts and permitted / undertaken by or on behalf of the Department of Culture, Ministry of Home and Cultural Affairs, RGoB.</p>	To be cleared by the Department of Culture, Ministry of Home and Cultural Affairs, RGoB.
6.0	<p><b>SERVICES PRECINCT</b></p> <p>This Precinct takes into cognizance the various aspects related to the Service needs of the town.</p>		
6.1	SP - 1 Transit Hub	<p><b>Precinct characterized by Transit Terminus location</b></p> <p>Multi Mode Transit Terminus, Transit Stops, Visitor Center, Parks, Gardens, Passengers Stay area, Hospitality Hub, Tourist Information Center, ATM, Cafes, Phone Kiosks, Convenience and Souvenir Shops, Clean Toilets and Showers, Luggage Storage, Petrol Pump with Minor Repairs Shop, Transit Hotel, Rest Areas, Taxi Parking, Visitors Parking, Security Post, Check Posts, Pedestrian Cross-overs.</p>	



Sr. No.	Designated Urban Precinct	Uses Sanctioned	Uses Permissible On Appeal To Competent Authority / Special Conditions
6.2	<b>SP - 2</b> Service Centers	<b>Service Centers, Industries and Workshops</b> Wholesale Markets and their Ancillary Uses, Ice Factory and Cold Storage, Ware Houses, Go-downs, Transport Terminal for Goods and Passengers, Restaurants, Lodges, Dormitory, Oil Depot, Steel Stock Yard, Timber Stock Yard, Junk Yard, Saw Mill, LPG Cylinder Storage Depot, Storage of Permissible Goods. Service Industries – to serve residential activities, commercial and industrial establishments, and also the daily needs of the People, Fuel Stations, Pasteurizing and Milk Processing, Printing Press, Binding, Packaging, Sealing, Paper Box Manufacturing, Battery Charging, Bakeries and Confectionaries, Cleaning and Pressing Establishments for Clothes, Small Cold Storage Units, etc. Light industry, Non-polluting Industrial Activity. Incidental residential activity. Banks, Canteens, etc. Amenities for Workers, Electric Sub-Station, Vehicles Service Stations, Under Ground and Over Head Infrastructure Lines required to operate the urban areas	Residential dwelling only for industrial workers and other public utility service staff, working within the industrial premises, querying of gravel, sand, clay and stone. Storage of inflammable goods, Dumping of solid industrial wastes (subject to N.O.C. from authorities such as the National Environment Commission (NEC) / Dept. of Trade and Industry).
7.0	<b>ROYAL PRECINCT</b>		
7.1	R Royal Uses	<b>Zones related to Royal uses</b>	To be cleared by His Majesty.

**Note:**

- Public utility, public facility, services buildings shall include buildings or works developed or undertaken by the Government / Semi-Government or Public Undertaking only, such as sub-stations, and receiving stations of the Electricity Department, buildings for infrastructural facilities like bus service, water supply, drainage, sanitation, domestic garbage disposal, pumping station, electricity, purification plant, police building, post and telegraph and telecommunication, public urinals, milk supply, and public telephone booth, fire brigade station, ward and zonal offices of Competent Authority, taxies, scooter and cycle stand and parking lot, garden, nursery, playground and open spaces, canal, communication network, first aid medical center, primary health center, dispensary, library, reading room and religious buildings / places of public worship.
- Shops, commercial establishments and professional uses (up to fifteen employees) shall be permitted in any precinct by charging license for these value added uses, which are not detrimental to development in the surrounding zone, with specific conditions. This value added license shall be a one-time fee and shall be decided by the Competent Authority from time to time. The Competent Authority shall regularize existing shops and commercial establishments not approved earlier by charging additional fees, as per the above stated provision. The shortfall of parking and other requirements shall not be condoned, but the Competent Authority may consider the case if equivalent facility in any manner is offered by the owner /occupants of the premises. In no case, regularization of built-up area shall be considered by the Competent Authority.
- In the case of the 'Uses permissible on appeal to the Competent Authority it shall be mandatory to apply for and revalidate the permission after five years. The Competent Authority shall revalidate the permission only based on an Environmental Assessment Report submitted by the National Environment Commission (NEC) and accepted by Town Committee after inspection of the site and the activities on the site. If so deemed, the National Environment Commission (NEC) may require further revalidation after a period it deems necessary.
- Where uses are allowed in Environmental Precinct** based on a "Special Appeal," it is incumbent on the Damphu Municipal Corporation to certify to the Town Committee Members after three years, and not later than five years, that the uses in fact conform to the application and the sanction, and conditions of successful Spatial Appeals for uses.
- The Growth Centers, Service Centers and the Basic Nodes have varying nature of scale, complexities involved and related issues. Hence in development proposal for a town the grouping of precincts and its sub-categories could vary as per the hierarchy in which it fits. This would also mean convenience and ease of implementation for the local implementing authorities. This implies that Thimphu as a capital with its multilayered complexities would have a different grouping of precincts, Gelephu as a Growth Center would have another grouping of precincts where as Damphu and Samtse as Service Centers would have different grouping of Precincts. However in all the settlements the underlining philosophy and the objective of the precincts remain the same.

