

# **TAGTSE ACTION AREA PLAN**



Prepared by  
Department of Human Settlement  
Ministry of Works and Human Settlement  
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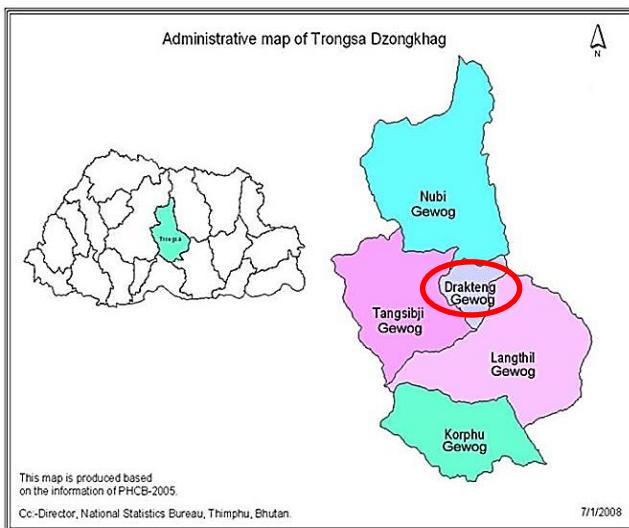
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## 1. Background

### 1.1.Location

Trongsa Dzongkhag lies in the central region of the country and is bordered by the districts of Wangdue Phodrang on the west, Bumthang on the East, Zhemgang on the South East and Sarpang on the south.

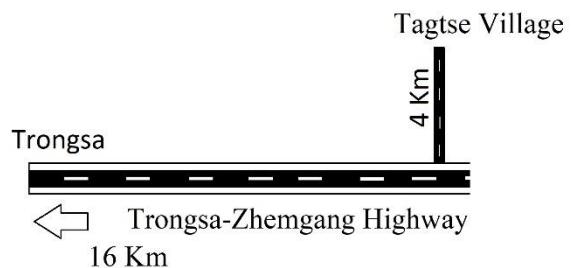
There are five gewogs under Trongsa Dzongkhag namely Nubi Gewog, Tangsibji Gewog, Drakteng Gewog, Langthil Gewog and Korphu Gewog. Tagtse village is located in Drakteng Gewog; it lies 16 km south of Trongsa town on Trongsa-Gelephu Highway. It lies 4 km away from Trongsa – Zhemgang highway.



**Figure 1: Administrative Map of Trongsa Dzongkhag**



**Figure 2: Road Map**



**Figure 3: Accessibility diagram**

## 1.2.Chronology of Activities

The activities carried out for the preparation of the Tagtse Plan are as given in the Figure 4 below.

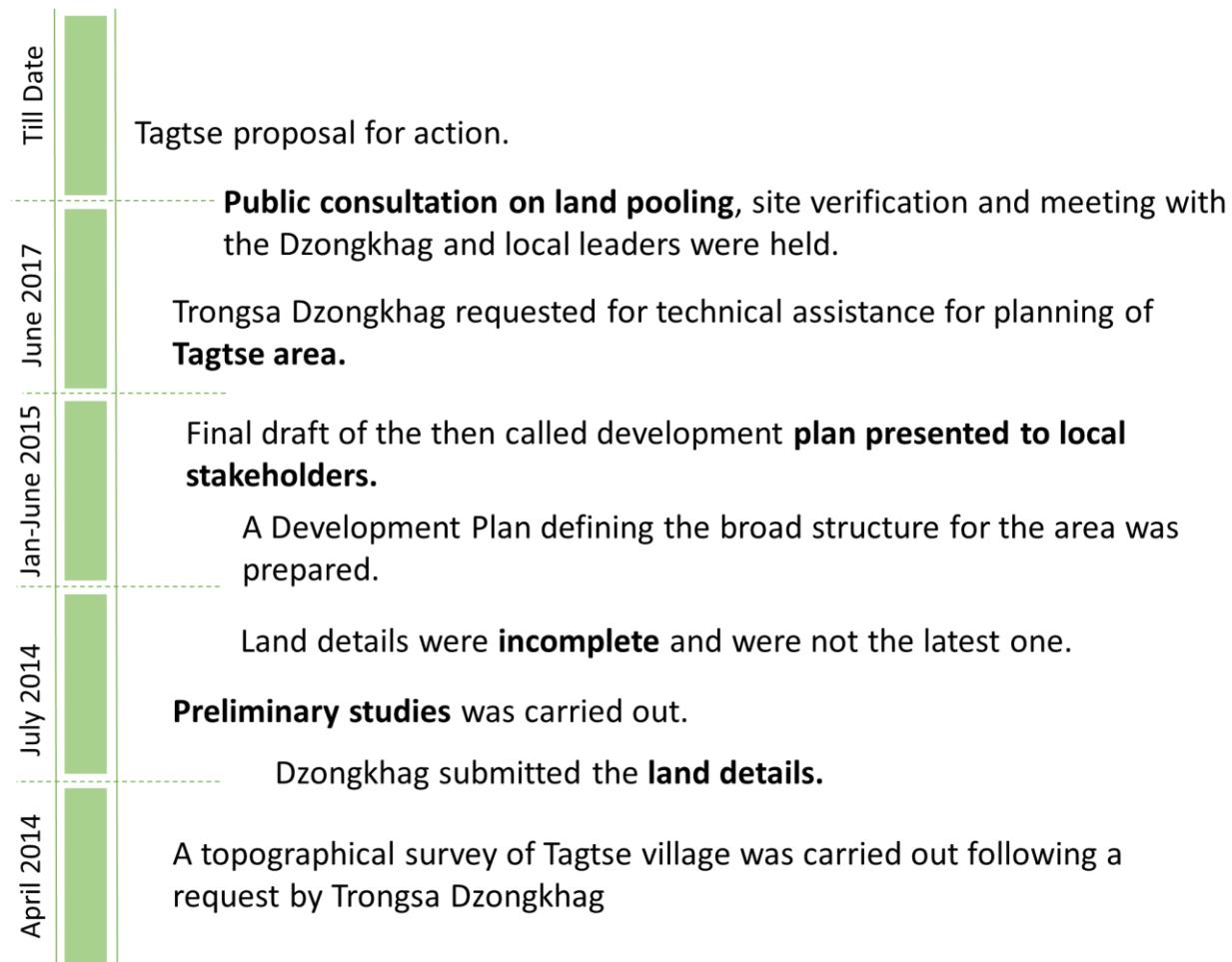


Figure 4: Chronology of activities

### April 2014

Trongsa Dzongkhag requested the Ministry of Works and Human Settlement for assistance with the preparation of a development plan for Tagtse village due to the effects of the new Institute of Language and Cultural Studies (ILCS) on the village. Following the request, a topographical survey of Tagtse village was carried out.

### **July 2014**

Preliminary studies were carried out for Tagtse village on the basis of the land details provided by the Dzongkhag but it was found that the land details were incomplete for carrying out planning. Thus a plan titled Tagtse Development Plan which defined the broad land uses and the road layout was prepared considering the limitations stated above.

### **January- June 2015**

The final draft of the then called development plan was presented to the Department of Human Settlement and then to the local stakeholders and the endorsed development plan of Tagtse was forwarded to the Dzongkhag.

### **June 2017**

Trongsa Dzongkhag requested for technical assistance in carrying out plotting as the development plan comprised of only land use designation and road layout. Without the detailed plotting the Local Government could not implement the plan. The DHS agreed to revisit Tagtse plan under conditions such that the Local Government would provide comprehensive land details and also that it would create awareness regarding the application of land pooling scheme amongst the people of Tagtse village. As per the request a public consultation on land pooling was conducted followed by site verification and meeting with the Dzongkhag and local leaders.

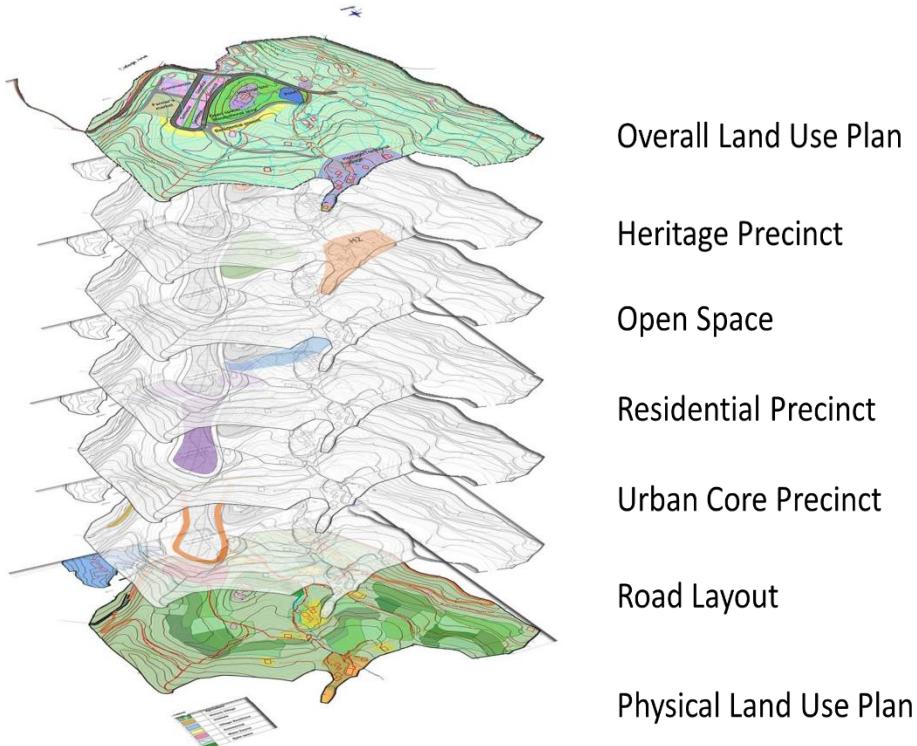
## **2. Request for Tagtse Development Plan**

In 2014 Trongsa Dzongkhag requested MoWHS to assist in the preparation of a development plan for Tagtse village. The key issues highlighted in the request were:

- Effects on the village by the Institute of Language and Cultural Studies (ILCS).
- Demand for housing and other commercial services associated with the college.

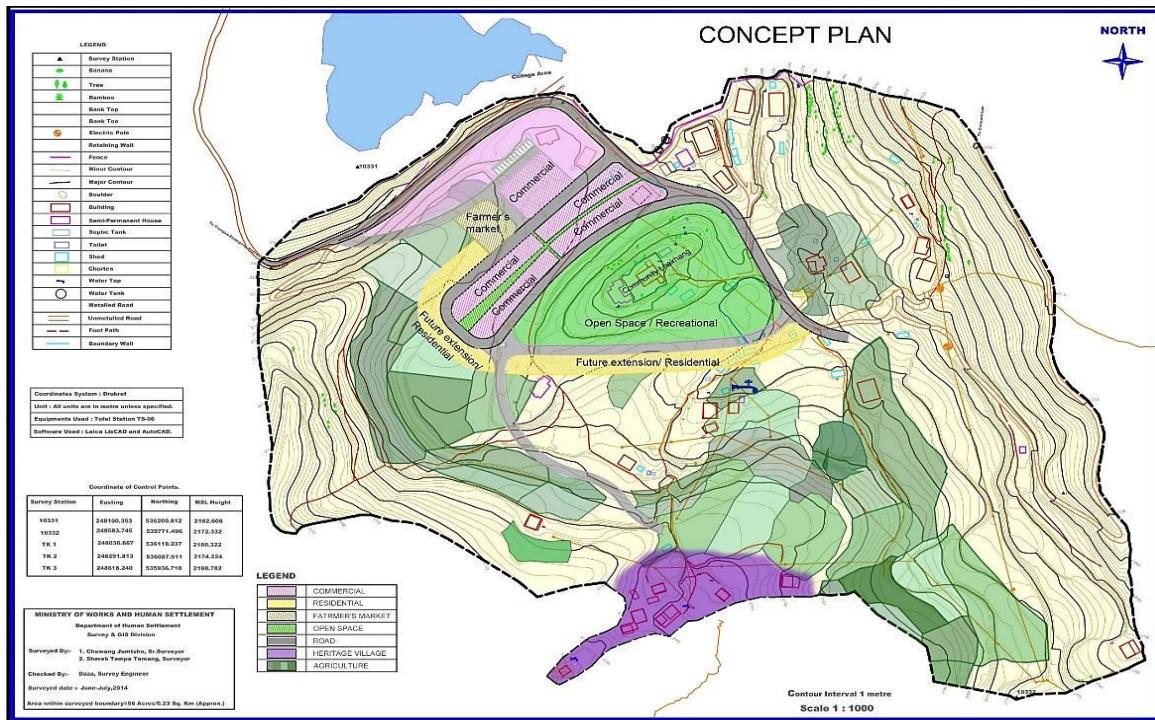
The plan was prepared with a title: Tagtse Development Plan. The main issues encountered during the preparation of the development plan were:

- Lack of land details and
- Lack of geotechnical information.



**Figure 5: An over view of Tagtse Development Plan**

The Figure 6 shows the land use plan prepared for the area under the then Tagtse Development Plan.



**Figure 6: Land Use for Tagtse Development Plan**

Besides the request from the Local Government, the plan has been revisited for the following reasons:

- No detailed plotting carried out for Tagtse development plan due to **land detail issues** and lack of **geo-technical information**.
- Development pressure from Tagtse village land owners.

### **3. Existing Scenario**

#### **3.1.Demography**

Trongsa Dzongkhag has total residents of 15,240 and the demographic statistics of Drakteng gewog are as given in the table below.

**Table 1: Population statistics of Drakteng Gewog**

Population ( civil registration/De-jure)	Value
Residents	3187
Non-residents	425
Workers	1657 (approx.)
Total population	5300(approx.)

Tagtse village has a population of 673 and they are distributed in approximately 50 (new and old) households in the main village, and 20 households in lower Tagtse.

As seen from the Table below, the population within the planning boundary has been recorded as 189, out of which 47% of the population are male.

**Table 2: Population Statistics of Tagtse village**

Population of Tagtse Village	673
Population within planning boundary	189
Male population	89
Female population	100
No. of Households	50

There are approximately 500 students who attend and/or board at Tagtse Higher Secondary School and 1231 students and 118 teaching and non-teaching staff associated with the Institute of Language and

Cultural Studies (ILCS) located adjacent to Taktse village. The number of students and staff is anticipated to increase to 1770 students and 250 staff (plus their families) by 2020.

**Table 3: Statistics of Tagtse College**

Faculty	62
Student	1231
Supporting staff	56
Total	1349

### 3.2. Site Orientation

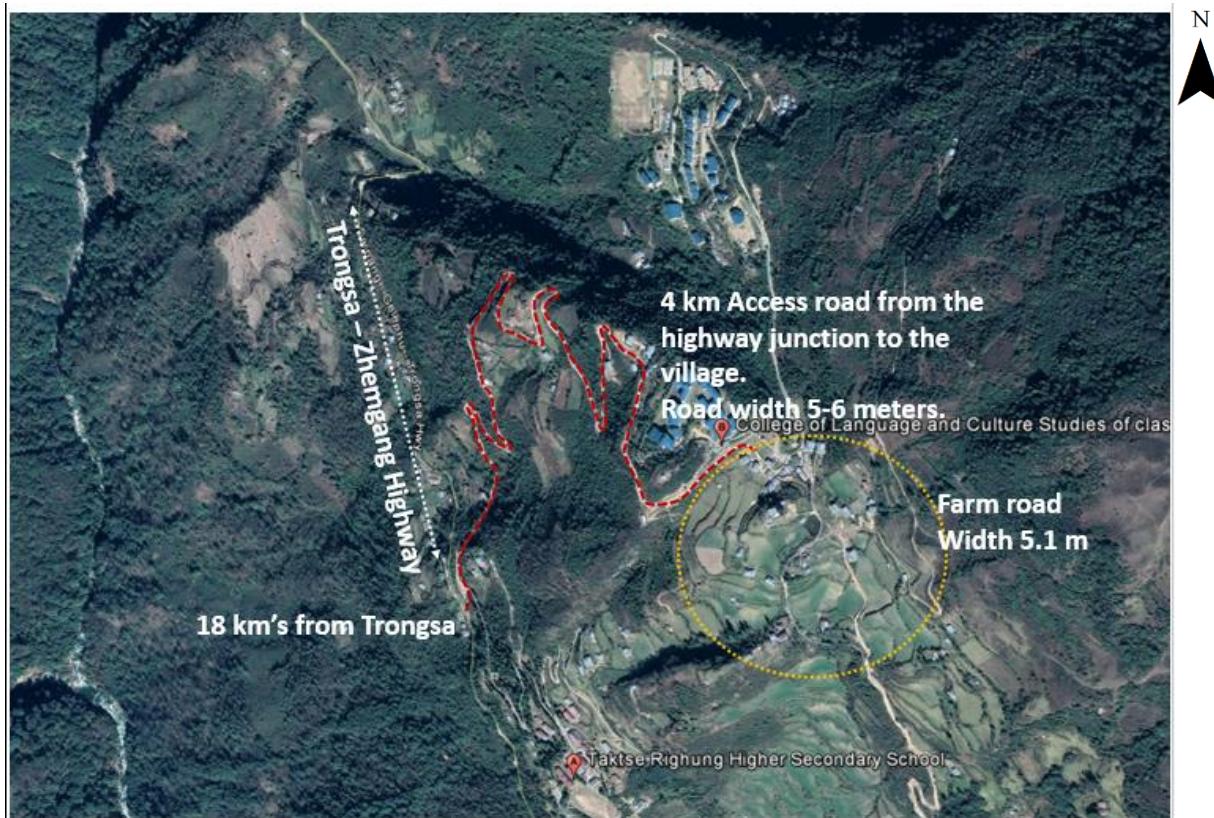
Tagtse village is located on the slope of the eastern side of the Mangdechhu valley. The planning boundary is 56.158 Acres and is located between Institute of Language and Cultural Studies (ILCS) in the north and Yuesa village in the south.



**Figure 7: Site Orientation**

### 3.3 Connectivity

The Tagtse village is connected to the Trongsa-Zhemgang Highway by a 4 km farm road with a width of 5-6 meters. The road is narrow and does not have good drainage particularly at the entrance to the village (adjacent to the ILCS).



**Figure 8: Connectivity**

The connectivity within the village as seen in the Figure 9 and Figure 10 below is served by the same farm road with a decreased width of 5.1 m and a number of walking trails criss-crossing the village. The walking trails connect the houses, farmland, temple, shops, etc. They are also used by students and staff of ILCS to walk between the Institute and their rented accommodation in the village.



Figure 9: a. & b. Footpaths c. Road

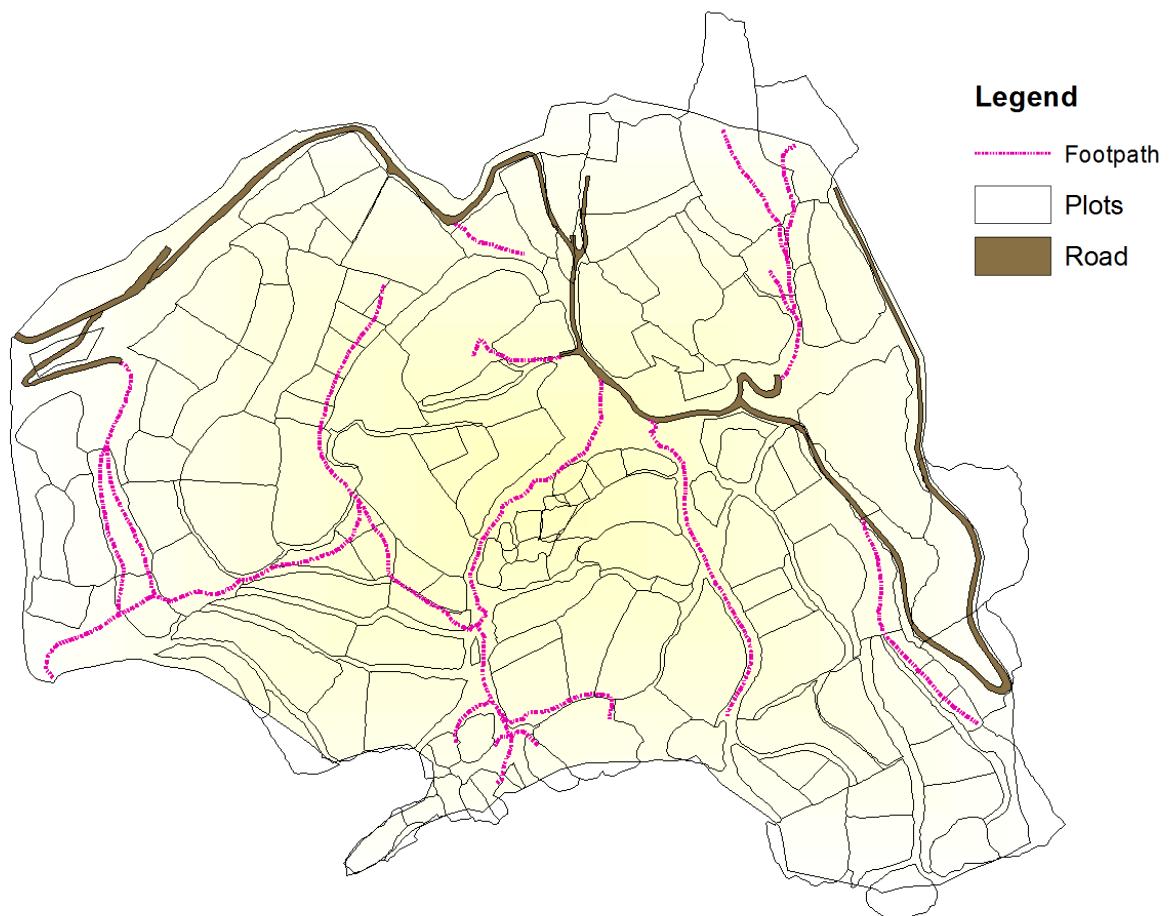
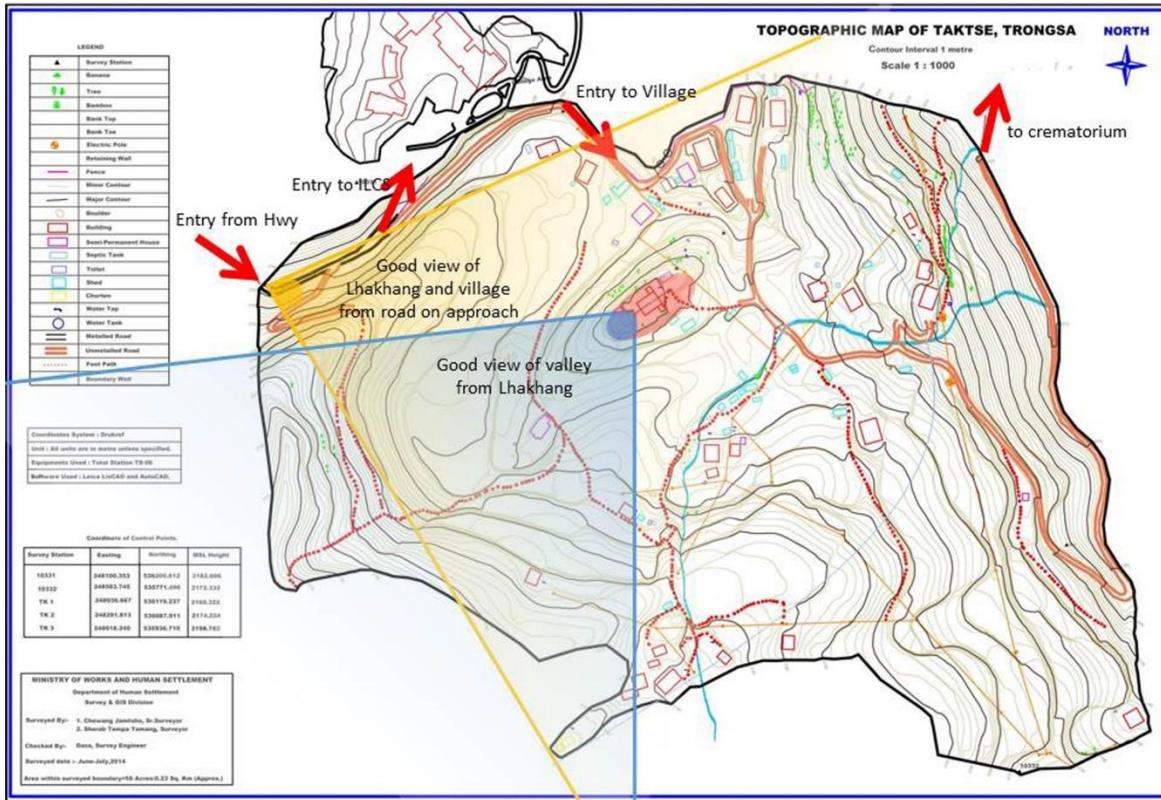


Figure 10: Existing road network

As seen in the Figure 11 below, visual connectivity and the views of the village can be established at two points viz. as soon as one makes the sharp turn just before entering the village from the farm road and the location of the Lhakhang. The first location gives a surprise entry to the village overlooking the Lhakhang. This site is elevated from the village level and therefore can be used as a viewpoint site. The other viewpoint from the Lhakhang is overlooking the opposite village Langthel.

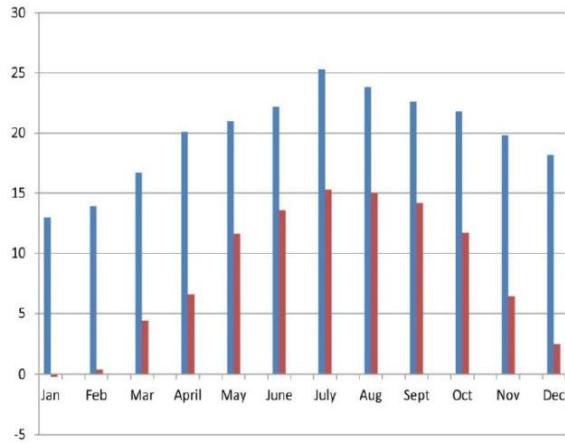


**Figure 11: Connectivity and views**

### 3.4. Environmental Condition

Trongsa is located in the temperate zone and has altitude varying from 1500 to 3500 meters. The area is dominated with evergreen conifer and broadleaf forests.

The soil composition in the area is sandy with variation in cobbles to gravels friction. The soil types predominately found is colluvium and alluvial soil and is not densely compacted and contains a high percent of natural moisture. The land is good arable soil for growing vegetables. The soil is also stable for construction purposes.

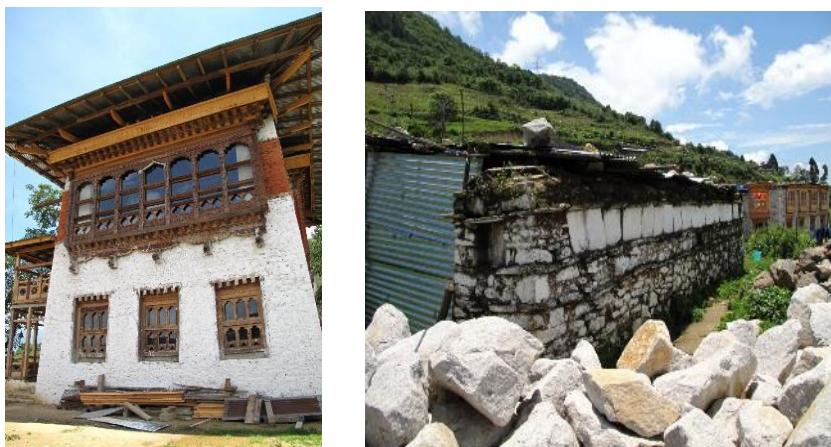
**Figure 12: Temperature graph****Figure 13: Revived pond**

In the centre of the village below the entrance to Khomling Lhakhang the existing low lying area used to be a pond that functioned as a natural sedimentation pond which was dried up but has been revived by the community as proposed in the structure plan.

### 3.5.Culture and heritage

Some of the significant cultural and heritage features of Tagtse village include:

- Tagtse Lhakhang
- A mani wall
- Several chortens/stupas
- Several stands of prayer flags
- A cremation ground

**Figure 14: a. Tagtse Lhakhang b. Mani wall**

Tagtse Lhakhang built approximately around 1671 is the former winter residence of the Lama Dorji Drukpa. Initially it was a single storey building. It was renovated into a two storey temple a century later. It is reported to be older than Trongsa Dzong. It is located in a strategic position on a prominent hill in the centre of the village and is considered sacred. The community ground in front of the Lhakhang (originally

referred to as Nyinkhor Tsamdro) is under the ownership of the Lhakhang. The community wish to retain this ground as a community space for local festivals and social events.



**Figure 15: Traditional village**

In addition to the Lhakang, a traditional village overlooking the Yeusa village is located towards the south of the ILCS and the community crematorium is located few meters outside the Tagtse planning boundary.

### **3.6.Economy**



**Figure 16: Subsistence farming**

Most households practise subsistence farming. The main crops grown are potatoes, rice, maize and wheat. The village has a vegetable growers group, formed to grow chillies and other vegetables for supplying to the schools. However there is issue of human wildlife conflict with farmers reporting up to 50% crop loss (particularly potatoes) due to wild boars, monkeys and deer.

As for other economic activities, most of the ground floor of the houses located close to ILCS was used for commercial activity such as shops and restaurants and for renting out to the ILCS students and staffs.

### **3.7.Infrastructure services**

#### **3.7.1. Education**

The closest primary school is located at Trashidhingkha. It has approximately 150 day students. The Tagtse Higher Secondary School (until grade 12) is located adjacent to the Trongsa-Gelephu Highway

and has approximately 500 students including boarding facilities. The **Tagtse Central School** is located **2km away from the village** and has approximately 500 students. The Institute of Language and Cultural Studies (ILCS) campus is located adjacent to Tagtse village. One of the mandates of the institute is to preserve and promote the country's national language and culture.



**Figure 17: View of ILCS campus**

The faculty was relocated from Semtokha in Thimphu to the new campus in Tagtse in the academic year 2013. The institute offers Diploma, Bachelor degree and Master courses in Bhutanese and Himalayan language, culture and translation. It has plans to expand the program for PhD and include Astrology and Buddhism Studies.

### **3.7.2. Health**

There is no hospital or BHU located within the planning boundary, the nearest hospital is located in Trongsa town which is 16 km away from Tagtse village and the nearest Basic Health Unit (BHU) is located in Kuenga Rabten, 7km away from Tagtse village. The ILCS has provided a space for outreach clinic located at the boundary of village and ILCS College. The Local Government has also approved to provide a BHU grade II for Tagtse community. The tentative site for the new BHU is outside the planning boundary.

### **3.7.3. Telecommunication**

There are mobile and landline telecommunication services with 100% availability of Telecom internet facilities (3G and 4G).

### 3.7.4. Electricity

Tagtse gets its power supply from Trongsa substation. Electricity is used mostly for lighting the houses. Heating and cooking is predominantly done with firewood (Bukari) or gas.

There are no solar hot water or PVC systems or street lighting.

### 3.7.5. Water Supply

The village houses get water from the spring above the village and is not treated. The same water is also used for agriculture.

The village has an irrigation channel but a section of it was washed away a few years ago and it is being repaired. Villagers report that the water supply has become less reliable. The ILCS has a separate water source. There is currently no rainwater harvesting occurring. There are no water meters and no water audit undertaken to date.

### 3.7.6. Road, Footpath and Drainage

The farm road which gives access to the village from the highway continues into the village and a number of footpaths are present but very few hard paved or impervious surfaces are present. There is no stormwater infrastructure. It is stated that the roads and footpaths become muddy in the monsoon season and there is some evidence of erosion. However, there are no reported issues with overland stormwater runoff.

### 3.7.7. Sewer and solid waste



**Figure 18: Sewerage**



**Figure 19: Solid waste**

Waste water (sewage) is collected in individual conventional household septic tanks. Solid waste from the village and the college campus used to be collected by the Dzongkhag garbage truck and taken to the land fill site at Chanjupang, which is located 15 km from the village. The MHPA had agreed to support the

village in terms of collecting waste by providing waste collecting trucks but the frequency of the waste collection fluctuates and the community finds it inefficient.

### **3.8.Uniqueness of the village**

Tagtse village is unique in terms of its landscape. The landscape is formed out of the harmonious combination of agriculture farmland, Lhakhang, the houses and the small traditional village cluster. The gentle slope on which the village lies provides viewpoints which enhance the visual connectivity. When entering the village from the Trongsa-Zhemgang highway the view of the whole village can be seen. Tagtse Lhakhang located on the hill in the centre of the village also adds a culture touch merged with the landscape.



**Figure 20: Tagtse Village**

## 4. Analysis

### 4.1. Land Type and Use Analysis

Land type is determined from its use and size and gives the basic idea on the zoning and precinct formulation which would guide the development.

#### 4.1.1. Land Category as per the details

As shown in the figure and table below, almost 97% of the land is under the category Kamzhing and Khimsa (Residential).

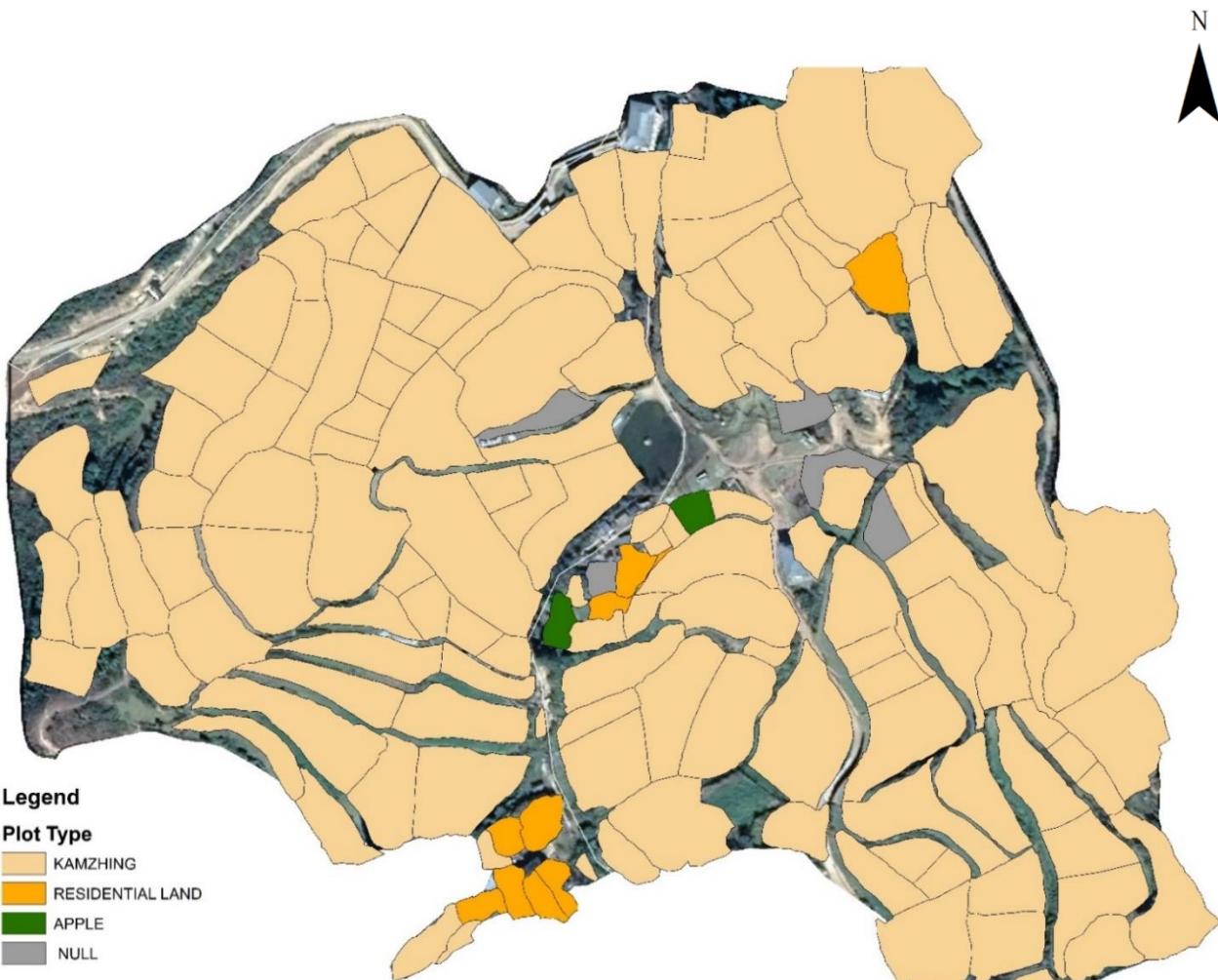


Figure 21: Land Type Analysis

Table 4: Plot type analysis

Plot Type	No. of Plots
Kamzhing	128
Residential (Khimsa)	10
Apple	2
Null	5
Total	145

#### 4.1.2. Existing land use as per Google Image

As seen from the Google image most of the area appears to be under cultivation which is not the case on the ground.



Figure 22: Google image of Tagtse

#### 4.1.3. Existing Land Use

The figure below shows the existing land use of the area based on the land use map prepared through site verification. From the site visit, it was found that not all land is under cultivation and that some plots are left fallow.

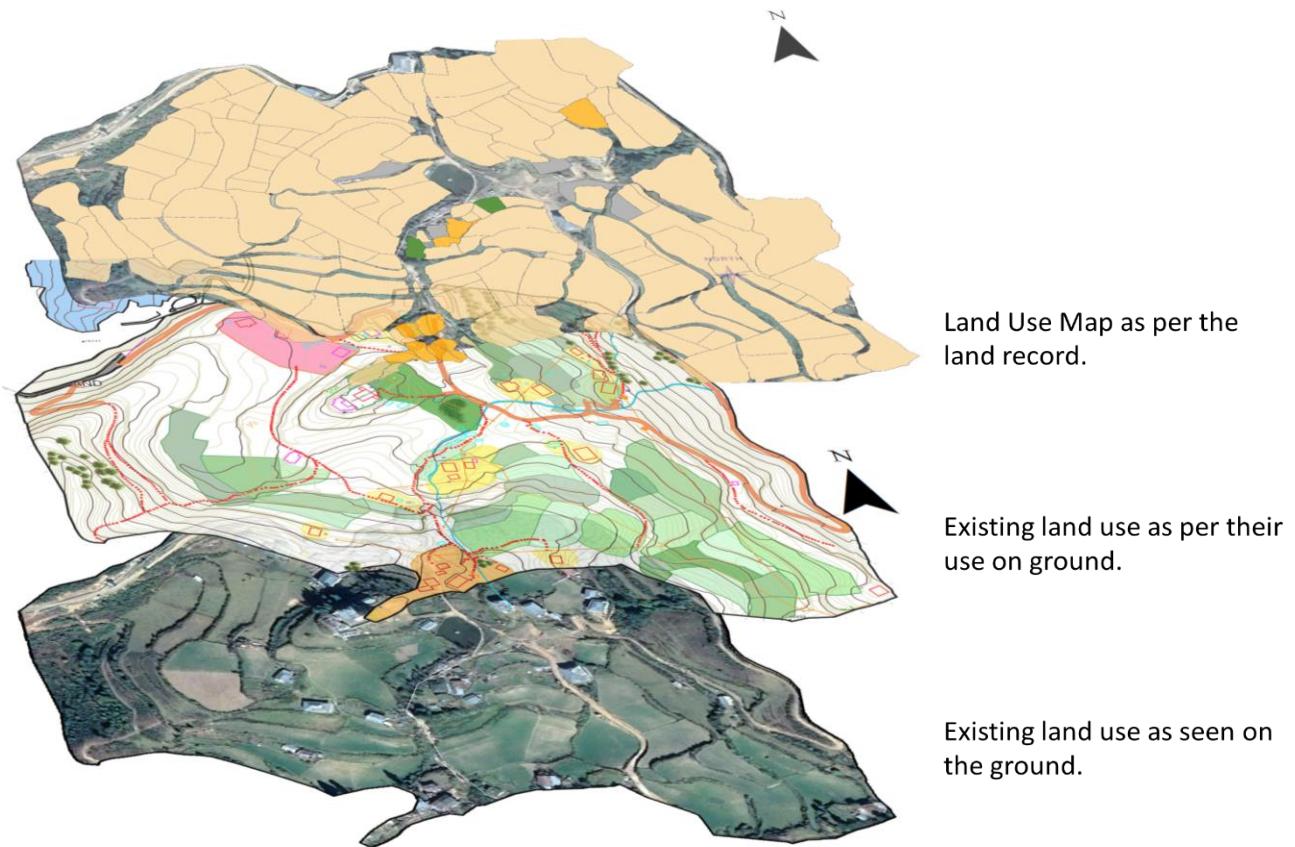


**Figure 23: Existing Land Use**

#### 4.1.4. Land Use Comparison

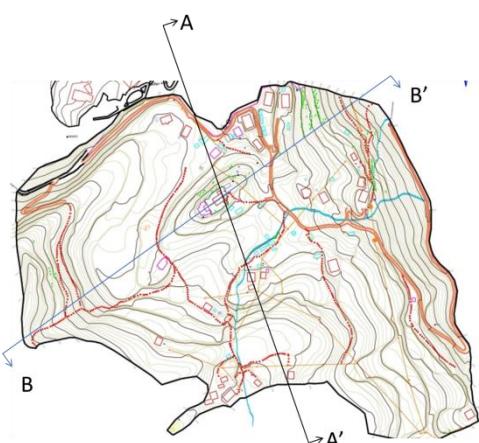
A comparative of the various land use maps were done and the maps considered for the comparative are:

- Existing land use as per google earth
- Existing land use as per site verification
- Existing land use as per land records



**Figure 24: Land Use Comparison**

#### Site Section



**Figure 25: Section AA'**



**Figure 26: Section BB'**

## 4.2. Environmental Conditions Analysis

### 4.2.1. Slope Analysis

Generally the land slopes from northeast to southwest direction. The map given below shows the details of the slope analysis of the area.

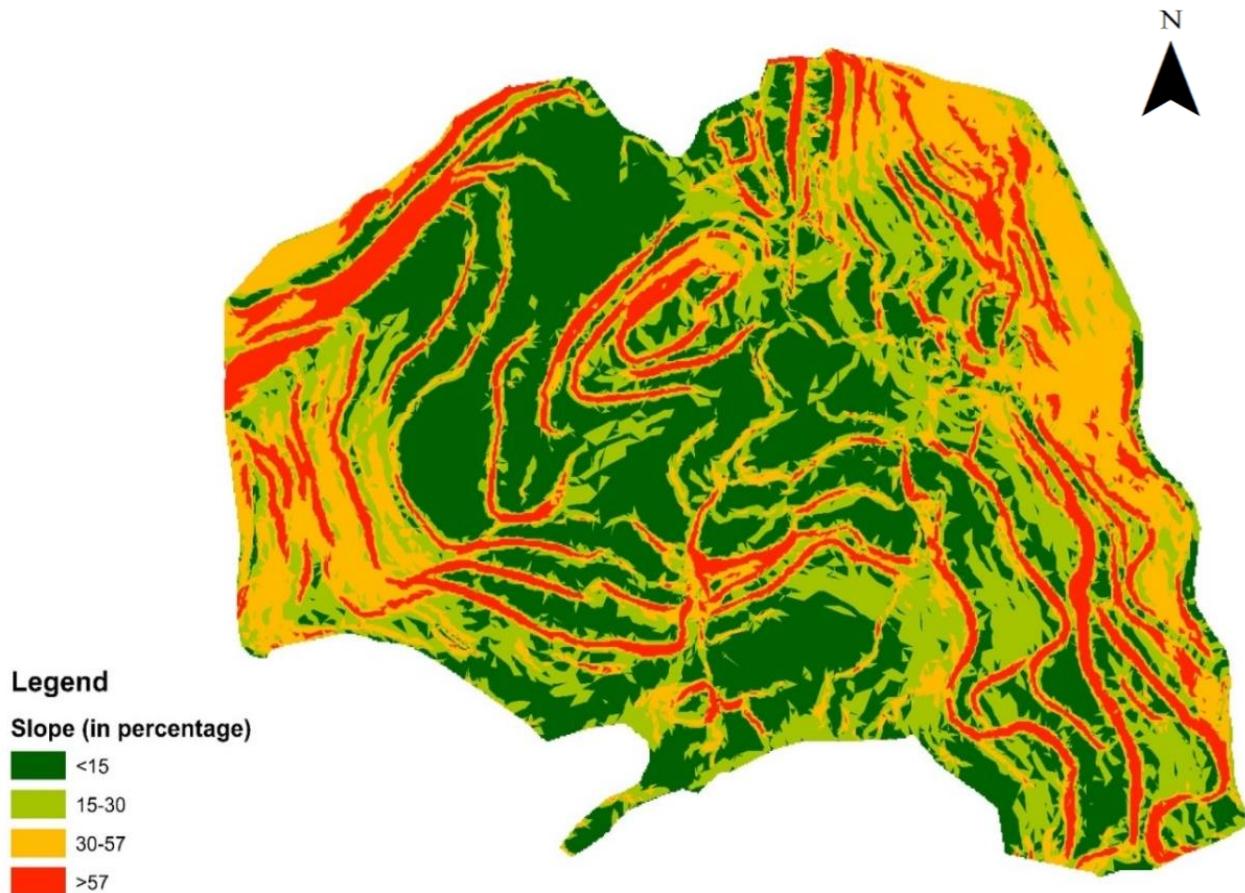


Figure 27: Slope Map of the Area

In the area, the slope has been classified into four categories as can be seen in the table below. About 36.28% of the area is flat land (0-15%); 25.88% consists of slope between 15-30%; about 23.69% falls in the category of 30-57% and 14.15% falls under above 57%. From the slope analysis, except for 14.15% of the total area, rest of the area is suitable for development.

Table 5: Slope Distribution in the area

Category in %	Area in acres	Area in %
<15	20.374	36.280
15-30	14.535	25.882

30-57	13.305	23.692
>57	7.944	14.146
Total	56.158	100

#### 4.2.2. Aspect Analysis

An aspect map shows the aspect (direction) and degree (steepness) of slope for a terrain (or a continuous surface). Aspect measures the direction of steepest slope for a location on the surface and is usually measured in degrees.

The importance of a slope aspect depends, partly, on the proposed uses of the site. At higher northern latitudes such as Bhutan, south-facing slopes are better suited for siting buildings that will result in more solar heating.

In Tagtse, maximum area is facing southwest and west. These slopes receive more sunlight and are warmer and considered well suited for agriculture and often settlement are found here due to better aspect. Therefore, proposed area is suitable for development in terms of slope aspect.

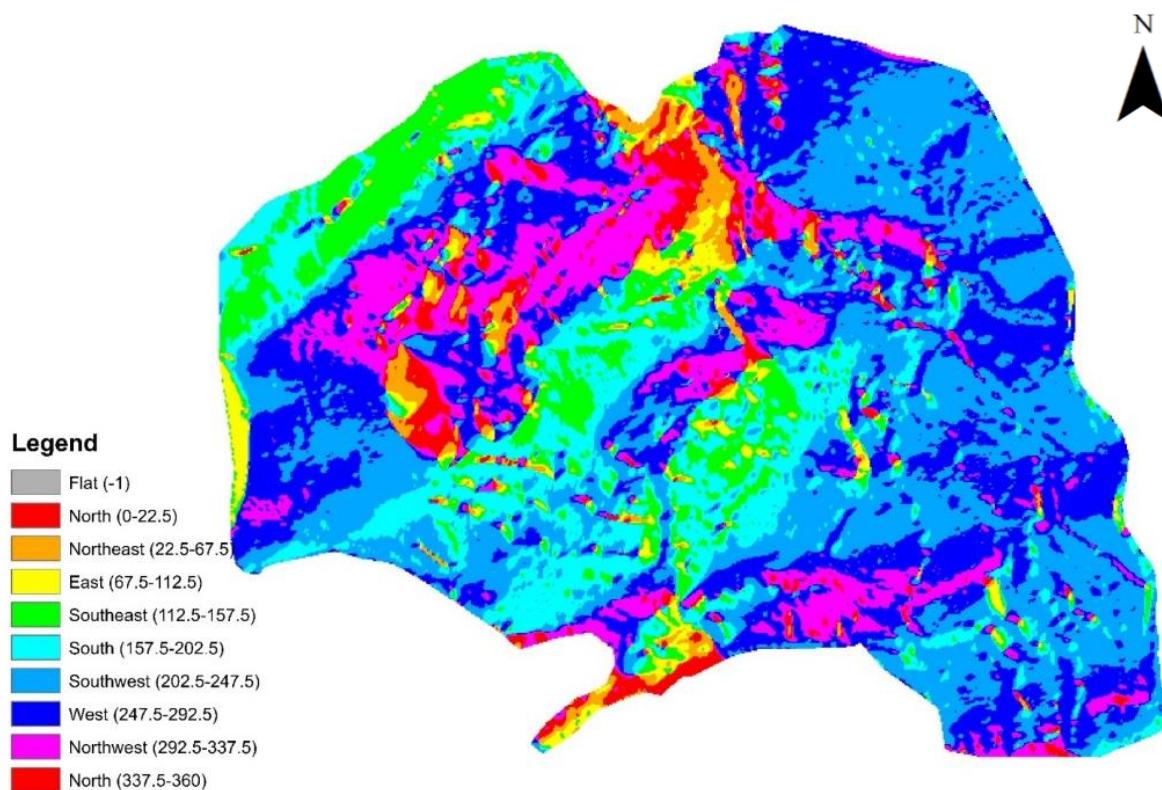


Figure 28: Environmental Conditions: Aspect

#### 4.2.3. Engineering Geology

The map below shows the minimum and maximum elevation of the project area. The minimum elevation of the project area can be found along the road alignment at 2,115 m. The maximum elevation of the project area is found at an uphill site at 2216 m. Depressed area is located in the central part, rear side of community Lhakhang and downhill in southwest of the area.

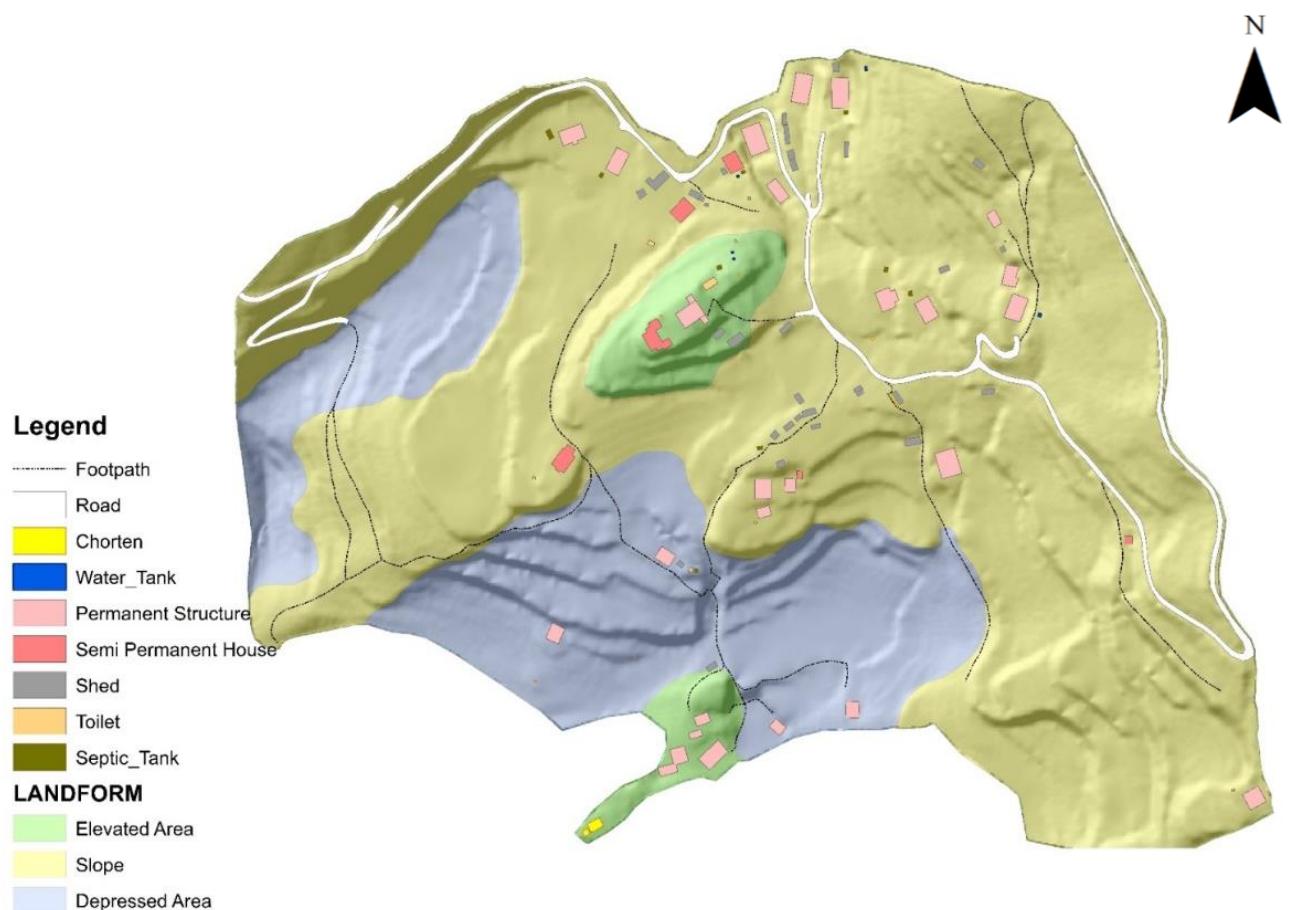
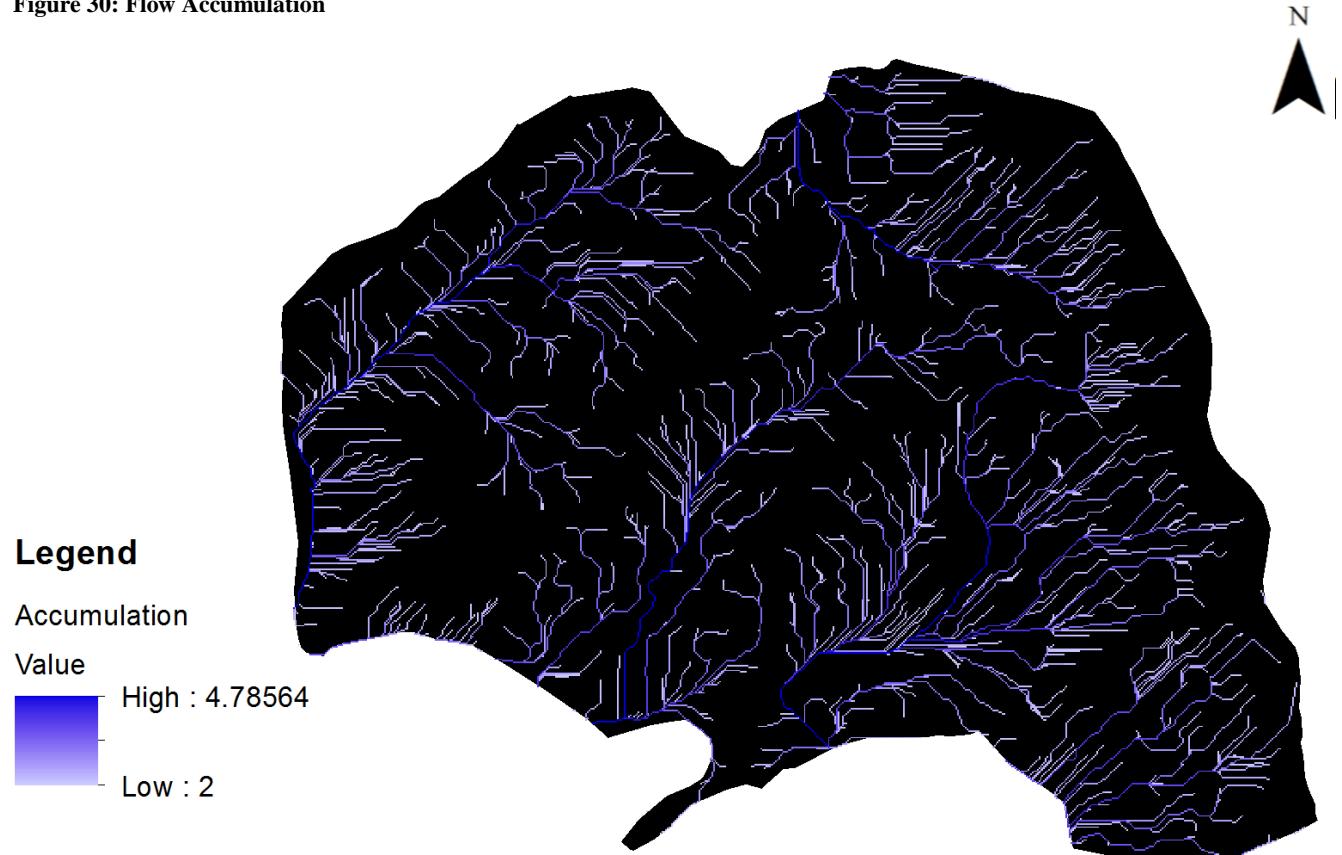


Figure 29: Geomorphological map of the area

#### 4.2.4. Flow Accumulation

Flow direction calculates the direction water will flow using slope data of the area and helps model how surface runoff contributes to flooding. The flow direction map is similar to slope aspect map. The output from the slope direction is used to analyze and generate the flow accumulation of the area. Flow accumulation means the summation of all the flow entering into the particular place. High flow accumulation means areas of concentrated flow.

**Figure 30: Flow Accumulation**



### **4.3.Hazard Zonation**

Hazard map is prepared based on the geological, engineering geological, slope and landuse maps. Factors for Hazard analysis are slope failures in soils and rocks which are calculated using parameters such as:

#### **1. Structural component**

- The geometrical relationship between the rock structures with the natural hill slope.
- It is rated on basis of potentially unstable discontinuity planes and wedges. The rating varies from 0 (no influence by structural component) to 40 (highest influence).

#### **2. Rock mass strength**

- It includes the aperture, the persistency and spacing of the discontinuities and weathering state of the rock.
- It is rated rock-wise according to the average rock mass strength and varies from 5 (high rock mass strength) to 10 (weak rock mass strength).

#### **3. Hydrology**

- Function of the groundwater and running water and depends on the position of the groundwater table and surface water flow.
- The rating of the hydrological component varies from 5 (for dry and rain induced) to 10 (for both sides of a perennial spring and stream).

#### **4. Sesimotectonics**

- Effects of seismicity and tectonic elements like faults and folds are considered which includes open and radiating fractures of the rock mass.
- Rating varies from 10 (in the corridor of a minor fold axis and fault) to 20 (in the corridor of a major fault and folds axis).

#### **5. Land-use and soil/slope type.**

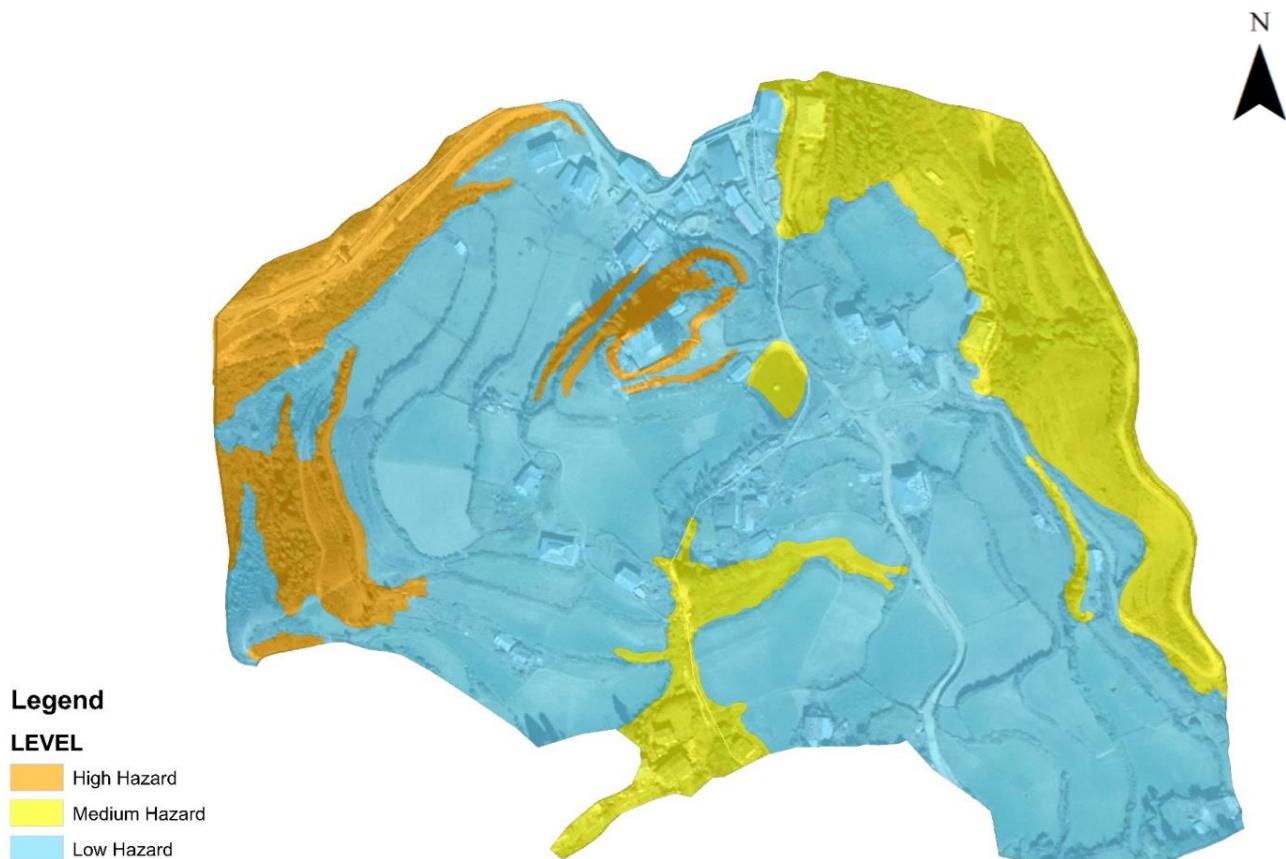
- Little influence on the rock slope hazard.
- Rating of the land use in rock slopes varies from 0(forest) to 8 (bare rock slope).

Based on the above parameters, the hazard zonation for the area was generated. It is found that the 39.47 acres (70%) of the area falls under Low Hazard as shown by blue color in the map below. It is recommended for the preparation of development plan in this low hazard zone as per the geo-technical report. The Medium hazard area is indicated by yellow color code. It consists of 11.03 acres (19%) of the

total area. Here, it is concluded as suitable for development with proper drainage system in place during the development phase. The high hazard (red color) constitutes 5.98 acres (11%) of the total area.

**Table 6: Hazard level distribution of Tagtse**

Hazard Level	Area in acres
Low hazard	39.476
Medium hazard	11.036
High hazard	5.985
Total	56.497



**Figure 31: Hazard Zonation Map**

#### **4.4.Economic Potential**

The economic potential of the village is influenced directly by the presence of ILCS near the village. The economic benefit that the villagers obtain from the ILCS is by running restaurants. The villagers used to supply vegetables to ILCS but the quantity they produced was not sufficient and hence the college discontinued. The college gets their vegetable supply from Trongsa market and other suppliers.

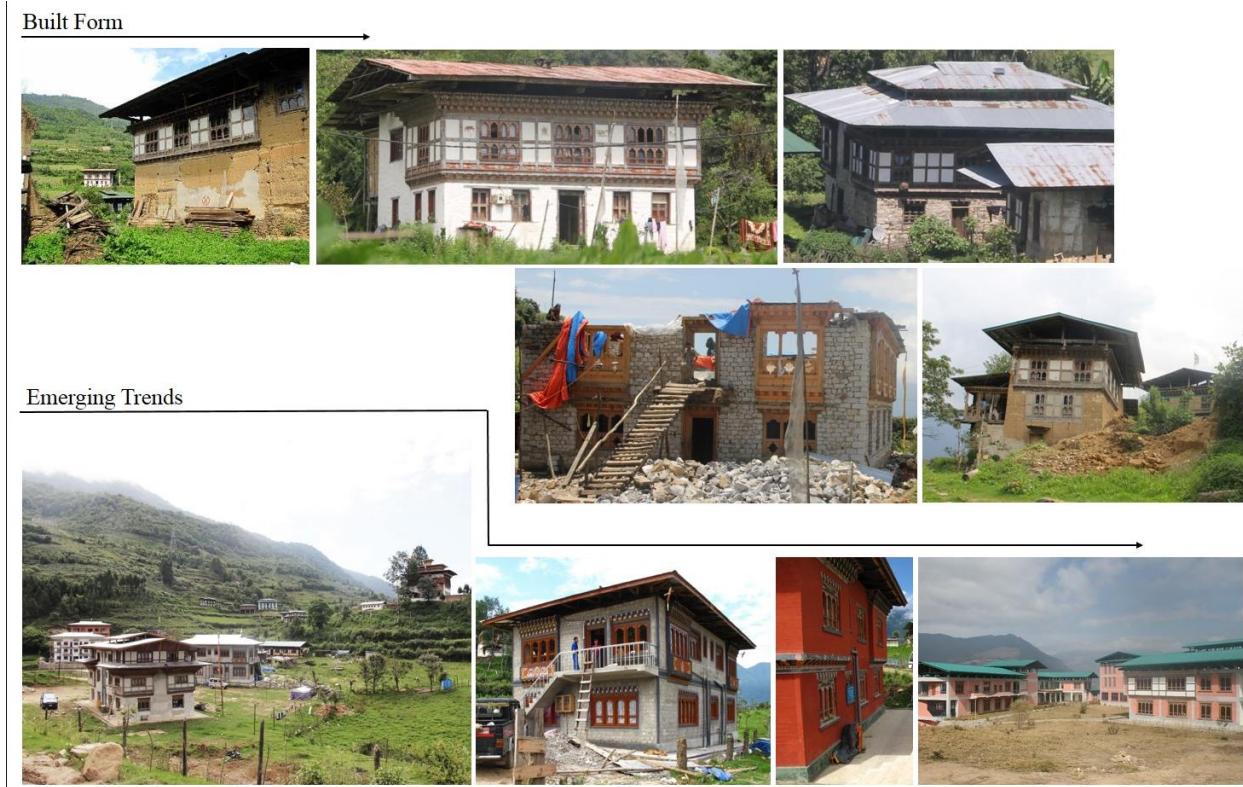
The villagers and house owners have high potential to introduce varieties of restaurants and small enterprises to cater to the students and staff of ILCS. There is a high potential for the villagers to initiate group commercial farming and selling it to the college. There are similar potential in dairy farming, poultry etc. The provision of standard housing units could also be one of the major economic boosters for the villagers.

There are no tourists visiting Tagtse village other than guest lecturers of ILCS. The lush green environmental setting with the historical Khomling Lhakhang in center and the traditional village cluster could be enhanced with better infrastructure and this could act as a potential to attract tourists. The traditional village also has potential to cater and promote home-stay.

#### **4.5.Built Form and Emerging Trends**

The images below shows the various building typologies present in the village. The general building typology in the area are constructed using local materials (mud, stone, wood) and suit their natural setting. The building heights vary from ground floor to 2 storeys (G+1) and the uses range from purely residential to commercial on the ground floor.

With the recent developments contemporary buildings have been constructed in the area. These buildings are constructed using modern construction materials and do not blend with the natural landscape of the village. The building heights goes up til 3 storeys (G+2) and uses such as institutional (ILCS) has also come. If no guidelines are provided in the area, such trends are viable to dominate losing the unique identity of the village.



**Figure 32: Built form and emerging trends**

#### 4.6.Population Projection

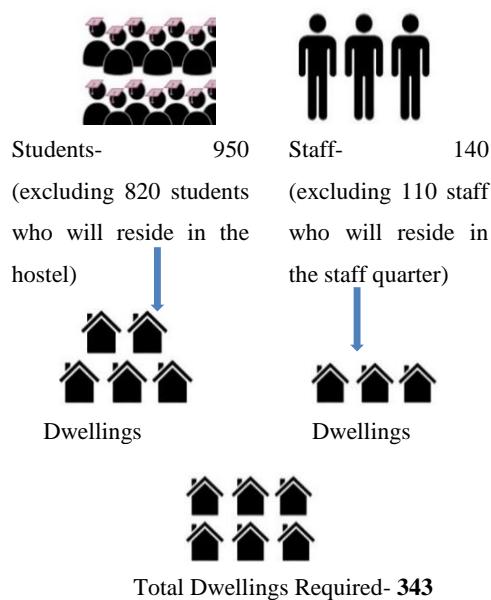
Population is one of the important factors to be considered during preparation of a settlement plan. The current and future population figures are used to determine the nature and level of infrastructure and services that needs to be provided in a settlement. Therefore, a successful implementation and realization of the development goals envisaged in the plan would depend to a large extent on the accuracy of the projections which in turn would depend on the correctness of the assumptions made during estimation of population. In absence of details specific to the village, the population is projected based on the growth rates of the Dzongkhag and the Gewog.

**Table 7: Population Projection for Tagtse, 2028**

Tagtse village population	Growth Rate	Village Population Projected for 2028	ILCS Population	Total Population Projected for 2028
190	1.7%	224	2020	2244

190	3.8%	276	2020	2296
-----	------	-----	------	------

The ILCS population projection for 2020 is 1770 students and 250 staff and it is assumed that when ILCS reaches its maximum potential after 2020, the number of outgoing and incoming students will be approximately equal. Tagtse total population for 2028 is projected to be 2244 as per the annual growth rate of Dzongkhag (1.7%) and **2296** as per the annual growth rate of Gewog (3.8%). Considering that Gewog growth rate will be more accurate, the population projected as per the Gewog growth rate will be taken into account for further analysis.



**Figure 33: Housing need analysis**

The number of dwelling units required for staff is based on an estimation that half the staff will live in share accommodation (2 staff per unit) and the other half will have families and therefore require their own dwelling unit.

### Housing Units Required:

Housing unit analysis is calculated as per the units required for the projected population of the village and capturing the students and staffs from ILCS after deducting its maximum hostel and staff quarter capacity within the college.

## 4.7. Housing Need Analysis

As one of the very basic human needs especially after food and clothing housing has to be an integral component of the analyses to achieve the overall development of any settlement. It is also both the cause and the consequence of many aspects of change in the existing social system.

Due to the presence of the ILCS, it was found that there is an expected need of housing for the students and the staff. The Figure 33 shows the housing need analysis for the staff and students for ILCS for 2028.

The number of dwelling units required for students is based on the assumption that 4 students will be sharing one unit.

Housing units required for villagers in 2028 is 20 units assuming the house hold size is 4.2. The household size of 4.2 is based on the existing population and the number of households in the area. Housing units required for students and staffs of ILCS is 343 units.

**Table 8: Housing units required as per the projected population**

	<b>Students</b>	<b>Staff</b>	<b>Village</b>
<b>Units required</b>	238	105	20

Total units = **263** units

A two storied house would have 4 units in a minimum plot size of 13 decimal. Therefore the number of houses required for 2028 is **86 houses**.

#### **4.8.Carrying Capacity**

Another method to project the population of an area is the carrying capacity calculation and is based on the availability of land for development. It enables us to calculate the ultimate population the land can carry and helps us to guide the development. As shown in the table, the carrying capacity is calculated as **5131** people within the developable area in planning boundary.

**Table 9: Land Carrying capacity**

Proposed Precinct	Total Area (Sq.m)	Coverage	Max. Floor	Residential Floor	Residence Area	Net Dwelling Units	HH size	CC (persons)
					(Sq.m)			
Developable land	134462.076	0.5	2	1.5	100847	1008	4.2	4236
Heritage	8381.039	0.4	2	2	6704.83	67	4.2	282
E-4	36543.110	0.2	2	2	14617.2	146	4.2	614
Total Carrying Capacity							<b>5131</b>	

Developable area includes RCC, RR and Heritage controlled development

Residential Area = Total Area X Coverage X Residential floor

Net Dwelling Unit = Residence area / 100

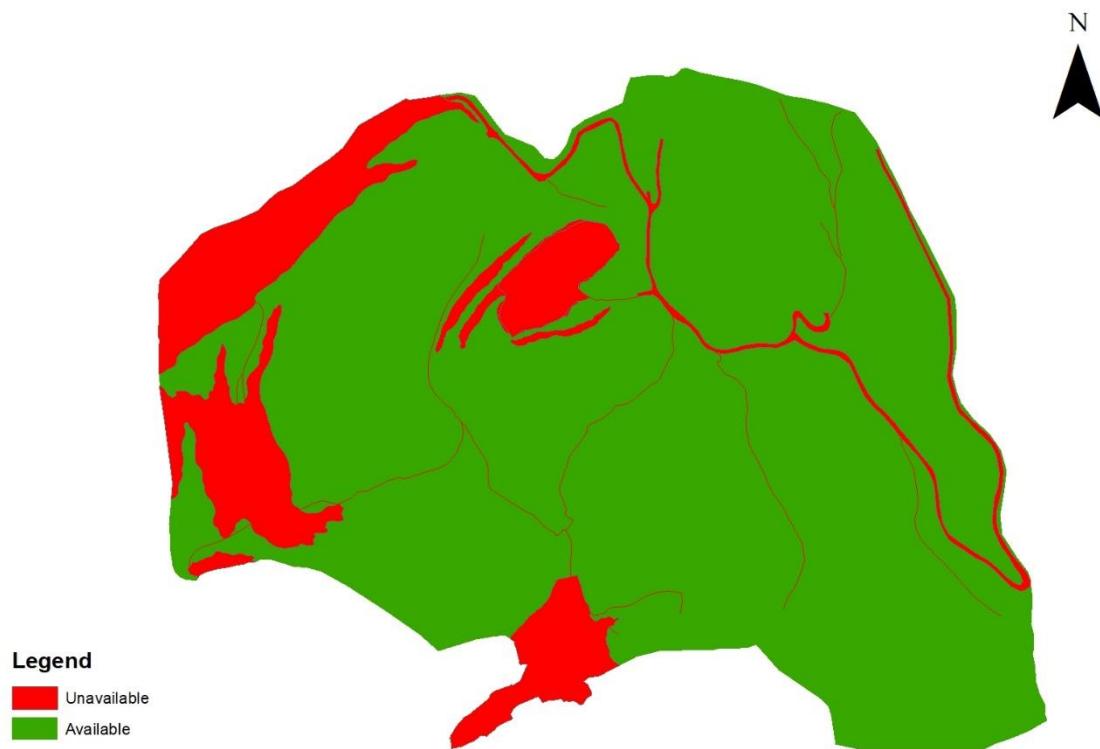
CC (persons) = Net Dwelling unit / HH size

#### **4.9.Land Suitability and Availability Analysis**

After assessing all of the analysis carried out, we came up with this land suitability analysis that basically maps the total area of the Tagtse village, which is suitable for development. Out of the total area of 56.5

acres, 42.57 acres of land is suitable for development. The remaining land, which is unfit for development basically comprises of the steep slopes and the high hazard areas.

Though land maybe suitable for development but certain areas are not available due to the existing infrastructures present such as the existing road and the footpath. The area under the Lhakhang and the heritage village cluster is clubbed as heritage and also not considered for development to maintain the cultural and rural landscape of the area. E1 is equivalent to the high hazard area which is also inclusive of the steep slope areas as explained above. Thus the table and map below shows the areas which were not available for development.



**Figure 34: Land Availability map**

**Table 10: Areas not included for development**

	Total Area (Sq.m)
Heritage	8381.039
E-1	11058.998
Existing Road	4646.265
Foot path	36289.812
<b>Area excluded</b>	<b>60376.114 (15 acres)</b>

15 acres of land is not considered for development. After excluding 15 acres from the total area which is 56.158 acres, **the total land available for development is 41.5 acres.**

#### **4.10. Land Required for Development**

In order to ensure the harmonious growth, there is need to understand the land required for development. Opening all land for development as per land available would disrupt the village visually and functionally. Thus after calculating the ultimate carrying capacity of land and the land suitable and available for development, the land which is required for development is calculated. This implies that though the land can carry 5131 people, with the conditions existing in the area, only certain area is needed to be developed to serve the projected population.

For the projected population of 2296 in year 2028, the housing units required is 363. Assuming there are 3 units per house with the minimum plot size of 445 sqm. (0.11 acre), 115 houses are required where one unit in the ground floor shall be utilized for commercial purpose. So the total land required is **51175 Sq.m. (12.64 acre)** from 41.5 acres of developable land.

#### **4.11. SWOT Analysis**

##### **STRENGTHS**

- Proximity of ILCS provides economic opportunities for the villagers.
- School and health facility such as ORC is available in the proximity.
- There is a wide view of the surrounding settlement from the proposed site.
- The presence of traditional village could influence the form and pattern of future development and attract tourists.
- South aspect fields for agriculture.

##### **WEAKNESSES**

- There is inadequate water supply for irrigation.
- Absence of solid waste disposal site in proximity.
- Agricultural crops are often destroyed by wild animals (Human-wild life conflict).

##### **OPPORTUNITIES**

- There is an opportunity to create a symbiotic relationship between the collage and the village.
- Showcase a development of a modern village: modern infrastructure over village pattern and form.
- Revive the natural and traditional backdrop of Trongsa Dzong: built-form and color.

## THREATS

- With the emerging trend of contemporary and modern style of architecture, new materials and colors, there is a threat of deterioration of authentic village architecture and landscape.
- Since the site constitute of steep slopes, there is a risk of landslides and erosion.

## 5. Proposal

### 5.1.Vision

The vision for Tagtse is;

**“A village with modern space in traditional form”**

### 5.2.Objectives

The objectives for Tagtse Development Plan are:

- To facilitate an organic growth with modern amenities: To facilitate the provision of necessary infrastructure required for efficient rural development in a planned and sustainable manner, particularly addressing housing crunch, roads, water supply, waste water and solid waste management;
- To preserve the historic village and to conserve village pattern, form and landscape.
- To integrate ILCS with village for symbiotic relationship.

### 5.3.Issues

The issues in the preparation of LAP for Tagtse are:

- From the land type analysis, it was found that almost 95% of the plots are Kamzhing and Khimsa. It implies that if proper planning and guidelines are not proposed for then the entire area will be developed and the land may not be able to withstand the pressure.
- Tagtse village is neither a declared throm nor an urban area. This implies that if appropriate planning interventions suitable to Tagtse are not made then the area will lose its rural character and the major activity which is agriculture in the area will also be lost.

### 5.4.Principles

- Integration of ILCS Tagtse with the village and encourage for a symbiotic relationship between the two.
- Conserve agriculture field to facilitate farming.

- Facilitate growth and development within a framework of traditional setting to bring about integration of tradition with modernity.

## 6. Proposals for Action

In most of the settlements plans the precincts are categorized as similar to Thimphu Structure Plan such as Urban Village 1, 2 etc. which captures the urban characteristics and are flexible to apply in other urban areas. However Tagtse is not a declared urban area nor a satellite town. It has the true character of village setting and for this purpose the precinct have been defined which would be applicable for rural areas.

**Proposed Precincts for Tagtse Action Area Plan are as follows;**

- Rural Commercial core
- Rural Residential
- Heritage
- Heritage Control development precinct
- Environmental
- Open Space

### Areas of Protection

- Environmental
- Heritage

#### 6.1. How to bring about Integration

##### 1. through the Action Area Plan

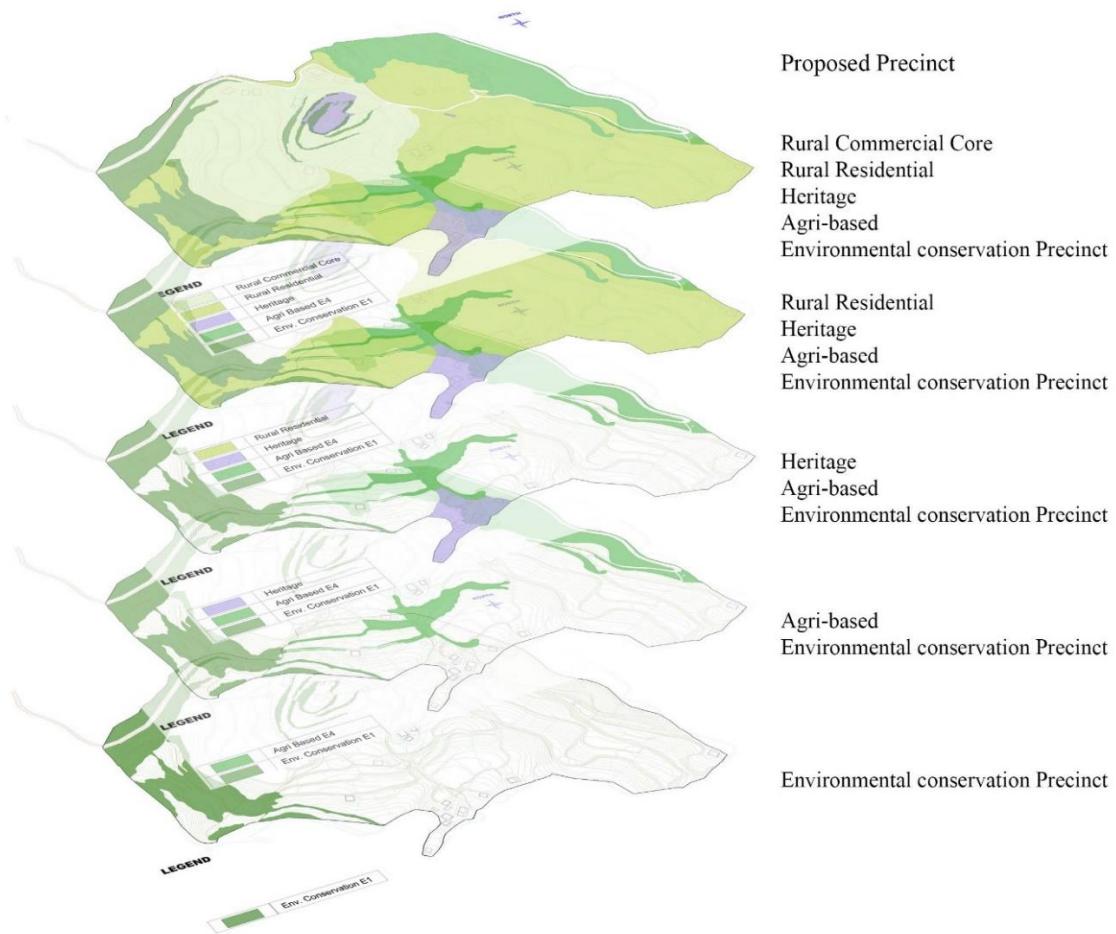
- Village produces vegetables and other farm produce including dairy products for the Institute.
- Village provides housing and small scale commercial services to the Institute.
- Village provides recreational spaces and cultural experiences for the Institute.

##### 2. through mutual engagement

- Institute supports village in farming through by buying vegetables and other farm produce including dairy products from the villagers.
- Institute avail housing needs from the village (for this the Institute may seek policy directives not to construct additional housing facilities)
- Institute using village facilities for their extracurricular activities and to educate the villagers (volunteer to provide non-formal education).

## **6.2.Possible Precincts**

To reflect a cycle of life, there has to be unique spaces or precinct for various activities, moods and behaviours. Some of these activities are not compatible with each other, while others are mutually reinforcing. Thus, it is necessary to define precincts that sanctify these activity clusters into functional areas. The precinct plan of Tagtse gives a clear indication of the organization of the various land uses. The entire area is divided into following precinct categories: Rural Commercial Core, Rural residential, Heritage, Heritage control development, Services and Amenities, Environmental Conservation and Open Spaces. The precincts have been designated after a careful consideration of the existing scenario in terms of terrain and topography, physical infrastructure and scope for future development. One of the main factors considered in determining the land uses for different areas and their development control regulations was the impact on the environment. Therefore, the sanctioned precincts aim to preserve the environment and to promote a sustainable development. While the site is primarily vacant, there are few structures on some plots. Efforts have been made to retain these structures.



**Figure 35: Proposed Precinct**

**Table 11: Proposed precinct**

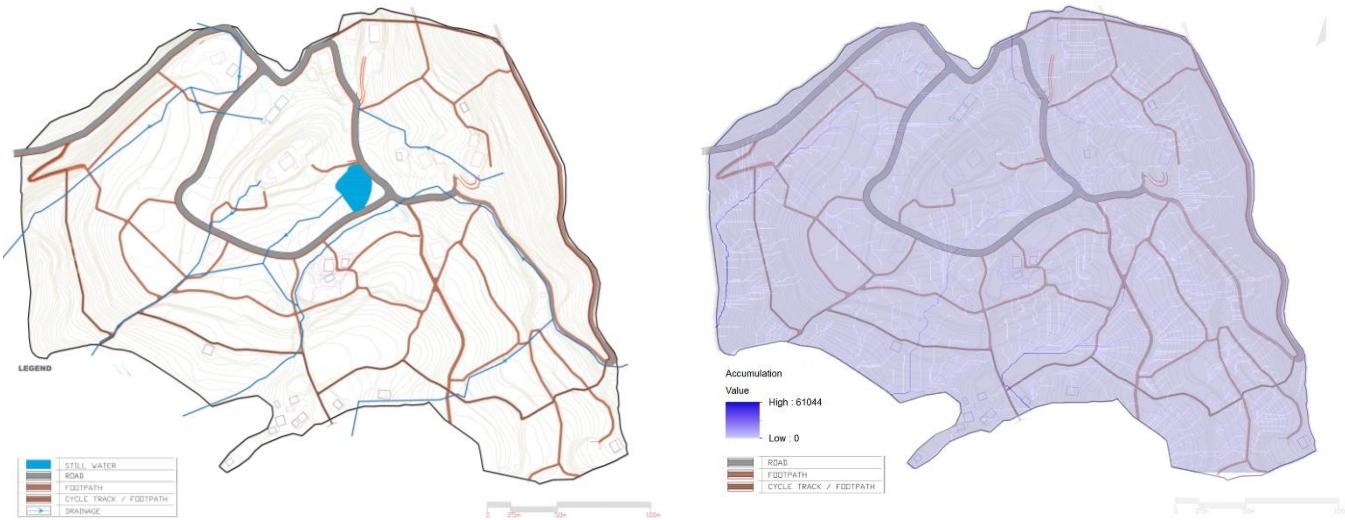
<b>Proposed Precinct</b>	<b>Area in Sq.m.</b>	<b>Area in Acre</b>
Rural Commercial Core	55176.638	13.62862959
Rural Residential	103868.4725	25.65551271
Heritage	9160.263	2.262584961
Env. Conservation E1	20268.3982	5.006294355
Agri Based E4	37183.8538	9.184411889
<b>Total</b>	<b>225657.6255</b>	<b>55.7374335</b>

Total land required – **51175 Sq.m. (12.64 acre)** from 41.5 acres of developable land.

### 6.3.Connectivity

#### Principle;

The **road and footpath** will have direct benefit on those lands they abut. Therefore **only those plot they abut will contribute for road and footpath**. The existing farm road which is 5m wide will be widened to 7m. A ring road is proposed around the Lhakhang and will also be 7m wide.

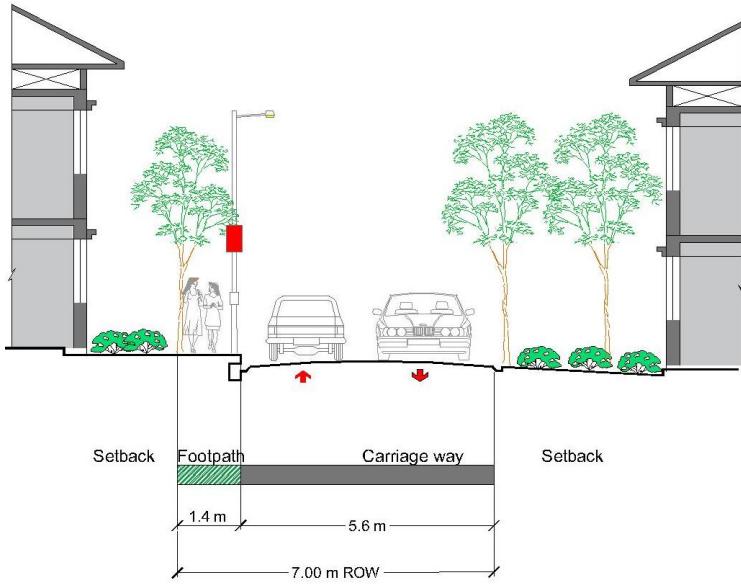


**Figure 36 a. Connectivity b. Connectivity and drainage**

An integrated network of path is proposed which will provide accessibility to all the plots. Most of the proposed paths follow the existing ones. The proposed paths are also in consideration with the drainage network. The paths are proposed in the way that they align along the drainage network as much as possible.

### 6.4.Road Cross-sections

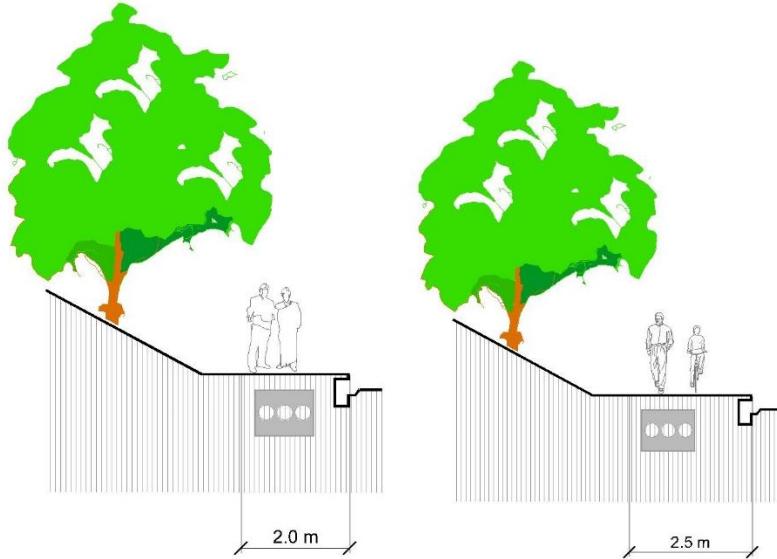
The proposed road will have a ROW of 7 m with a carriage way of 5.6 m and 1.4 m footpath on only one side as can be seen Figure --.



**Figure 37: Design section of the proposed Road**

## 6.5.Footpath cross-section

Footpaths of width 2-2.5 m have been proposed in areas where the proposed roads cannot provide an access.



**Figure 38 Cross-section of footpath**

## 6.6.Drainage Flow Path

The analysis of the flow accumulation gives us with the concentrated flow areas. The flow accumulation is then used to generate the drainage flow path to guide the proposed drainage network.

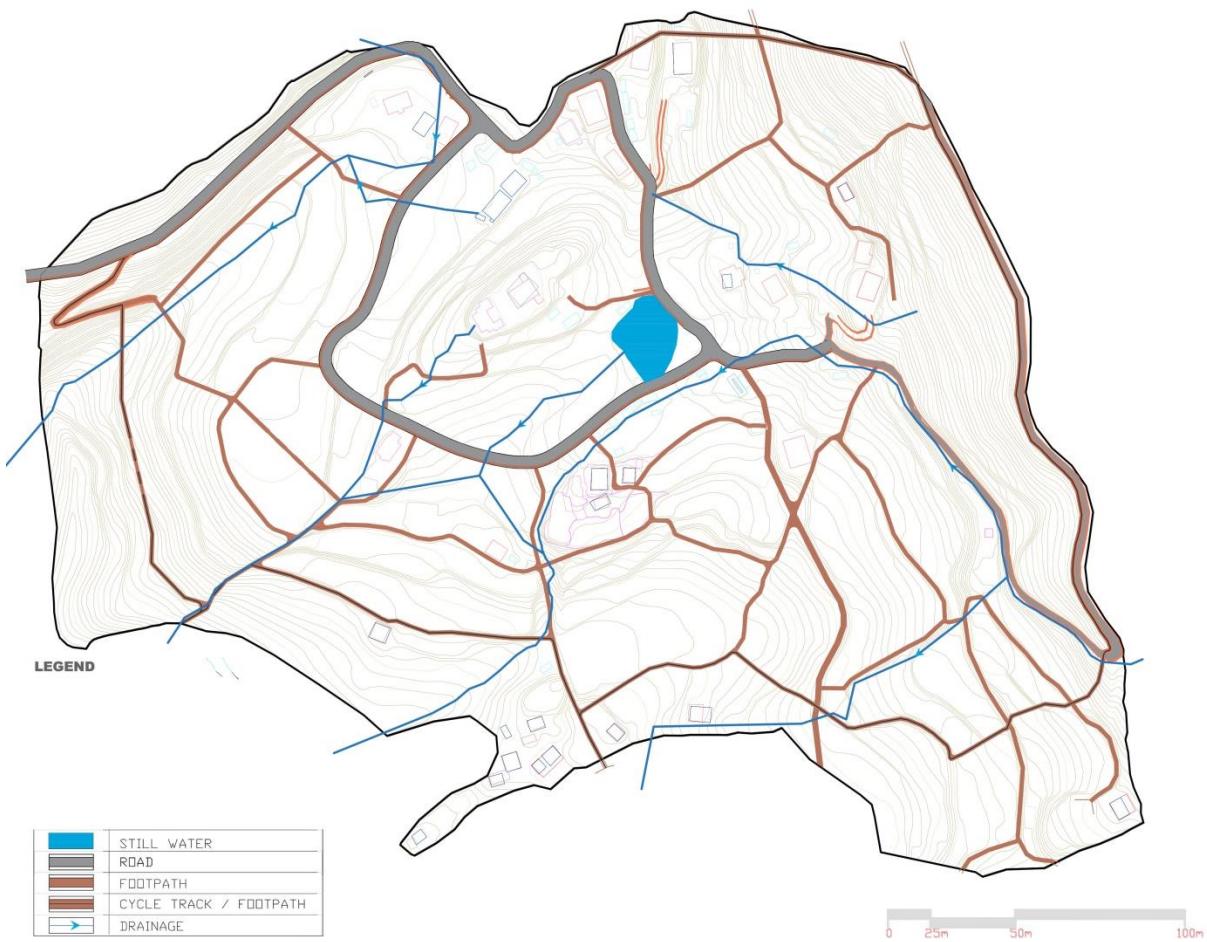


Figure 39: Drainage Flow Path

## 7. Precincts

### 7.1. Environment sensitive and Open Space Precinct

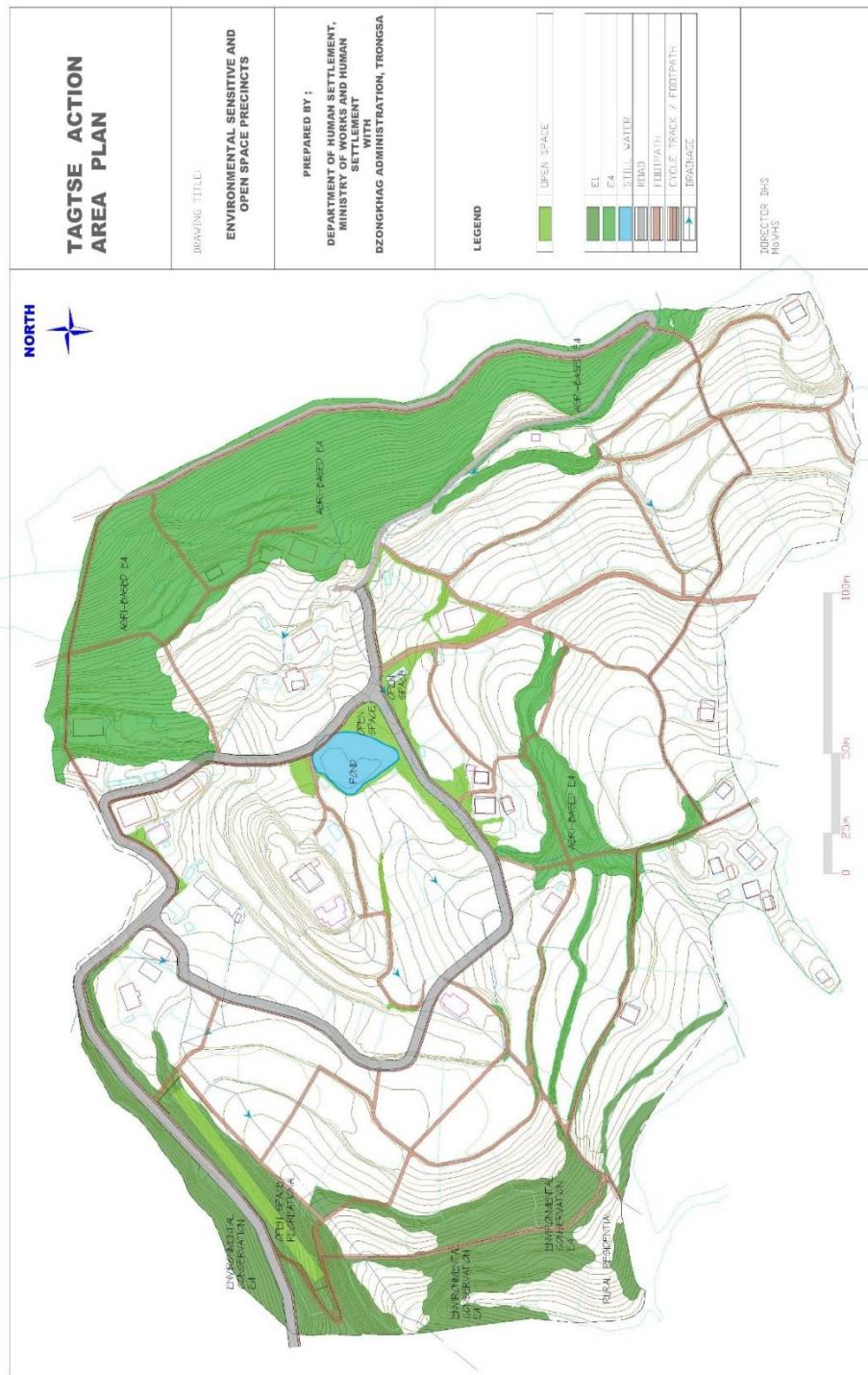


Figure 40: Environmental sensitive and open space precinct

## 7.2.Heritage and Heritage Controlled Development Precinct

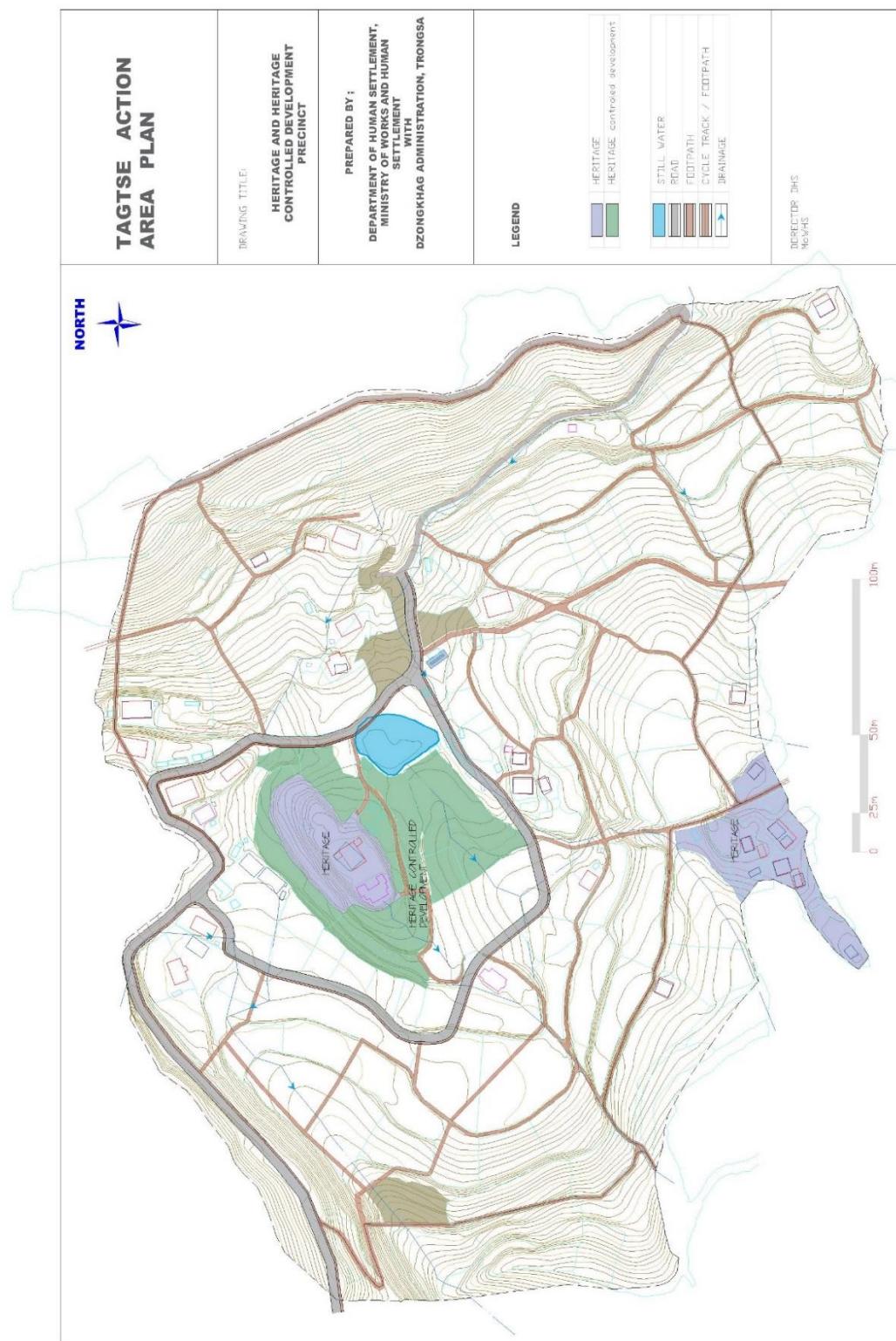


Figure 41: Heritage and heritage controlled development precinct

### 7.3.Rural Residential Precinct

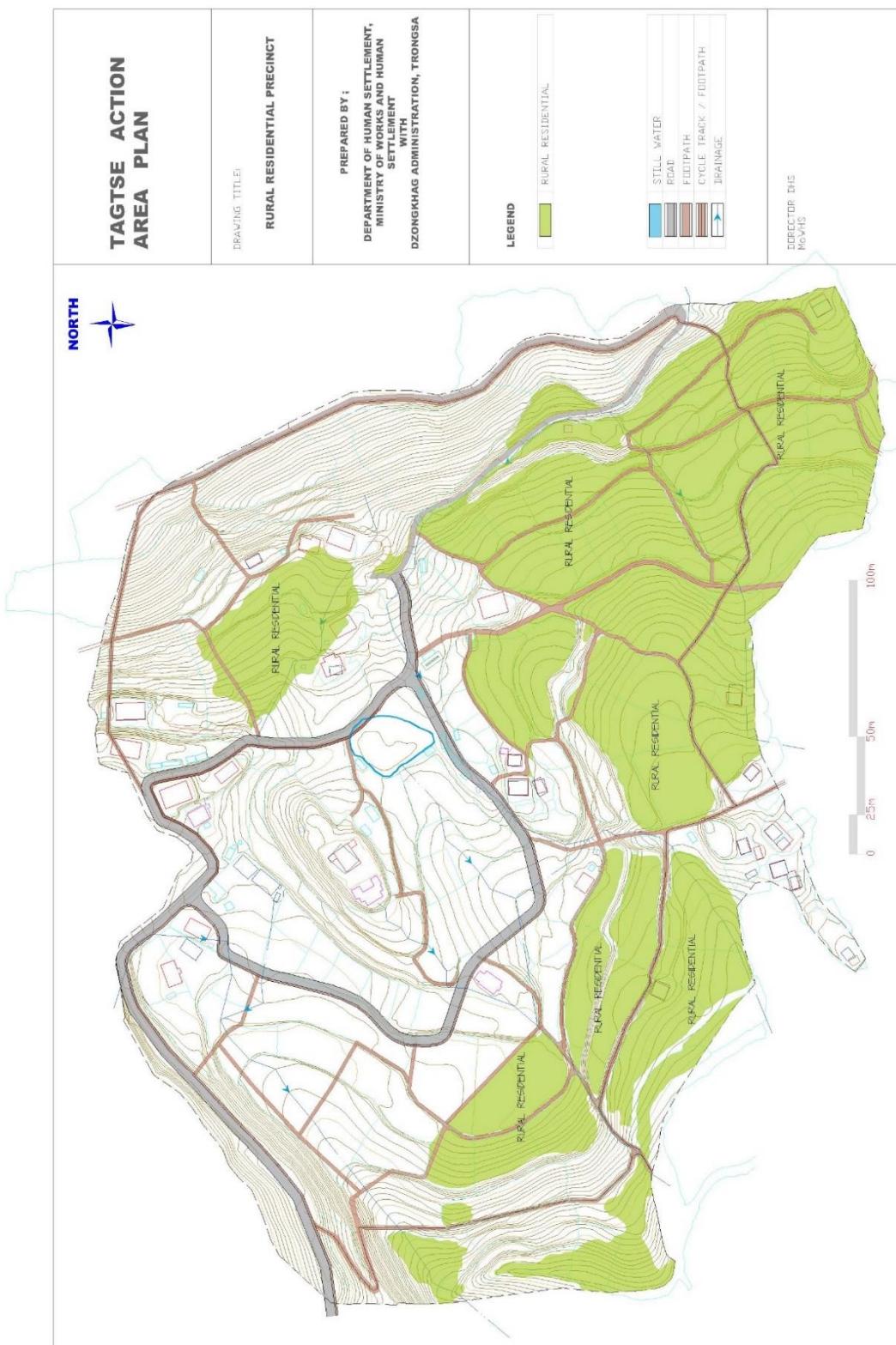


Figure 42: Rural residential precinct

## 7.4.Rural Commercial Core

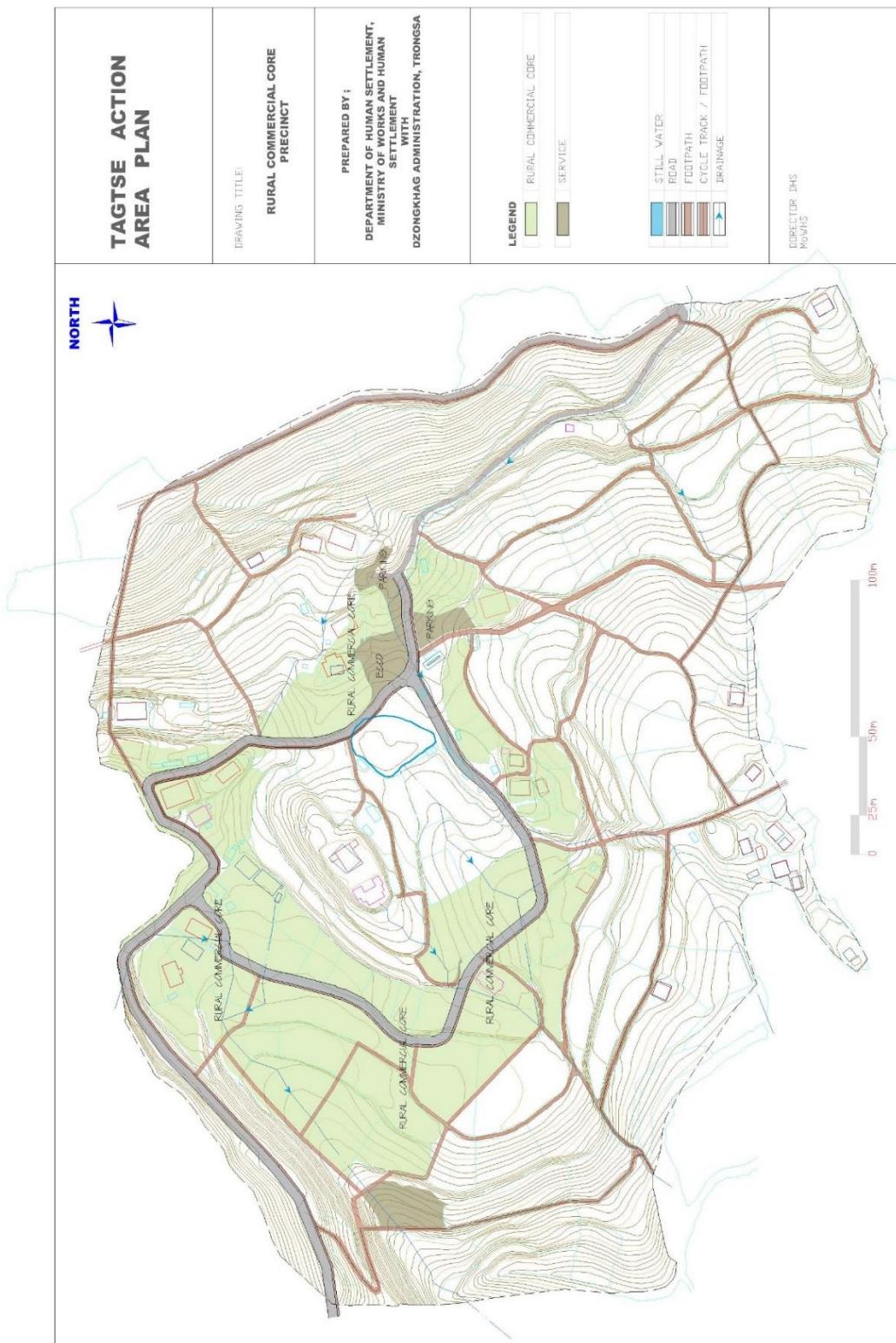


Figure 43: Rural Commercial Core

## 7.5. Overall Tagtse Action Area Plan

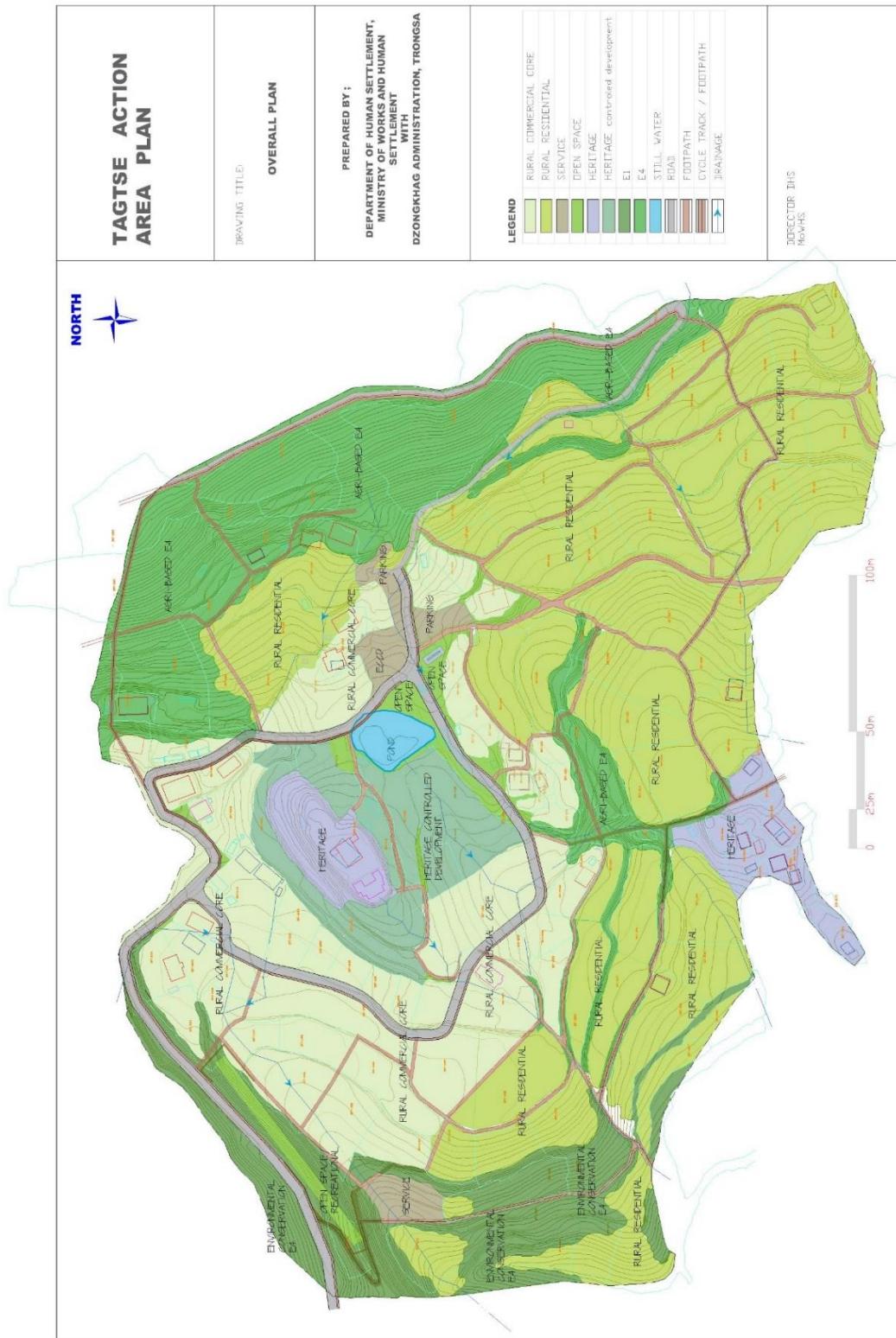


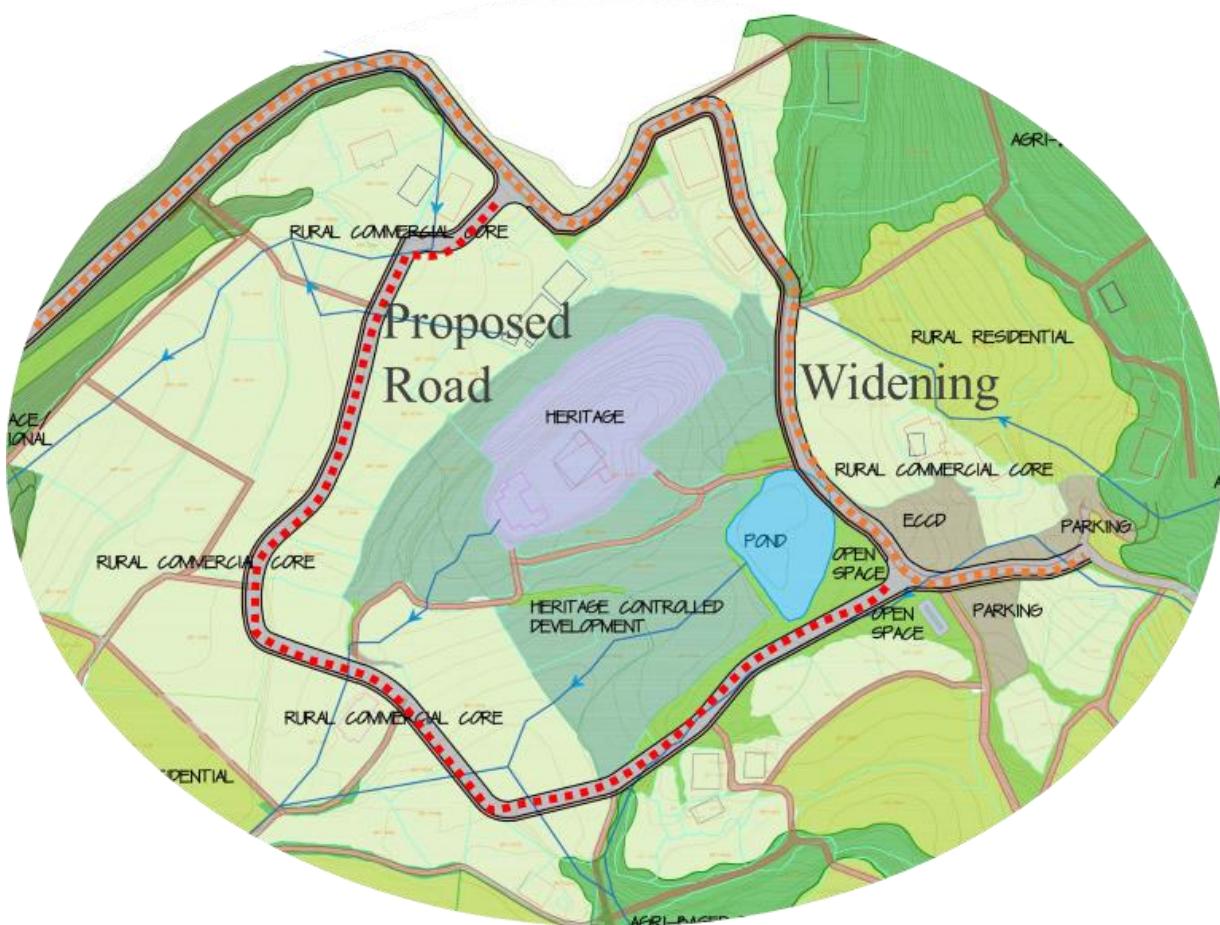
Figure 44: Overall Precinct Plan of Tagtse

## 7.6.Land Mobilization modality for the proposed new road

Following are the optional proposal for land mobilization modality;

1. Guided land development: The proposed road alignment would follow appropriate land topography. To minimize unfairness, the road would follow the cadastral boundaries. As the road would benefit the plots that it abuts, no compensation would be paid.
2. Land Pooling: A differential land pooling contribution depending on the size of land that the proposed road abuts. The land pooling contribution could be proportionate to the size of land that the road affects.
3. Acquisition of the land falling under proposed road.

As per the stakeholder meeting and public consultation meeting, guided land development is opted for mobilizing the land for the proposed ring road. However the Local Government has the authority to adopt any of the options if the guided land development brings unfairness as the range of land contribution varies.



**Figure 45:** Proposed road

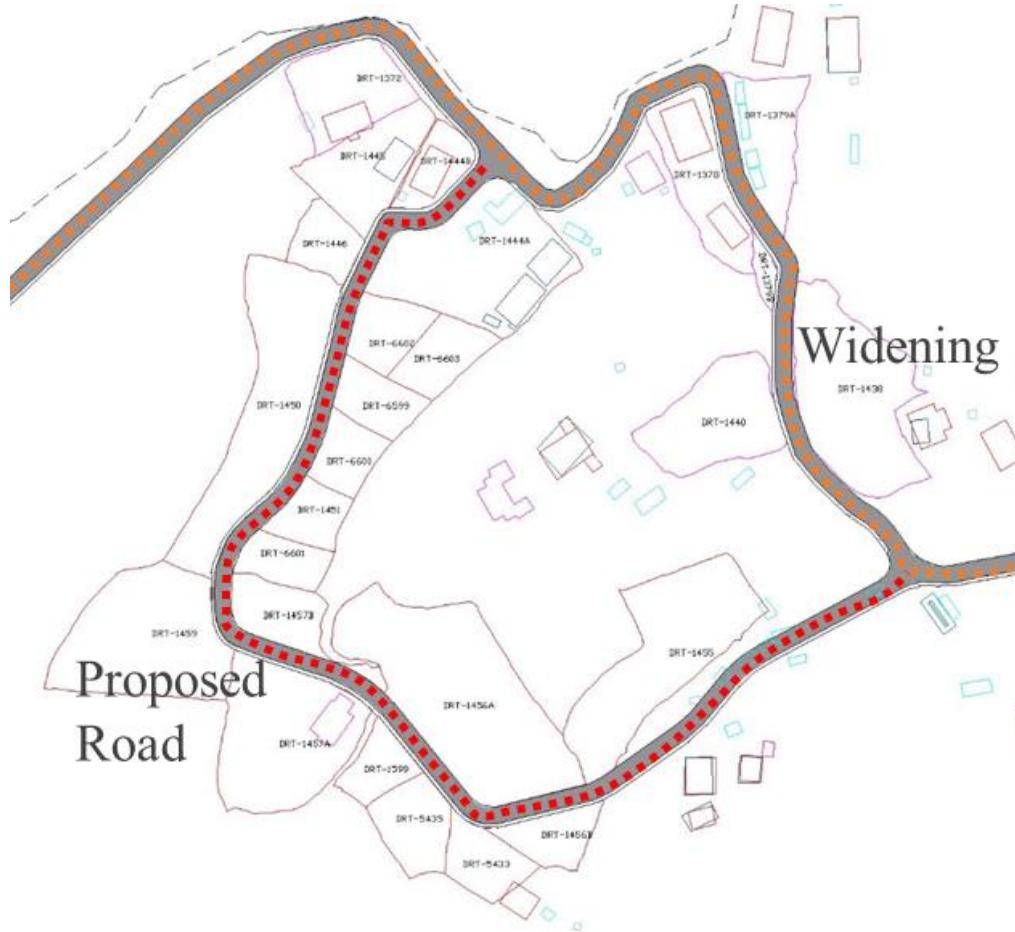


Figure 46: Widening of the road and proposed road

Table 12: Land reconfiguration for the proposed new road and widening of existing road

Sl No.	Owner Name	Thram No	Plot ID	Land Use	Precinct	Registered Area (Acre)	Registered Area (Decimal)	Registered Area (Sq.m)	Area under Road (Sq.m)	Area under Road (Decimal)	Area left (Sq.m)	Area left (Decimal)	Plots segregate d by road	Remarks
Area under road contribution														
1	RINZINMO	873	DRT-1440	KAMZHING	HCD	0.198	19.800	801,277	7,273	0.182	794,004	19.618		Road widen
2	RINZIN WANGMO PUEN 2 CHIRUB	702	DRT-1372	KAMZHING	RCC	0.263	26.300	1064,323	10,506	0.263	1053,817	26.037		Road widen
3	BADUMO	656	DRT-1438	KAMZHING	RCC	0.537	53.700	2173,162	12,980	0.324	2160,182	53.376		Road widen
4	TASHI DORJI	197	DRT-1379	KAMZHING	RCC	0.291	29.100	1177,635	78,819	1.970	1098,816	27.130		Road widen
5	GEMBO DORJI	705	DRT-1378	KAMZHING	RCC	0.257	25.700	1040,042	157,9657	3,949	882,076	21.751		Road widen
6	DAWA PEMA PUEN 3 CHIRUB	703	DRT-1445	KAMZHING	RCC	0.262	26.200	1060,276	20,833	0.521	1039,443	25.679		New Road
7	SANGAY WANGCHUK	862	DRT-5433	KAMZHING	RCC	0.142	14.200	574,654	21,716	0.543	552,938	13.657		New Road
8	DORJI WANGCHUCK	457	DRT-1446	KAMZHING	RCC	0.117	11.700	473,482	21,793	0.545	451,689	11.155		New Road
9	Pema Choden	1172	DRT-6602	KAMZHING	RCC	0.14	14.000	566,560	21,946	0.549	544,614	13.451		New Road
10	SONAM DORJI	863	DRT-5435	KAMZHING	RCC	0.172	17.200	696,059	21,966	0.549	674,093	16.651		New Road
11	KUENZANG WANGCHUK	864	DRT-1599	KAMZHING	RCC	0.116	11.600	469,435	38,142	0.954	431,293	10.646		New Road
12	PEMA LHAMO PUEN 2 CHIRUB	439	DRT-1455	KAMZHING	HCD	0.546	54.600	2209,583	39,835	0.996	2169,749	53.604		New Road
13	TashiMo	1169	DRT-6599	KAMZHING	RCC	0.14	14.000	566,560	44,645	1.116	521,915	12.884		New Road
14	Tshering Dorji	1171	DRT-6601	KAMZHING	RCC	0.13	13.000	526,091	80,628	2.016	445,463	10.984		New Road
15	Tshering Phuntsho	1170	DRT-6600	KAMZHING	RCC	0.14	14.000	566,560	94,601	2.365	471,959	11.635		Road widen
16	Chimi	463	DRT-1451	KAMZHING	RCC	0.136	13.600	550,372	108,363	2.709	442,010	10.891		New Road
17	LHADEN	425	DRT-1459	KAMZHING	RCC	0.559	55.900	2262,193	134,298	3.357	2127,895	52.543		New Road
18	Pelden	1183	DRT-1457	KAMZHING	RCC	0.761	76.100	3079,657	394,647	9.866	2685,011	66,234	A-1996,6216 B-686,7587	New Road
19	NAKCHEY	918	DRT-1450	KAMZHING	RCC	0.694	69,400	2808,518	424,787	10,620	2383,731	58,780		New Road
20	NORBHU DEMA	659	DRT-1444	KAMZHING	RCC	0.784	78,400	3172,735	490,939	12,273	2681,796	66,127	A-2214,5564 B-468,0988	New Road
21	TSHERING ZANGMO	131	DRT-1456	KAMZHING	RCC	1.052	105,200	4257,293	506,234	12,656	3751,059	92,544	A-3204,3312 B-480,0296	New Road

## **8. Tagtse Rural Plan Design Guidelines**

The rural design guidelines for Tagtse local area plan is aimed to promote architecture and design which would complement and reinforce the existing character of the rural landscape without spoiling its original character. This shall be done through the identification of guiding principles that would result in good quality design and development which will be sustainable in the future.

The Guidelines shall help to realize the development objectives envisioned for Tagtse in a manner that is environmentally sustainable, socially and culturally responsible and practically achievable. The chapter outlines guiding principles that will help the people to build by preserving the natural site features and the natural environment, enhancing the scenic views and vistas, respecting the local building scale and architecture.

With the institution of Tagtse College, several un-guided development has started in the area. If this growth of development is not guided or supervised, Tagtse is viable to losing its rich cultural settlement features. It may lead to unrestrained growth of which is unsustainable and an environmental threat in terms of water quality, loss of rural amenity and landscape, increased vehicular traffic and loss of habitats. It is therefore a key policy of this guideline to cater for such threats and provide a liveable society thereby sustaining the vitality and viability of Tagtse village.

The guideline focuses on the different precincts (heritage, commercial, residential, green spaces, services, etc.), built form and circulation pattern (roads and pathways).

### **8.1.Precincts**

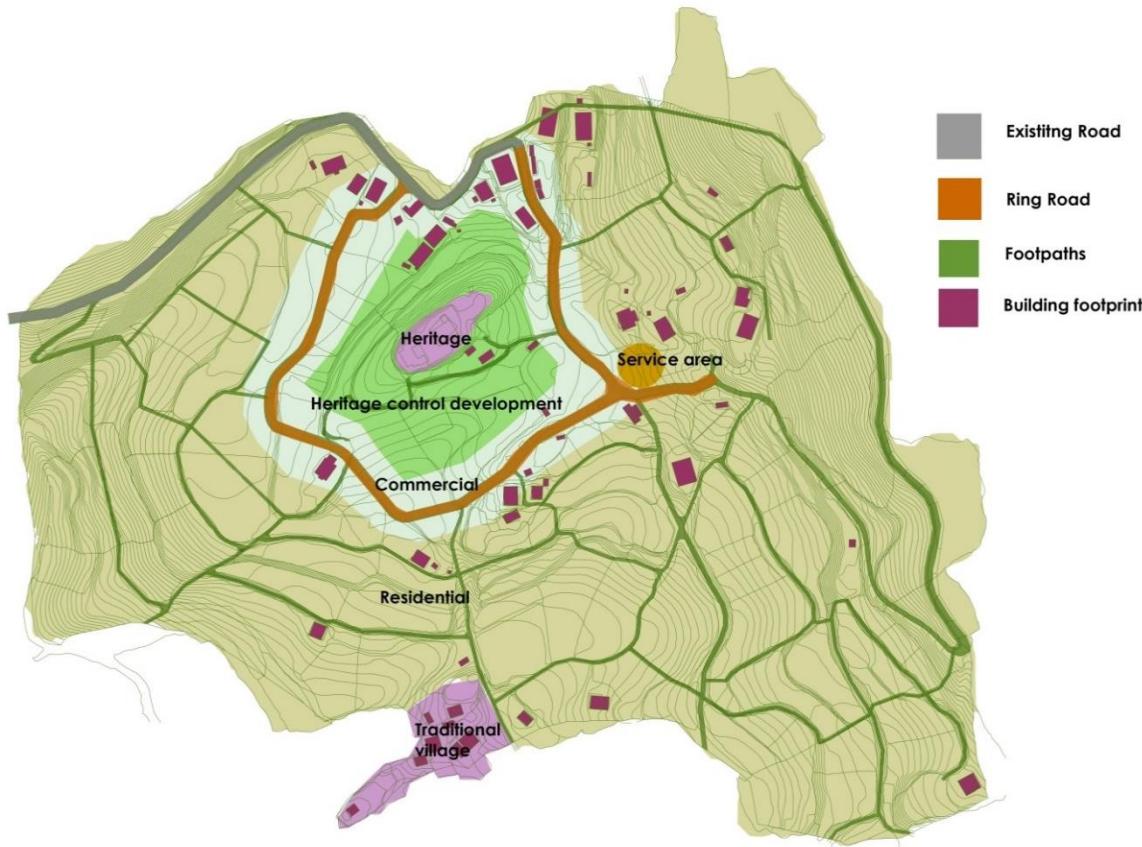
Different precincts for Tagtse action area plan as shown in the figure are as follows:

#### **8.1.1. Heritage area**

This includes the Lhakhang and its compound which shall be maintained and preserved as it is. Built form in this area shall be not more than two storeys in order to respect the scale of the Lhakhang.

#### **8.1.2. Heritage controlled development**

This area will act like a buffer between the heritage area and the commercial/residential area. Heights of the building shall be restricted to only one floor to maintain the sanctity of the heritage zone. Only residential uses shall be allowed without any commercial activities.



**Figure 47: Plan showing different precincts**

#### 8.1.3. Commercial Precinct

Commercial activities shall be allowed around the new proposed ring road. This precinct will be the hub of main commercial and retail activity of Tagtse village which will cater to both the villages and ILCS population. Two storeyed building will be allowed in this zone assuming commercial activity in the ground floor and residential in the top floor.

#### 8.1.4. Residential Precinct

Beyond the commercial precinct is the residential zone where no commercial activities will take place. Farming activities and conservation of green areas shall be continued. No road is proposed through this zone but paved foot path catering to all households shall be provided for the ease of people.

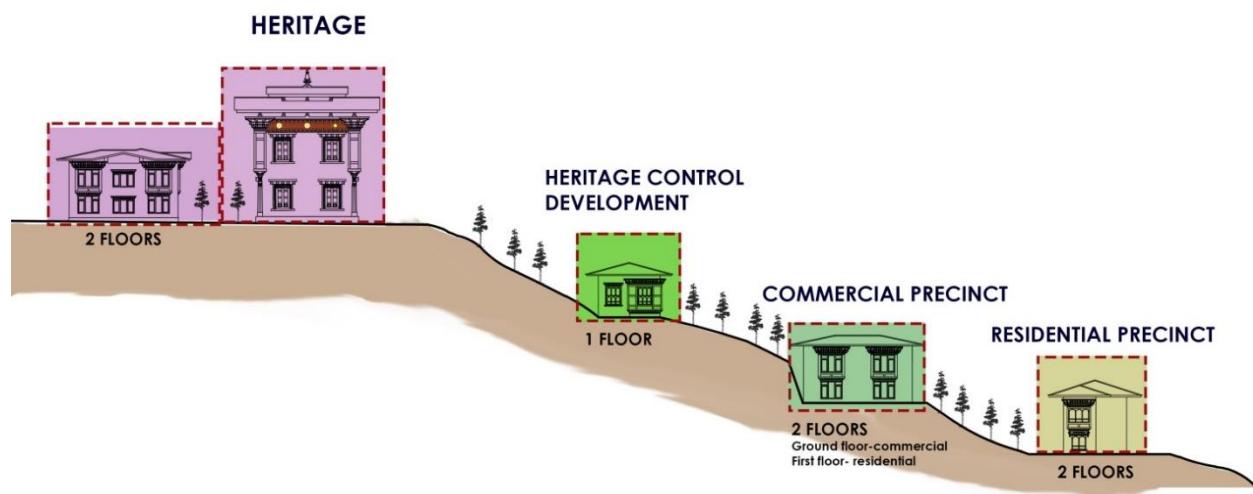
#### 8.1.5. Traditional Village

A heritage village that exists at the bottom end of the site shall be maintained in its original form and prevented from any invasion of urbanism or modern architectural style.

### 8.1.6. Service

The patches of government land shall be utilised for service purposes. A parking area and ECCD facility shall be provided in this area.

## 8.2. Built Form



**Figure 48: Built form and height restriction**

The allowable number of floors in different zones is as shown in the figure above. This restriction for the built form will help the village to sustain its unique identity instead of getting flooded with unguided built environment in the near future. For instance, the decision to allow only one floor in the heritage control development area has been carefully made in order to maintain the sanctity of the lhakhang and to serve as a buffer zone between the heritage and the commercial zones.

The buildings in the commercial zone will be allowed to have two floors where by the ground floor may be utilized for commercial purpose and the other will be residential units. Beyond the commercial floor is the residential zone where two-storeyed construction shall be allowed. The buildings shall comply with the traditional building guidelines irrespective of their zones, there by preserving the rich cultural form of Tagtse village.

**Table 13: Precinct Uses Permissible**

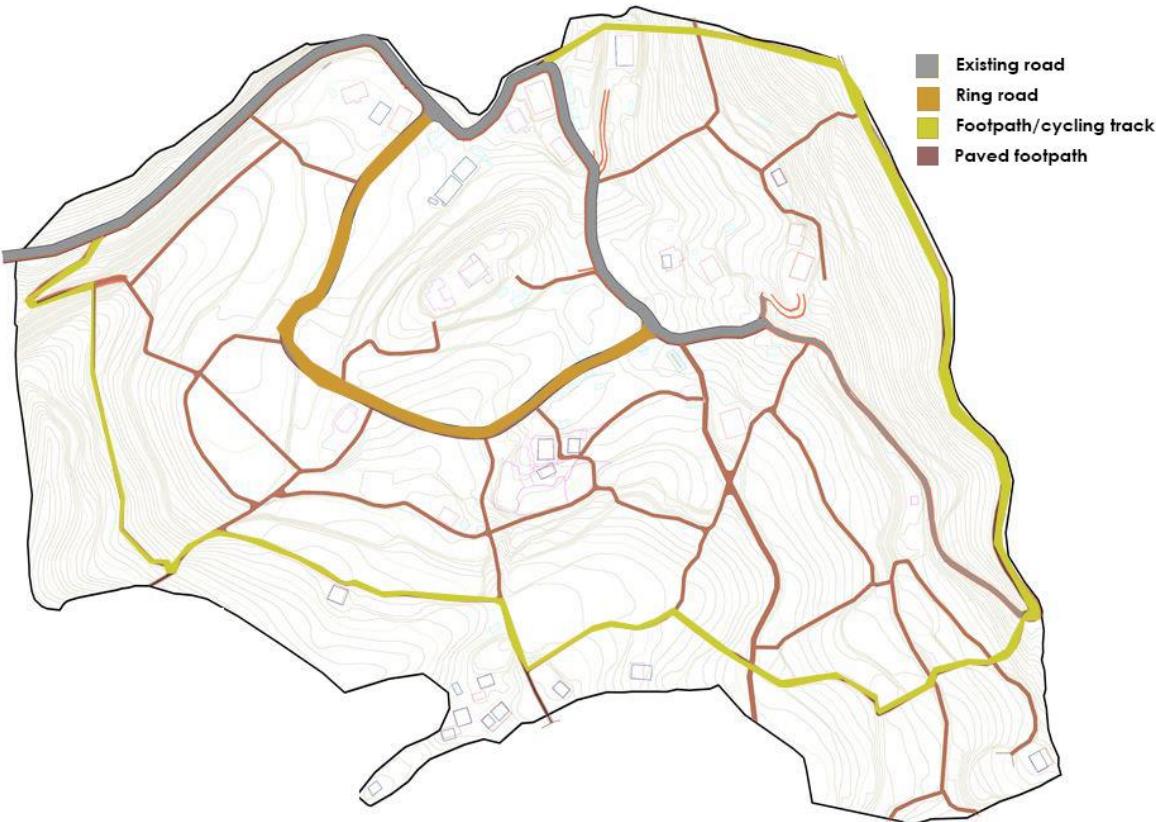
<b>Precinct/Area</b>	<b>Max. Permissible No. of Floors</b>	<b>Permissible coverage</b>	<b>plot</b>
Heritage	2	40%	
Heritage Control Development	1	30%	
Residential	2	50%	
Commercial	2	60%	

### **8.2.1. Design Principles for Built-form**

- Developments around the Lhakhang should be low rise so that the Lhakhang's sanctity, views and vistas are respected.
- The buildings should not be more than two floors to promote and respect local scale of building and architecture.
- Use of traditional building materials and construction methods is encouraged.
- The level difference between the street and the shops on the ground floor should be minimal to provide a comfortable access to users and the people with special needs.
- The fenestrations and balconies should be oriented to allow daylight access, capture the scenic views of the surrounding areas and provide shade to the public spaces.
- The roof and its projection should be adequate to protect the pedestrians from the rain. The rain water gutters should be provided wherever necessary.
- The building materials and method used for the construction should promote local building character, green architecture and sustainability.
- The buildings should be designed in response to the topographical condition. The split type of design and construction should be carried out to avoid excessive excavation.
- The buildings should define the street with uniform setback to contribute towards desired urban form and enhance visual containment of the street.
- The facades of buildings should define streets with high quality of architecture reflecting the Bhutanese architecture, local character and also contribute towards the aesthetics of the street. The openings of the active spaces and habitable rooms should face the street to enhance passive surveillance.
- Finishes and exterior colours are to complement the scenic feature through use of muted colours and natural materials. Vibrant colours for walls and highly reflective roofs are not permitted. (Follow the building colour codes approved for Trongsa Dzongkhag).
- Service pipes should be integrated into the building design. Surface mounted pipes on external walls are to be avoided. If they cannot be avoided, they are to be located on the sides of the building and will not be permitted on the front of the building or the side facing the Lhakhang.
- Sewer could be connected into community sewerage system in future. (Use plot level septic tank till the community sewerage network is installed).

## 8.3. Circulation

Circulation forms a very important part of any settlement. They provide accessibility and connectivity. Roads, streets and footpaths are the main elements of circulation. They ensure efficient connectivity and ease of accessibility within the area. For Tagtse, the circulation is categorized into the main road (existing road), the ring road around the lhakhang and the footpaths that provide accessibility to all households.

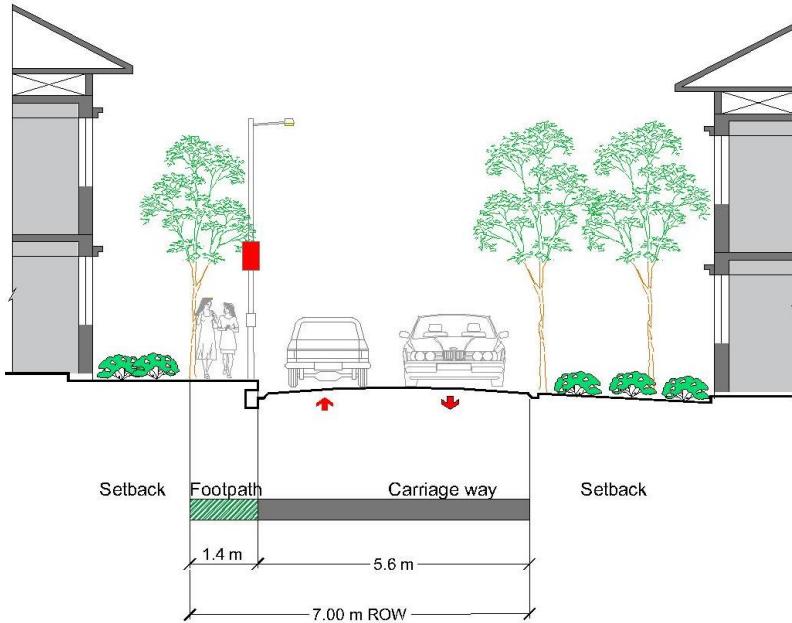


**Figure 49: Circulation Network**

### 8.3.1. Main road

The main road provides accessibility and connects Tagtse to the rest of the Gewogs. The existing road of 5m width will be widened to 7m with proper footpath and the driveway. The widening of the road will help to maintain a safe environment by reducing the conflict between the human and vehicular traffic. It will allow a barrier free and comfortable access to the buildings and public amenities.

It is very important to have a safe and comfortable street/road because they are the main spine of any settlement. A settlement is defined successful if its streets are lively and safe at all times. Hence the widening of the street from 5m to 7m is seen necessary.



**Figure 50: Cross section**

### 8.3.2. Ring road

The ring road which has been proposed around the lhakhang shall be 7m wide with footpath on one side. The main commercial hub of Tagtse will revolve around this ring road. It will be an important element in prospering commercial area of Tagtse village.

### 8.3.3. Footpath/Cycling tracks

The footpath along the periphery of the plan may be used for different recreational purpose such as walking, jogging or cycling. These are the opportunities that may attract visitors from other places to the Tagtse.

### 8.3.4. Paved footpaths

Rest of the households that won't have accessibility to the ring road will be reached or connected by paved footpath. These footpaths will be along the existing ones such that it won't disturb the natural landscape. The footpaths shall be wide enough for easy commute and shall be wide enough to carry goods to and fro. This will reduce the mess during monsoon season and will prove helpful to both the villagers and the students.

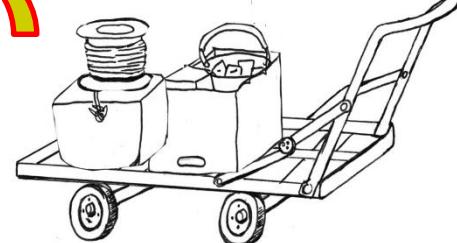
Use of trolleys along the footpaths is encouraged as it will serve almost the same purpose as cars for carrying goods and services. Transporting vegetables and other dairy products will become much easier and convenient with the implementation of trolleys.



Figure 51: Current Situation



Proposed paved footpath



Encourage trolleys for carrying goods

### 8.3.5. Footpaths Design along the main road and the ring road

Good footpaths have 3 clear zones:

1. Pedestrian zone: continuous space for walking
2. Frontage zone: buffer between street-side activities and the pedestrian zone
3. Furniture zone: space for landscaping, furniture, lights, bus stops, signs and private property access ramps

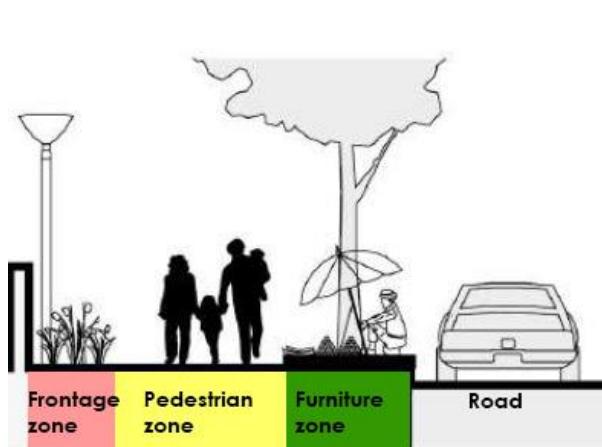
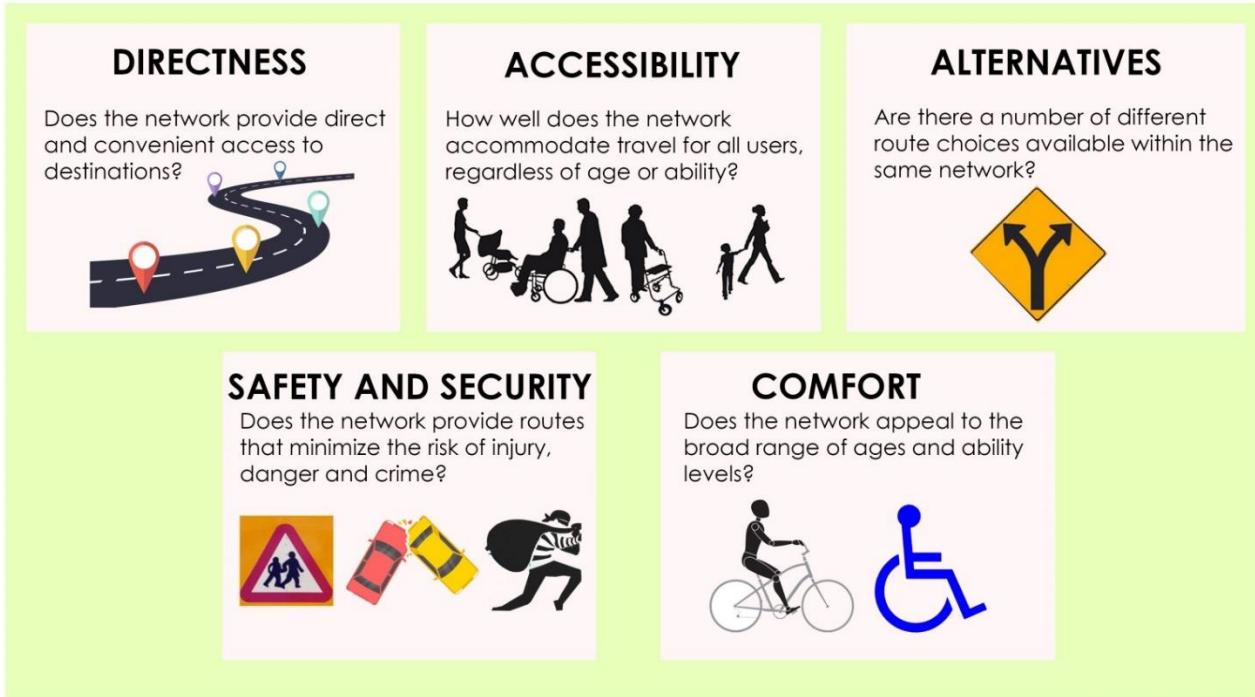


Figure 52: Aundh street, Pune

**8.3.6. The circulation network shall be able to tackle the following concerns:**



**8.4. Design Principles for Roads and footpaths**

- Ensure that there is proper signage with no or very minimal obstruction along and across the street to enable the people of all ages and the people with special needs to use it safely and comfortably.
- Ensure that the streets have footpaths, parking areas and travel ways clearly marked with legible lines, upright kerb and pavements (coloured and textured wherever possible) to ensure the safe passage of pedestrians and vehicles.
- Design the street in response to topographical features of the site. There should be minimum excavation with minimum level differences (to enable appropriate gradient) between street and the building. This would ensure comfortable movement of people between street and building.
- The landscape elements such as street benches, trees and street lights to be oriented and located considering the ‘scenic views’, ‘light and shade based on the climatic condition’, ‘Visual continuity of the street and buildings’ and ‘the safety and comfort of the pedestrians’.
- The buildings defining the street should off-set or setback uniformly to enhance visual containment of the street.
- The facades of buildings defining the street should have a high quality of architecture reflecting the local character and also contributing towards the aesthetics of the street. To enhance passive surveillance, the openings of the active spaces and habitable rooms should front the street.
- In order to encourage walking there should be speed deterrents and control mechanisms in place to reduce vehicular speed.

## **9. Development Control Regulations**

### **9.1. Introduction**

These Development Control Regulations have been formulated as part of the Tagtse Action Area Plan and its related Rural Design Proposals. They support the aims of the plan through the introduction of regulations and procedures. The jurisdiction of these Regulations includes the area under the Tagtse Action Area Plan. The Local Government shall be the Implementing Authority implementing these Regulations.

### **9.2. Administration**

#### **9.2.1. Title, Commencement and Jurisdiction**

These Regulations shall be called the Tagtse Development Control Regulations 2018 (TDCR 2018). These Regulations shall come into force with effect from the date of their notification by the Royal Government of Bhutan. The provision in the BBR 2018 shall supplement the TDCR 2018. This DCR shall supersede the BBR 2018 and all other local rules and regulations.

#### **9.2.2. Applicability**

- i. These regulations shall be applicable from the date of their notification by the Royal Government of Bhutan. The regulations shall be applicable to all development in Tagtse unless otherwise stated.
- ii. Any action taken or developments permitted under the regulations or Building Rules, existing prior to these regulations coming into force, shall be deemed to be valid and continue to be so until alterations are made to such structures or sites.
- iii. If there is a conflict between the requirements of these regulations and those of any other rules or byelaws, these regulations shall prevail.

#### **9.2.3. Interpretation**

Unless the context otherwise requires, the terms and expressions not defined herein shall have the same meaning as indicated in the following legislations:

- i. The Local Government Act 2009
- ii. The Land Act 2007
- iii. National Housing Policy 2002
- iv. Building Color Code of Bhutan 2014
- v. Bhutan Building Regulations 2018

#### **9.2.4. Delegation of Power**

The Implementing Authority may delegate any of the powers, duties or functions conferred or implemented upon or vested in the Implementing Authority to its officers or designated committee of officers generally or specifically in writing and may impose certain conditions and limitations on the exercise of such powers as it may deem fit.

#### **9.2.5. Definitions**

**Basement** - The story of a building below the ground floor whose construction was necessary to bring the ground floor level to the street level.

**Building** - Permanent structure enclosed within exterior walls and a roof, and including all attached apparatus, equipment, and fixtures that cannot be removed without cutting into ceiling, floors, or walls. However, structures of a temporary nature like tents, hutments, etc. erected for temporary purposes or for ceremonial occasions, with the permission of the Implementing Authority, shall not be considered to be "buildings".

**Building Height** - The permissible number of floors. This is inclusive of the ground floor and will be determined from the ground floor level. In addition to the precinct regulations, the height of buildings shall be governed by the "*Bhutanese Architecture Guidelines 2014*." and by the overall allowable building heights.

**Commercial Building** - A building or part thereof primarily used for commercial purposes such as shops, stores, departmental stores or markets, for display and sale of goods or merchandise, including office, storage and service facilities incidental thereto located in the same building.

**Community** - The people living in a particular place and usually linked by common interests.

**Community Facilities/Services** - Facilities/services used in common by a number of people, including schools, health, recreation, police, fire, public transportation, community center, etc.

**Demarcation** - The marking of the Site Plan at the actual location, on the ground, by the Implementing Authority in the presence of the owner and adjacent plot owners, if any.

**Density** - A measure of the intensity of occupants or use and measured in units per area. Units are commonly referenced in plots, dwellings, rooms or people per area.

**Development** means:

- the construction or placing of a building or other structure on, over or under land;

- a change in the use or intensity of use of a building or land;
- the subdivision of land or the consolidation of plots;
- the excavation of land;
- the removal of soil or vegetation from land; and
- the deposit or stockpiling of soil or material on land.

**Dwelling Unit** - A shelter consisting of residential accommodations for one household.

**Existing Use** - Authorized use of a plot of land, a building, or a structure existing before the commencement of these Regulations.

**Floor** - The lower surface in a story on which one normally walks in a building. This does not include a mezzanine floor. The floor at ground level with direct access to a street or open ground/ land shall be called the ground floor. The ground floor shall also be counted as a floor in defining the number of floors and referred to as the ground floor. All additional floors shall be numbered sequentially starting with 1.

**Floor Area** - The built-up area including the area of walls.

**Floor Area Ratio** - The ratio of the dwelling area to the land area.

**Front** - The area of land or side of building facing the primary road.

**Household** - The socioeconomic unit which often coincides with the basic kinship unit of a society. Usually several related persons living together in a form of shelter and sharing food and other basic resources.

**Implementing Authority** - The government body responsible for governance, implementation and additions/corrections of these Regulations.

**Infrastructure** - The basic physical networks, including water supply, sewage disposal, electricity, circulation, street lighting, storm water drainage, and telephone.

**Jamthog** - The space within the confines of the roof structure, above the ceiling or the top floor which is constructed and adopted for storage purposes, lift machine room, water tanks etc.

**Plot Coverage** - The percentage of building area to the total area of the plot. Also referred to as plot coverage. If half of the lot is covered by a building the lot coverage will be 50%.

**Occupancy Certificate** - An official document issued by the Implementing Authority certifying that the building is safe and fit for occupancy.

**Open Space** - A parcel of public land set aside to retain land, water, flora, fauna, historic or aesthetic features in their natural state; scenic or open condition; parcel size to be based on the surface area necessary to maintain the integrity of the unique site characteristics. Open space provides recreational areas for residents and helps to enhance the beauty and environmental quality of neighborhoods.

**Parking Space** - An area, enclosed or unenclosed, covered or uncovered, sufficient in size to park vehicles with space for their movement. Parking spaces may be served by a driveway connecting them with a street, or alley, and permitting ingress or egress of vehicles.

**Permission** - A valid authorization in writing by the Implementing Authority to carry out development or a work regulated by the Regulations.

**Precinct Plan** - A geographical area designated in the approved plan for the purpose of regulating land uses within the approved boundary.

**Right of Way (ROW)** - An area reserved for road carriageway, central verge, footpath, roadside drains, avenue plantations and utilities.

**Road/Street** - Any expressway, highway, boulevard, street, lane, pathway, alley, stairway, passageway, carriageway, footway or bridge, whether a thoroughfare or not, over which the public has the right of passage or access or have passed and had access uninterruptedly for a specified period, whether existing or proposed in any scheme.

**Setbacks** - The distance between the plot boundary and the building outer edge, or the distance between buildings within a plot.

**Site Plan** - The up-to-date legal plan of the plot showing all boundaries, their dimensions, the total plot area, angles in degrees of corners, abutting legal roads and required setbacks issued by the competent authority.

## **9.3. Procedures for Obtaining Development Permission**

### **9.3.1. Development Permission/ Planning Permit**

No person shall change the use of a land or carry out development or erect a building or carry out additions and alterations or carry out civil construction activity without obtaining a written permission from the Implementing Authority. Development permission shall be issued only to the legal owner of the land/plot. The following developments do not require a planning permit:

- a) a minor utility installation on a road;
- b) repairs or routine maintenance to a building;
- c) alterations to a building, other than a heritage building or a structure in a heritage precinct which:
  - i) do not affect the external appearance of the building;
  - ii) do not add built-up area to the building and
  - iii) do not alter the use of the building;
- e) emergency works undertaken by local government, a public authority or a utility service provider in the exercise of powers conferred by law in force;
- f) gardening;
- g) works required in order to comply with a notice issued under the National Environment Protection Act;
- h) a temporary structure for construction purposes;
- i) external lighting normal to a building of the type;
- j) a crop support or protection structure associated with horticulture;
- k) excavation, including wells, in the ordinary course of agricultural operations and
- m) works and temporary structures relating to an event on land, where that event is approved by local government.

### **9.3.2. Procedure for Obtaining Development Permission/Planning Permit**

A person or body intending to carry out layout development as defined in these Regulations in or over a land and/or subdivide land or to erect a building or carry out additions and alterations to a building or to carry out development within the limits of the Tagtse shall obtain prior permission for the same from the Implementing Authority by applying on the prescribed forms as given in Annexes of BBR 2018 and furnishing all information in forms, formats and plans prescribed under these regulations and as may be amended from time to time by the Implementing Authority.

The application shall be signed by the legal owner of the plot or authorized signatory. The applicant shall submit signed plans and drawings along with the application and pay the requisite scrutiny fees,

development charges, betterment charges, and other charges and dues if any to be levied under these Regulations and as decided by Implementing Authority based on prevailing rules and regulations.

### **9.3.3. Documents and Particulars to be furnished with the Application**

The following particulars and documents shall be submitted along with the application:

Sl.no	<b>Land Development</b>	<b>Building Development</b>
1	Copy of the Land Ownership Certificate.	Copy of the Land Ownership Certificate.
2	Copy of the Site Plan drawn to scale, showing: i) the boundaries and dimensions of the plot, set back lines and the access road; ii) levels of the plot, and the location of drains, septic tank and soak pit; and iii) location and dimensions of existing buildings, trees and car parking spaces.	Copy of the Site Plan drawn to scale, showing: i) the boundaries and dimensions of the plot, set back lines and the access road; ii) levels of the plot, and the location of drains, septic tank and soak pit; and iii) location and dimensions of existing buildings, trees and car parking spaces.
3	Copy of Planning Certificate substantiating “Use Conformity”.	Copy of Planning Certificate substantiating “Use Conformity”.
4	Three copies of proposed layout plan drawn to a readable scale showing all the details of the development.	Three copies of proposed layout plan drawn to a readable scale showing all the details of the development.  Three copies of the detailed drawings showing the plans, sections and elevations of the proposed building to a scale of 1:100 showing all the details.
5	Certificate of Architect or Planner who prepared the plans and drawings.	Certificates of Architect and Engineers who prepared the plans and drawings.
6	Copy of No Objection Clearance from relevant Authority wherever applicable.	Copy of No Objection Clearance from relevant Authority wherever applicable.
	<b>Notes:</b>	
	<ol style="list-style-type: none"> <li>1. All the drawings shall be prepared in metric system only.</li> <li>2. The applicant shall sign all forms, plans, sections or written particulars or cause them to be signed by his authorized signatory and registered Architect and Engineers.</li> <li>3. One copy each of plans and documents shall be returned, on approval, to the applicant duly signed by the Implementing Authority or authorized officer.</li> </ol>	

It shall be incumbent on the person/body whose plans have been approved, to submit amended plans, if any, for deviation leading to increase in built-up area, building height or change in plans, he proposes to make during the course of construction of his building work, and the procedure laid down for plans or other documents hereto before, shall be applicable to all such amended plans.

#### **9.3.4. Scrutiny, Services and Amenity Fees**

Permission for carrying out development shall be granted by the Implementing Authority only on payment of Scrutiny Fees for processing the submitted application, service and amenities fees for execution of works as decided by the Implementing Authority based on prevailing Rules and Regulations. These fees and maintenance charges may be revised by Implementing Authority from time to time.

The scrutiny, services and amenity fees may be exempted if buildings are built based on the Traditional Architecture and Masonry and uses local materials and skills.

#### **9.3.5. Grant of Development Permission**

On receipt of the application for Development Permission, the Implementing Authority after making such inquiry as it thinks fit may communicate its decisions granting or refusing permission to the applicant as per the provisions of the regulations. The permission may be granted with or without conditions or subject to general or special orders.

Grant of Development Permission shall mean acceptance by the Implementing Authority of all the requirements of these Regulations excluding the following:

- i. Easement rights.
- ii. Variation in area from recorded areas of a plot or a building.
- iii. Structural reports and structural drawings.
- iv. Soundness of material specifications used in construction of the building.

#### **9.3.6. Rejection of Application**

If the plans and information given do not contain all the particulars necessary to deal satisfactorily with the development permission application, the application shall be rejected.

#### **9.3.7. Expiry and Revocation of Planning Permit**

A planning permit expires if the development that it authorizes is not started within a period of 12 months. The local government may in its discretion grant an extension of the planning period for one additional period of 12 months.

The local government may revoke a planning permit that was issued in error. No person shall claim for loss and expense arising out of the revocation of a permit if:

- a. the plans and documents submitted in connection with the application for the planning permit were false or misleading;
- b. the applicant knew or ought to have known that the proposed development does not comply with the Plan; or
- c. the applicant participated in illegal or improper actions in connection with the application.

## **9.4.Precinct Sanctity**

### **9.4.1. Precinct Sanctity**

The Tagtse Action Area Plan has 8 precincts with different land uses. These precincts have been designated in response to the topographic features of Tagtse area and to ensure the different land uses and activities within the rural area are compatible with one another.

#### **RCC Rural Commercial Core**

A precinct of trade and commerce

#### **RR Rural Residential**

Low density residential precinct

#### **I Institutional Precinct**

Local, National and International Institutions

#### **H Heritage Precinct**

Precincts for sacred activities and places of historical importance consisting of critical mass of building having strongest architectural features of the original dwelling units and heritage streetscape.

#### **HCD Heritage Control Development Precinct**

Precinct around the heritage areas to give an added layer of protection to the designated site and to help maintain the heritage and cultural sanctity.

#### **S Services & Amenities Precinct**

Precinct for utilities in the area such as Water & sewage treatment plants, electric substations, fuel station etc....

#### **E Environmental Conservation Precinct**

Enhancement and protection of Tagtse's ecology and steep slopes.

**OS Open Spaces**

Shall mean an area primarily intended for active and passive recreational purposes which includes precincts of public assets like parks, gardens, sport facilities, recreation areas etc..

**9.4.2. Pre-existing Non-Conforming Use Types**

A lawful use of land existing prior to the adoption of the Tagtse Action Area Plan which do not conform to these Regulations, shall be permitted to continue, subject to the condition that no extension, modification of the buildings, or intensification of the non-conforming use shall be permitted. A change proposed in the existing building shall be permitted only if it is intended for changing the use to one that is permitted as per these Regulations.

**Table 14: Precinct Schedule showing Maximum Plot Coverage and Maximum Building Height**

Precincts	Permissible plot coverage range %	Max. Permissible No. of Floors	Minimum setbacks required on all side (meter)
RCC	60%	2	2m on 3 sides, 5m on one side
RR	50%	2	3m on 3 sides, 5m on one side
H1 Heritage	40%	2	
I Institutional	30%	2	3m on 3 sides and 5m on the side accommodating the septic tank
S Service	20%	2	3m on 3 sides and 5m on the side accommodating the septic tank
E4	20%	2	3m on 3 sides and 5m on the side accommodating the septic tank
H2 Heritage Controlled development	30%	1	3m on 3 sides and 5m on the side accommodating the septic tank
Open Space	15%	1	

**Table 15: Precinct Schedule showing Uses Permissible in Designated Precincts**

Precincts	Uses Permissible	Special conditions and restrictions
RCC – Rural Commercial Core	<b>Medium Density Mixed Use Precinct.</b> Residential, local level retail shops and services, household economic activity and cottage industries not involving use of, or installation of, total machinery driven by more than 10KW power and which do not create noise, vibrations, fumes, dust, etc. will be allowed only in independent dwelling units (not in tenement dwellings or flats). Daycare centers, dispensaries, clinics, public facilities and utilities, local community halls and service apartments and TCB standard hotels with boarding and lodging are allowed.	Sports complexes and public utility facilities in a minimum plot area of 4,000sqm. Cinema Halls may be permitted in a minimum plot size of 1000sqm.
RR Rural Residential	<b>Low Density Mixed Use Precinct.</b> Predominantly residential uses, ¼ of overall area of the house will be allowed for local level retail shops and services. Resorts, professional services, office spaces, and educational institutes shall be permitted.	Minimum plot size for uses like, educational institutions and office buildings shall be 1,000sqm. b. Resorts, hotels with boarding and lodging facilities of TCB standard in a minimum of 2,000sqm plot may be permitted.
H Heritage	<b>Cultural and Religious Heritage</b> 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, MoHCA	No new construction shall be allowed. Minor renovation shall be permitted as per the approval from local government. NOC to be obtained from Department of Culture, MoHCA.
I Institutional	Educational, Training, Cultural and Government Institutions, Public Libraries, Museums, Art galleries, Government Offices.	Residential and other activities incidental to the main institutional use, provided only 20% of the site should be used for such activities.  Parking fulfillment subject to design check and site visit.

<b>S Service</b>	Public utility, public facility, services buildings, Water treatment plant, sewage aerobic & mechanical plants, electric substations, Go-downs and vehicle workshops	
<b>E1</b> Environmental Conservation	Natural reserve and sanctuary, river Basin, Streams, rivulets, avi-fauna, fauna breeding places, unique flora and bio-mass preserves. Activities related to environmental enhancement/ protection and permitted/undertaken by or on behalf of the National Environment Commission. Existing structures with an approval may be retained, but new development and extension to the old structure (except the above mentioned) is not permissible.	To be cleared by the National Environment Commission (NEC) or NEC representative at Dungkhag level.  No service installations to private lots to be permitted through this zone.  Construction may be allowed if a detailed plot level soil and slope stability is carried out.
<b>E4</b> Agri-based Environments	Allied Agricultural Activities. All uses permitted in E-1, Farm house, Agriculture, Horticulture, Orchards, Floriculture, Vegetable Gardens, Facilities for Plant Tissue-culture, Mushroom Culture, Green Houses, Cold Storage incidental to Agriculture and related uses, Agro- based research Labs, Herbal Extraction Units, Dairy Farms, Poultry Farms, Herbal based health centres, afforestation. Light home workshops, workshops related to agricultural activity, repair of tools and implements of agricultural use, timber depots, uses pertaining to processing of agro/farm/milk products	More than one farmhouse structure (may accommodate more than one household) may be permitted provided the minimum area required for each farmhouse structure is 1000sqm.
<b>OS Open Space</b>	<b>Public Assets</b> Open space precincts of public assets like parks, gardens, community level/local recreational and sports facilities, etc.	
<b>HCD</b> Heritage Controlled Development	Only residential uses	

## **9.5. Building Regulations**

### **9.5.1. Setbacks and Plot Coverage**

The minimum setback to be maintained and the maximum plot coverage permissible shall be as specified in the Precinct schedule provided both the conditions are fulfilled.

### **9.5.2. Maximum Building Height**

The maximum building height, expressed in terms of the number of floors permissible shall be as specified in Table.

### **9.5.3. Attic**

Human occupancy of the attic spaces shall not be permitted.

### **9.5.4. Basement**

Excavation of ground for construction of basement shall not be permitted, provided, partial basements which become necessary to bring the building plinth level to the street level may be permitted.