

# GREEN & LIVELY LEH



## A PLAN FOR LEH'S PEOPLE & NATURE

ATTRACTIVE SUSTAINABLE LIVEABLE INCLUSIVE



Funded by  
The European Union

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LEDeG (Ladakh Ecological Development Group) works on promoting ecological and sustainable development that harmonises with and builds upon local traditions and culture of Ladakh .

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Liveable Leh Project - The overall objective of the project is to strengthen capacities of the local government, the Ladakh Autonomous Hill Development Council (LAHDC) to make Leh, its prominent capital city and surrounding areas more environment friendly and a symbol of resilient and sustainable urban development.

***The contract number is CSO-LA/2017/393-560***



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# Chapter 1

## Overview

*The 'Green & Lively Leh' plan report is a part of Liveable Leh Project funded by European Union & BORDA and implemented by Ladakh Ecological Development Group (LEDeG). LEDeG has collaborated with officials of LAHDC and Leh Municipality and numerous experts from national and international agencies.*

*On 7th August 2018, the Ladakh Autonomous Hill Development Council Leh constituted a special committee to develop a strategic plan for Leh town. The committee supported by experts from various fields related to urban planning and management was given the mandate to understand the nature and extent of development in Leh. This committee helped us evolve strategies to develop the "Green and Lively Leh" plan through several rounds of meetings, where we were able to identify various sites for the plan and prepare a public green and open space plan.*

## Background

The overall objective of the project is to strengthen capacities of the local government, the Ladakh Autonomous Hill Development Council (LAHDC) to make Leh, its central town and surrounding areas more environmentally-friendly and a symbol of resilient and sustainable urban development.

*The contract number is* **CSO-LA/2017/393-560**

Specific objectives:

- Train its officials and strengthen institutions to conceptualise and develop Leh as a resilient and liveable mountain city;
- Prepare implementation plans to aggressively improve public services that have deep environmental impact (sewage treatment, waste management, green public spaces and transportation)
- Educate Leh's 30,000 residents and 250,000 + tourists on issues related to climate change.

## Purpose of the plan

**As per work package 2.2.c: to create a detailed strategy and plans for Green and Lively Leh.**

Understanding the current scenario of public green and open spaces and development pattern of the town. Create a network of open spaces for all users, especially for children and the elderly, with diversity of open spaces to make Leh town attractive, sustainable, liveable and resilient.

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## Chapter 2

### Introduction



## Leh Town

Leh town is the administrative headquarter of the Union Territory of Ladakh. A Class 3 town, it comprises of 13 municipal wards with a total population of 30,870 according to the 2011 Census. The municipal area is spread across 17.2 sq. km. It is an important tourism town and the main educational, political and economic centre of the district.

Leh town is the nerve-centre of the entire Leh district as it is the administrative headquarter and its only urban centre, which provides all major services including administration, health and education, trade and commerce, facilities for industrial growth, transport and communication and a host of other services essential for the functioning of an urban community.

It has been experiencing rapid population growth over the last decade. It has also faced the additional pressure of a floating population serving various security forces. The town is the most urbanised area in Ladakh and attracts lots of migrants from all over the region for job opportunities.

A lot of economic processes and infrastructure are concentrated in and around Leh. People from surrounding villages visit Leh on a daily basis while migrant labourers from the district as well as Bihar, Uttar Pradesh and Doda reside in the town or nearby areas for seven months each year. Additionally, the district is a tourist centre with Leh town serving as an entry point and a base to explore the rest of the region. The town receives a large number of cars in the summer season leading to traffic congestion and pollution. All this leads to mass construction of buildings, roads and infrastructure. While this is a sign of growth it is not planned development. On the other hand, open spaces, streets of the town and pedestrian facilities are neglected by development authorities and by citizens themselves. Many public spaces around town have been converted into parking areas, footpaths have been narrowed to create more space for on-street parking, and residential roads are used to park cars. Our goal is to return open spaces and streets to pedestrians.

## Issues in Leh

As described later in the report, the people of the town have lost most of the public open spaces to parking and built-up structures. In the past, the people of Leh cherished social gatherings. Localities like Leh Old Town, which is has historically been called Stagophilok (Stago=space for informal social gathering, philok= outside). This Leh Old Town locality had street junctions with small seating areas attached to adjacent houses. The major religion in Leh is Buddhist and Islam, which are well-represented in this area. Despite various differences, people of this area have always cherished spending time together along the streets.

With the opening of the district for tourism in 1974, there have been positive and negative impacts. Tourists visit Leh for its nature, culture and people. In the small area of 17.2 sq. km, one can find six wetlands and several meadows with magnificent mountains in the backdrop. Ladakhis have tried to conserve these green areas and glaciers but increasing tourism and urbanism has had a detrimental impact on its ecology. Problems include construction on wetlands, over extraction of ground water, drying of wetlands, increase in the number of vehicles leading to noise and air pollution that in turn have an impact on glaciers. Moreover public spaces have been converted to parking areas. At the same time, the economy of the region has grown dramatically, which means that people of Leh town have become busier. As a result, people use vehicles to go everywhere and have stopped walking and enjoying various Leh's nature. Historically, Leh was located at crossroads of important trade routes for hundreds of years. As a result, people from different regions such as Yarkand, Baltistan, Kashmir, Himachal, Punjab and Tibet used to visit Leh for trading. Leh's market served as the main exchange point for goods. At that time, Leh had a healthy proportion of public open spaces.

The principal vision for Leh is to restore and maintain social gathering spaces that were an important element of contentment and happiness in Leh. This requires non-motor transport facilities on the roads of Leh and active and passive recreational spaces. Senseitive planning and urban design principles will encourage people to adopt non-motor transport and enjoy open spaces.



Figure 1 : Flow chart showing issues related to open and green spaces

## Aim and Objectives

### Aim:

*To provide a network of open public and green spaces tailored to meet the recreational needs of the town's residents, while preserving and enhancing the unique environmental attributes and the visual character of the town.*

### Objectives

Providing a convenient network of open spaces across Leh town.

Use open spaces as a tool kit to Increase the liveability index of the town.

Create opportunities for all by providing safe, inviting and affordable spaces.

Make the town more attractive to residents and visitors through a comprehensive townscape enhancement strategy, which includes streetscapes, open spaces and town entries.

Maximisation of green spaces.

Provide a diversity of public open spaces such as sports centre, city centre park, city cultural park and flora-fauna park.

Preserve historical and cultural heritage sites in their original condition for future generations.

Revitalise old walking trails through agriculture fields, old streets, and market places by place-making techniques.

## Open space

Open space is any open piece of land that is undeveloped (has no buildings or other built structures) and may or may not be accessible by the public.

### Green open space:

Land that is partly or completely covered with grass, trees, shrubs, or other vegetation). Green space includes parks and community gardens. It may also include places that are not accessible for the public but have a green.

### Recreational open space:

Open spaces that have the potential to create active and passive uses.

- **Passive uses** refer to elements such as seating places and areas for enjoying views of scenery as well as places for young people to meet and interact.
- **Active uses** encourage physical activities including walking, running, cycling, skating and playing.

### Living street:

It is a mixed-use pedestrian street that may provide social space and play areas. Traffic calming is often implemented in streets that are pedestrian-friendly. Living streets are designed to be safe for children.

### Blue Space:

Attractive blue spaces such as waterfront parks, open air streams, canals, lakes, ponds and fountains are thought to improve quality of life and also counter urban heat.

### Previously developed land (PDL):

The opportunity to create public open spaces on land that has previously been developed for other purpose and then abandoned or now used as a historic place.

- Historic places
- Parking areas
- Old market places
- Old towns

### Plaza:

A place surrounded by urban buildings and often featuring walkways, trees and sometimes shopping and eating zones.

### Community Garden:

A community garden is a place where a community comes together to grow fresh fruits, vegetables, and sometimes flowers. The garden serves as a place for neighbours to get to know each other and build relationships.

### Protected area:

These are areas which are clearly defined geographical spaces, recognised, dedicated and managed through legal or other effective means, to achieve long-term conservation of nature and associated ecosystem services.

## Open Space Principles

Great public spaces are places where celebrations are held, social and economic exchanges occur, friends run into each other, and cultures mix. They are the 'front porches' of our public institutions – libraries, field houses, schools – where we interact with each other and the government. When these spaces work well, they serve as a stage for our public lives. They have various dimensions that we need to consider in our discussion:

- Quantity
- Access & Linkages
- Comfort & Image
- Uses & Activities
- Sociability

### Quantity :

Open space should be distributed among all wards of the municipal area with equity in terms of amenities and quality. It should also be provided in areas where migrants live. Amenities and usability should be for all age groups.

The guidelines set by the Bureau of Indian Standards are:

OPEN SPACE CATEGORISATION	SIZE GUIDELINES	DISTANCE FROM THE HOUSE
Local Parks & Open Space <i>Providing for courts games, children's play area, seating</i>	2 hectares	800m from house
City park <i>Large area of open space providing space for variety of natural features &amp; landscape with wide range of sports facility</i>	10 hectares	1.5 km from house
Small open space / Pocket spaces <i>Small area of open spaces that provide natural surface and shade area</i>	Under 0.4 hectares	Wherever feasible
Linear open space <i>Waterfront, market place, living street, plaza.</i>	Variable	Wherever feasible

Table 1 Open Space standard,  
Source : Indian Standard of Bureau

### Access & Linkages :

You can judge the accessibility of a place by its connections to its surroundings, both visual and physical. A successful public space is easy to access and is visible both from a distance and up close. Open spaces of a neighbourhood should be reachable within walkable distance of 800m.

The edges of a space are important as well: For instance, a row of shops along a street is more interesting and generally safer to walk by than a blank wall or empty lot. It should be permeable from all direction. Proper pathways should be leading to the open space from every corner of the neighbourhood. Walkability of a city plays an important role in making urban open spaces successful.

Public transportation are the backbone of urban spaces. Open spaces should be accessible by public transport as well as other modes of transport.

### Comfort & image :

Whether a space is comfortable and presents itself well:

*...has a good image is key to its success.* Comfort includes perceptions about safety, cleanliness, and the availability of places to sit—the importance of giving people the choice to sit where they want it is generally underestimated. Places give urban spaces an image. For example, New York's central park and Time Square are two places that have given an identity to New York. This identity gives a sense to urban spaces.

Open spaces should also be sustainable. Examples include:

There should be more trees than grass as the latter are more water intensive and need more maintenance.

Materials to construct lavatories, pathways, cafes and other structures should be constructed with locally-available materials.

The cost of operation and maintenance should come from the park itself.

### Uses & Activities :

Activities are the basic building blocks of great places: They are the reasons why people visit specific spaces in the first place, and why they continue to return to it. They also make a place special or unique. When there is nothing to do in a place, it will remain empty and unused—a sure sign that something needs to change.

There are different types of open space all around the world. Some are meant for passive recreational purposes and some for active ones. In addition, there are living streets, plazas, open air theatres and other cultural centres that serve as open spaces. Urban areas should have all these types of diverse open spaces.

### Sociability :

This is a difficult quality for a place to achieve but once attained, it becomes an unmistakable feature. When people see friends, socialise with their neighbors, and feel comfortable interacting with strangers, they tend to feel a stronger sense of place or attachment to their community—and to the place that fosters these types of social activities.

## How liveability is linked with open and green spaces

There are various tools developed by governments and other organisations to measure the liveability of urban areas. For instance; the United Nations City Prosperity Index is one such tool used by cities to measure their level of prosperity. This tool was developed by the United Nations Habitat Group. In addition to such international tools, there are other tools such as the one prepared by the Ministry of Urban Development called the Liveability Standards in Cities, which is also known as Liveability Index. The advantage for using this tool is that the Liveability score of Leh can be then submitted to the Government of India and compared to other towns in India.

### The Liveability Standards in Cities

The Liveability Standards in Cities prescribe four pillars to measure Liveability :

- Social
- Physical
- Economic
- Institutional

These pillars are further divided into 79 indicators. The physical pillar holds maximum percentage and includes an Open Space Index:

#### 1) *Per capita availability of green spaces:*

Total area of green space (sq. m.)

----- = \_\_\_\_ sq. m.

Total population of the town

#### 2. *Per capita availability of public and recreational places*

Total area of public and recreational places (sq. m.)

----- = \_\_\_\_ sq. m.

Total population of the town

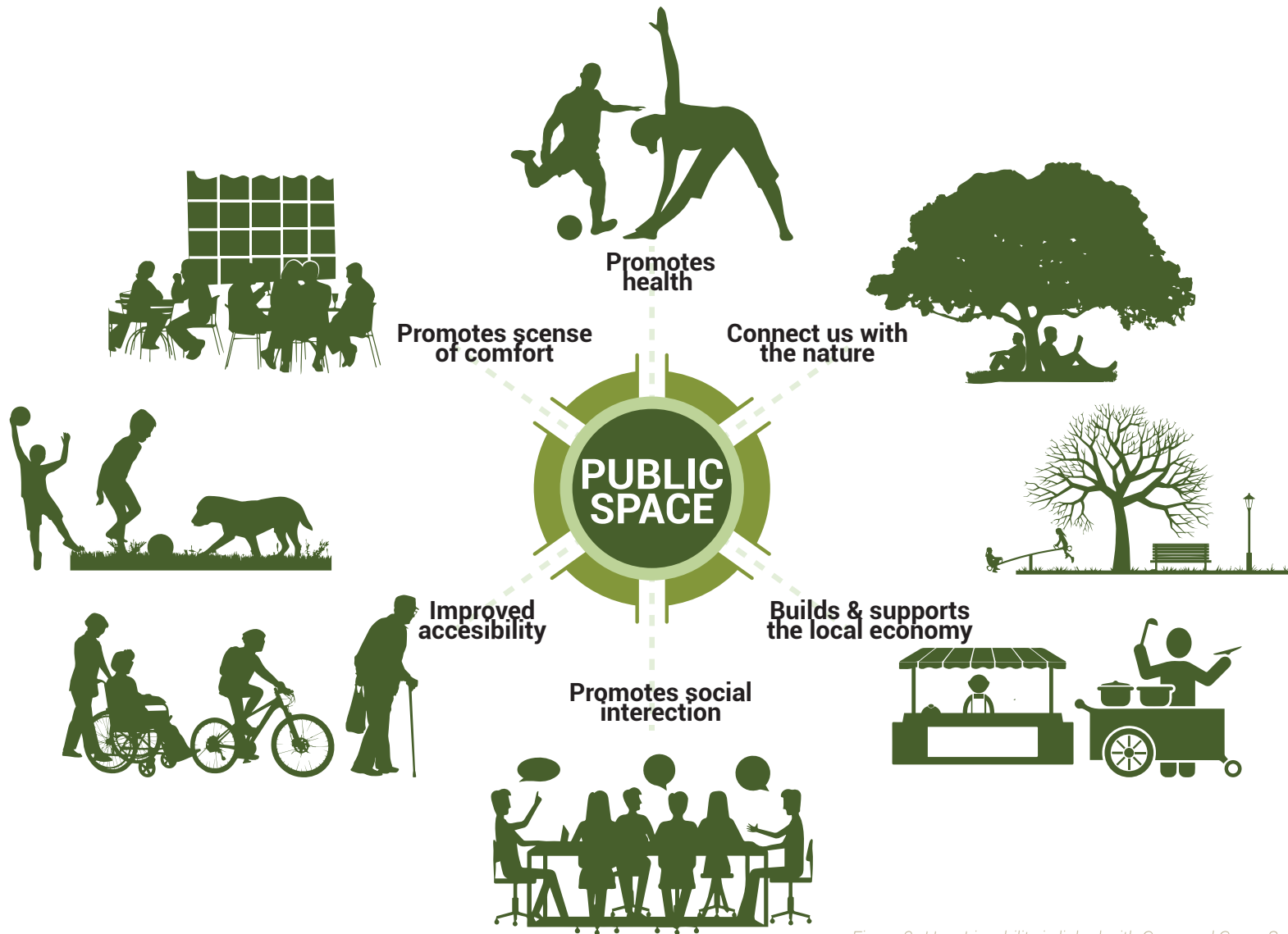


Figure 2 : How Liveability is linked with Open and Green Spaces

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## Chapter 3

### Study Area & Analysis



## Land Use

Leh town was initially settled in 16th Century when the capital of the kingdom was shifted from Shey to Leh. The Leh Palace was built during the reign of King Sengge Namgyal and led to development of settlements along the base of the palace. Since then Leh has slowly developed as the largest city in the Union Territory of Ladakh. Leh's old town areas has now included in the World Monument Funds list of 100 most endangered sites. Modern Leh town is now spread across 17.2 sq. km and divided into 13 wards. The land use of the town remains largely homogeneous.

Agriculture covers the largest surface area and accounts for 40% of the total land of the town, which is about 6.8 sq. km including 1.23 sq km of tree cover and 0.32 sq km of scrub cover. These agricultural lands are primarily located Ward 1, Ward 2, Ward 3, Ward 4, Ward 5 and Ward 6. Residential area covers around 22% of the town area, which is around 3.7 sq km and is distributed across all wards. Leh district shares international boundaries with two countries: China and Pakistan and defence forces occupy around 16% of Leh town's land cover. Public and semi-public areas account for 1.2 sq km of the town area, which is approximately 7%. Commercial areas are spread over 3% of the total town cover. Recreation and industry account for 1% each of Leh town's total land cover. Mixed land use accounts for 0.02 sq km of Leh town's land area.

Urban areas around the world are following the compact city guidelines, under which the main element is mixed land use. In the case of Leh it is the exact opposite wherein mixed land use cover is lower than other land uses.

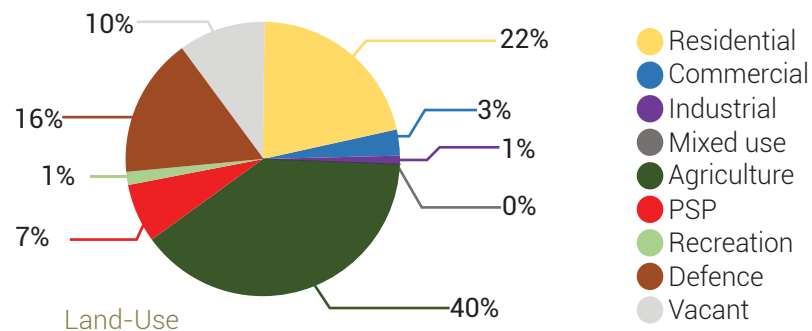
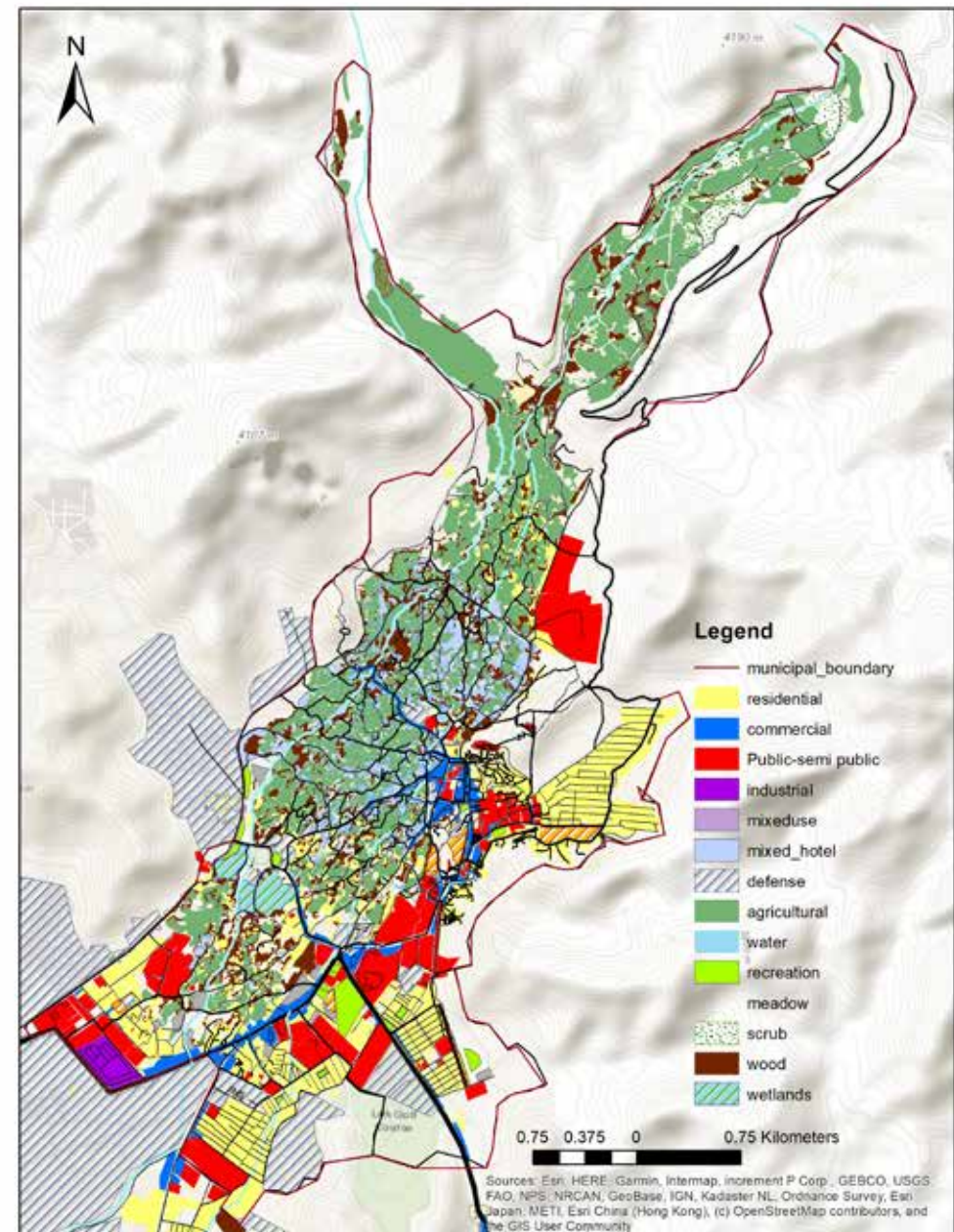


Figure 3 : Landuse distribution of Leh



Map 1 Landuse Map of Leh

## Settlement typology

The city has seven different types of settlement patterns as development has taken place based on availability of appropriate land in this mountainous landscape. The street patterns have also developed in a similar manner.

### 1) Urban village

Leh is the largest town in the UT and largest land use is under agriculture, which accounts for 40% or 6.8 sq km. A majority of the agricultural lands are located in the uppermost part of the town. This region also replicates rural characteristics with cattle farming, physically removed from the town centre, clean water bodies, and negligible commercial areas.

### 2) Planned area

Historically land in Leh town was owned by large land owners (similar to the Zamindar system) and monasteries. After the abolition of the Zamindari system, land ownership became more inclusive of other social groups. Thus, most areas of the town have developed organically. There is very little government-owned land in the town. One of the areas developed by the administration for migrants from other parts of Ladakh is called Housing Colony. It is planned in a grid-iron pattern with some basic amenities, (park, school, religious buildings and a commercial centre).

### 3) Organic development

The core of the town is the old town area and areas around, which remains the oldest quarters and has developed organically. It is connected by a maze of narrow, winding paths. This part of the city is only accessible on foot even now.

### 4) Hilly settlement

Snemoling in Ward 11 is a settlement on the western face of a mountain. It has limited accessibility and has no provisions for infrastructure, or basic facilities such as water. Though this area has the highest net residential area, it is largely neglected by the urban local body.

### 5) Semi planned

Ward 8 in the southeastern part of the town was distributed among family members of army personnel who were martyred in the 1990 Kargil War. Although, the land was distributed in a grid-iron pattern, no land was allotted for parks, a community centre, and schools. Similarly, areas in the northeastern part of the town were distributed to residents of Leh's old town area in equal blocks of land in a grid-iron pattern.

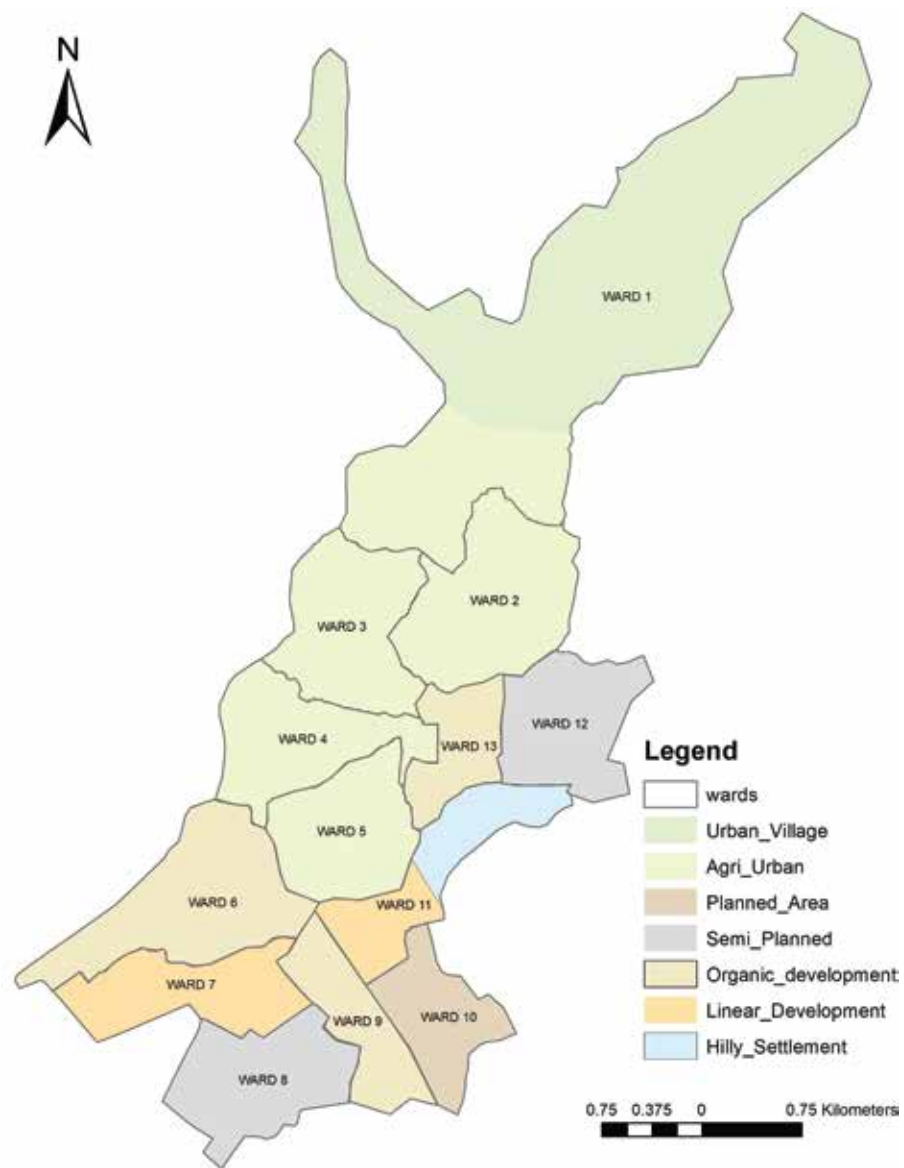
### 6) Agri urban

The northwestern part of the city is dominated by agricultural fields. This part of the town hosts the maximum number of hotels and guest houses and serves as a major tourist area, here built up or houses are scattered along the agricultural fields and density here is low as compared to other areas.

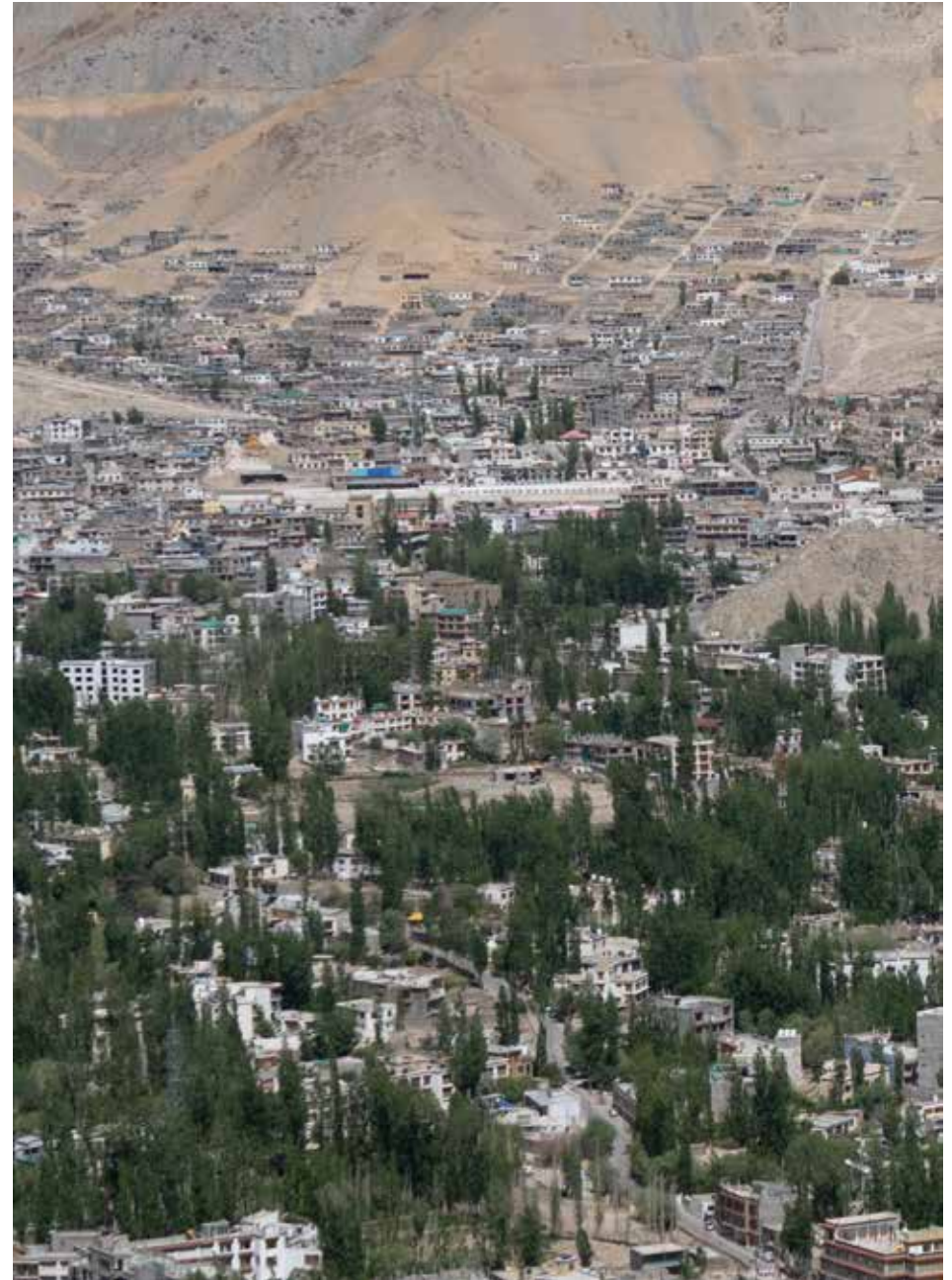
### 7) Linear growth

The southern part of the city is developed around the main road or highway and all the major commercial areas and important facilities located along the road, and the residential areas around it.





Map 2 Settlement Typology map of Leh



## Understanding the urban characteristics:

We used four elements to understand the spatial use of Leh's urban area: **Green area, blue area, built up density and its use and the town's road network**. Based on these elements we were able to divide the town into seven different characteristics. These characteristics are called spines.

A 'spine' has been one of the most powerful constructive concepts in urban planning since people first started planning urban areas, especially the heart of an urban area; its centre. In the 18th cCentury a movement known as 'City Beautiful Movement' started. It was also known as spinal movement. The focus of the movement was to make core areas, public places, plazas in urban areas more interesting and beautiful.

A spine, briefly, is a form that holds the rest of the body together without bending. In other words, the spine binds a whole form of body from head to tail by providing it with a support. This concept reflects the back bone , which is made up of numerous small interconnected bones stacked on top of each other. The spine and their related structures (such as the intervertebral disk, the ligaments, and muscles) work in concert to provide:

- Movement,
- Balance,
- Upright posture,
- Protection,
- Shock absorption, to an organism.

Like the spine of a human body, different spines for Leh town have been identified, which support the city economically, ecologically and socially.

- Blue spine/ water bodies
- Green spine/ green cover
- Soft spine/ low built-up density area
- Hard spine/ core commercial
- Residential spine/ residential area
- Working spine/ institutional area
- Town network

### Blue spine / water bodies :

It consists of blue areas in the town. The mountains to the north of the town are covered by glaciers (Khardung-la glacier), which feed the main stream of Leh town. This stream flows through the town covering a distance of 9.42 km. In many parts of the town, especially in Ward 3, the stream bank is encroached by buildings, which will continue till regulation of such constructions are enacted and implemented. These encroachments have also led to increased pollution of water bodies. The town is surrounded by mountains in the east and west, which has forced it to grow in a linear manner. This also limits the width of a setback along the stream. Thus, we have taken a 10m setback while identifying the blue spine of Leh town. An urban area with a river, canal or stream following through it is regarded as beautiful if it is used and maintained properly.

### Green spine / green cover :

The green areas in Leh town include agricultural fields and trees with low built up density. The northern part of the town, which falls in Ward 1, has low built up density along with a lot of agricultural fields and trees. This part of the town resembles a rural area. The green spine provides an opportunity to develop natural open spaces and green boulevards towards the town centre.

### Soft spine / low built-up density area :

These are areas that have moderate built up density with agricultural fields and trees. This includes Ward 2, Ward 3, Ward 4, and Ward 5, which have limited commercial activities, moderate built up density and moderate agricultural covered area. This area has most of the hotels and guest houses.

### Hard spine / core commercial :

Core commercial areas are those with widespread commercial activity and high traffic flow. Ward 13 and Ward 7 have large presence of commercial activity areas where all supply chain management system take place. These areas have the potential to develop good market places and plazas.

### Residential spine / residential area :

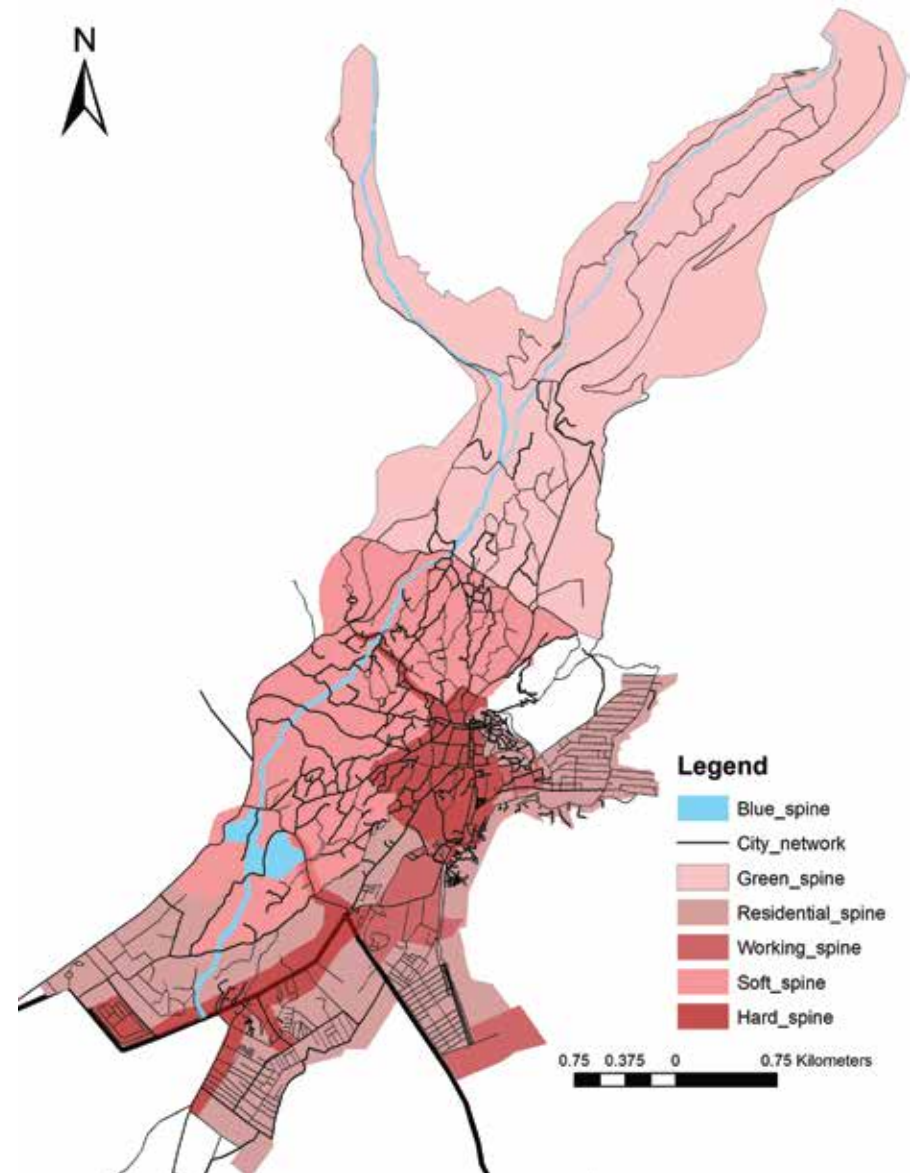
These are the areas where the citizens of the town reside. Most of the residential areas of Leh have low per capita open space and no neighborhood parks. These areas have the opportunity to bring neighborhood parks, pocket social areas, active recreational spaces.

### Working spine institutional area :

This part of the town includes institutions with low residential built up with ample opportunities to create plazas. Ward 12 and Ward 10 have a high number of institutions and act as the town's brain.

### City network :

All the roads of the city come under the city network. These networks facilitate accessibility and mobility to the open spaces spread across the town. Based on the traffic flow of the roads, some can be converted into pedestrianised streets.



Map 3 Urban Spine Map

## Demography

### The town's population

The population of the town varies seasonally. In summers it shoots up to **65,927** due to the presence of tourists and migrants (labourers and villagers). In winters, it reduces to **35,807** (*local population*).

The total population on account of the following special factors :

- 1) Residents
- 2) Tourism
- 3) Migration

### Residents

The current local population was 35,807 in the Leh municipal Area. From 2,401 residents in 1921, the population increased to 30,870 in 2011 (census 2011). The current population is 35,807 but an exact figure is difficult to estimate due to significant rural-urban migration within Leh district, especially from nearby villages, in the summer.

The chart shows that in the 1990s, people of Ladakh moved to Leh town seeking better schools, hospitals and livelihoods. By 2011, the population reached 30,870, representing 34% of the district's population. Since 2008, tourism has driven the town's growth, and the population is likely to cross 41,000 in 2027. This growth is also reflected in the physical spread of Leh town and residential colonies have emerged along its periphery. While India's urban population grew about 2.1 times from 1991 to 2018 (217 Million to 460 Million), Leh's has grown 3.4 times. The resident population drops in the winter by 15 to 20% as many people leave for warmer places.

### Residents of Leh Town

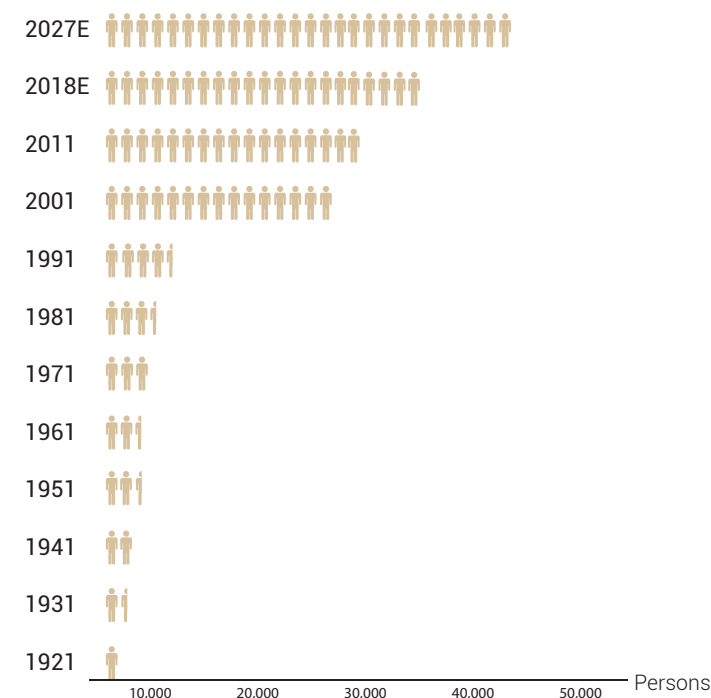


Figure 4 Population growth since 1921 & projected population till 2027 of Leh town

Note: The sharp jump in population from 1991 to 2001 is partly due to expansion of administrative boundaries of the town.



Leh's full-time resident population was estimated to be 35,807 in 2018 and the total population, including migrants, is estimated to be **65,927**.

Type	Population	Source
Local population 2019	35807	Primary & secondary surveys - ICDS - District statistical - Department
Tourist	11460 (one-week football)	294710 (May to September 2019) - Tourism department leh
Migrant labourers	18660	Police stations Labour registration department
Total population	65,927	Peak Population in summers on a given day

Table 2 Population Growth of Leh Town,

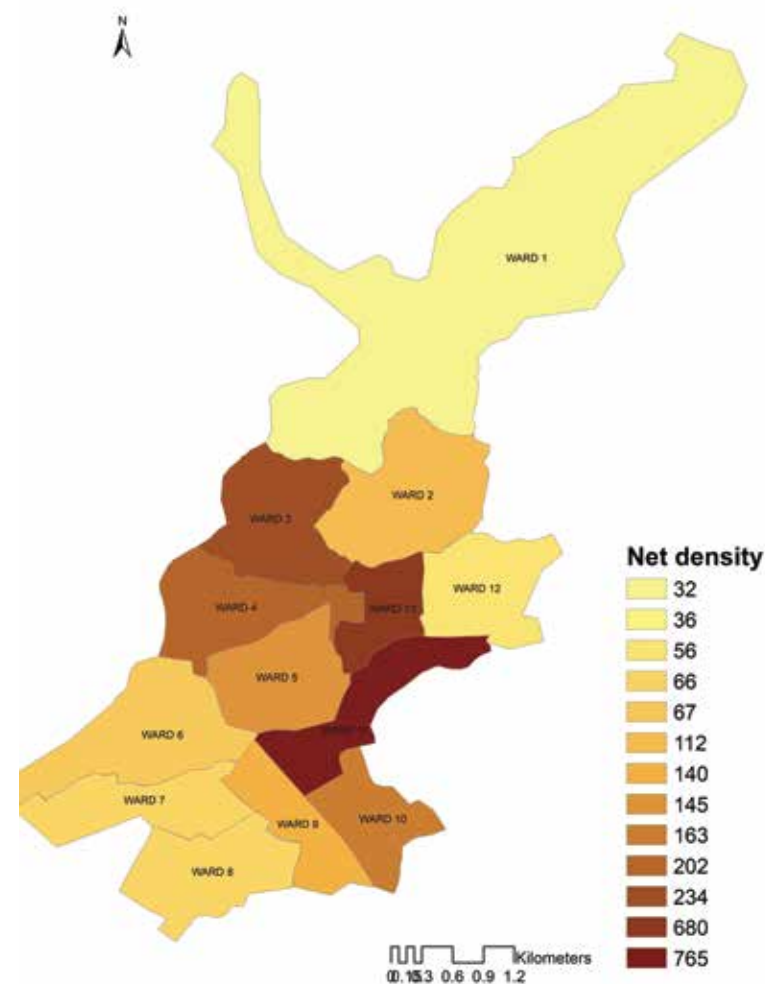
### Spine wise population distribution

Spine	Population	Area (sq.km)
Hard spine	3128	1.17
Soft spine	6314	3.2
Residential spine	41912	3.9
Green spine	3088	5.8
Blue spine	45	0.46
Working spine	Nil	0.6
City network	Nil	0.8

Table 3 Spine-wise population distribution

### Net residential Density

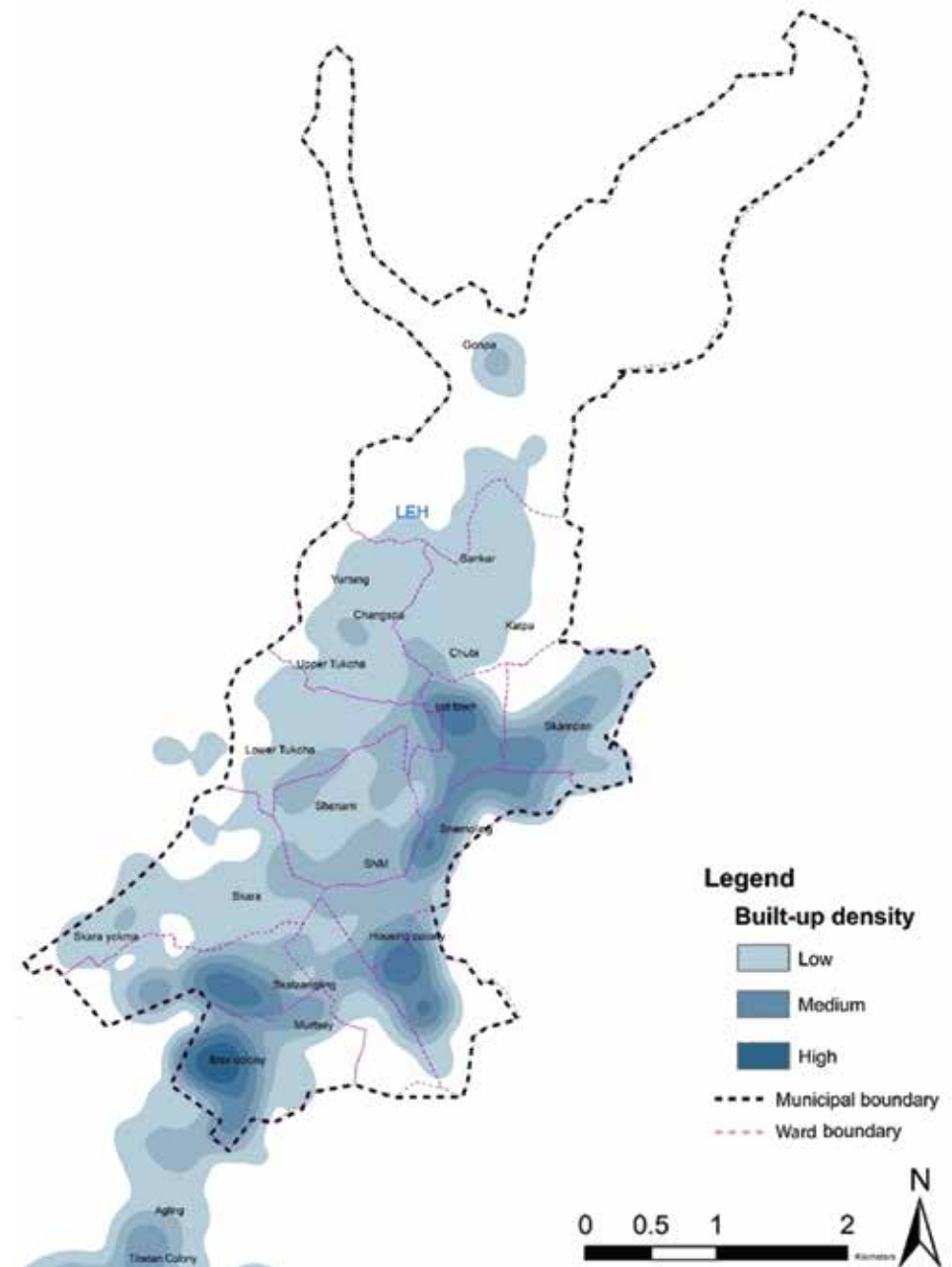
The net residential density of the city is 135pph. Ward 11 or Snemoling has the highest density of people as it is settled on a hill with the limited residential area, followed by Ward 13 or Leh core area. Ward 1 is sparsely populated and has the lowest population density.



Map 4 Ward-wise net residential density (ppkm) map

## Built-up density

The map below shows the built up density or settlement density of Leh town. This built up density influences land use and travel patterns for the whole town. Areas with higher density (Skalzangling, Ibex Colony, Housing Colony and Leh Market area) are the major activity and commercial centres of the town.



Map 5 Built-up density map



## Tourism

Parts of the Ladakh region were opened to outside visitors in 1974. Since then, many areas in the region have been opened for tourism. Leh town has emerged as a major tourist destination through which tourists access the rest of the region. The adverse weather conditions in the winter months from September to April, keeps the tourist traffic at its minimum. However, a sizeable number of tourists are always present in Leh, which serves as a base to access other regions in Ladakh. There is thus a need for civic amenities in and around Leh town. Around 294,710 tourists visit Leh between May and September and stay in Leh town for an average of seven days. This means around 11,460 tourists are at any given time in this period (  $294710 \text{ visitors} \times 7 \text{ days per visitor} / 150 \text{ days of tourist season}$  ).

Almost 70% of the tourist population in Leh town is concentrated in four wards; Ward 3 (Changspa ), Ward 4 (Tukcha), Ward 5 (Sheynam) and Ward 13 (Leh Main market). These wards have the highest number of hotels and guest houses. According to the Tourism Department, 277,255 tourists visited Leh in 2017 and around 322,000 in 2018 (Figure 2). In 2007, only 54,346 tourists visited—a six-fold growth in 11 years or an annualised growth of 18%.

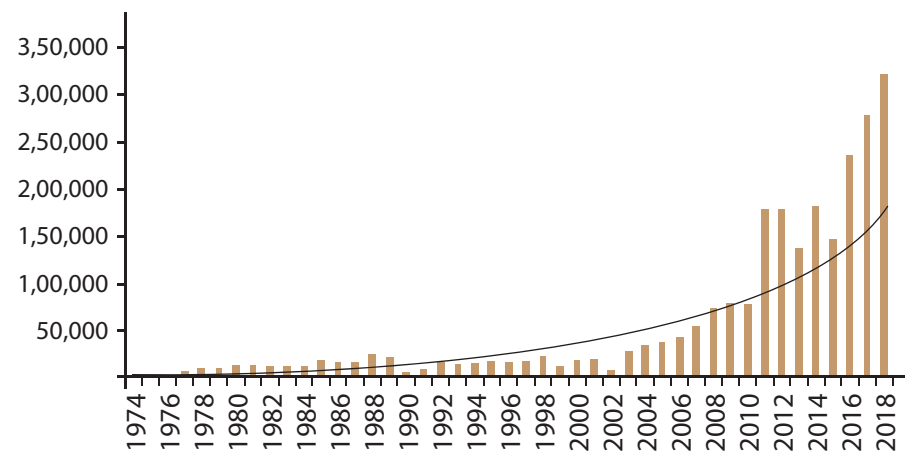
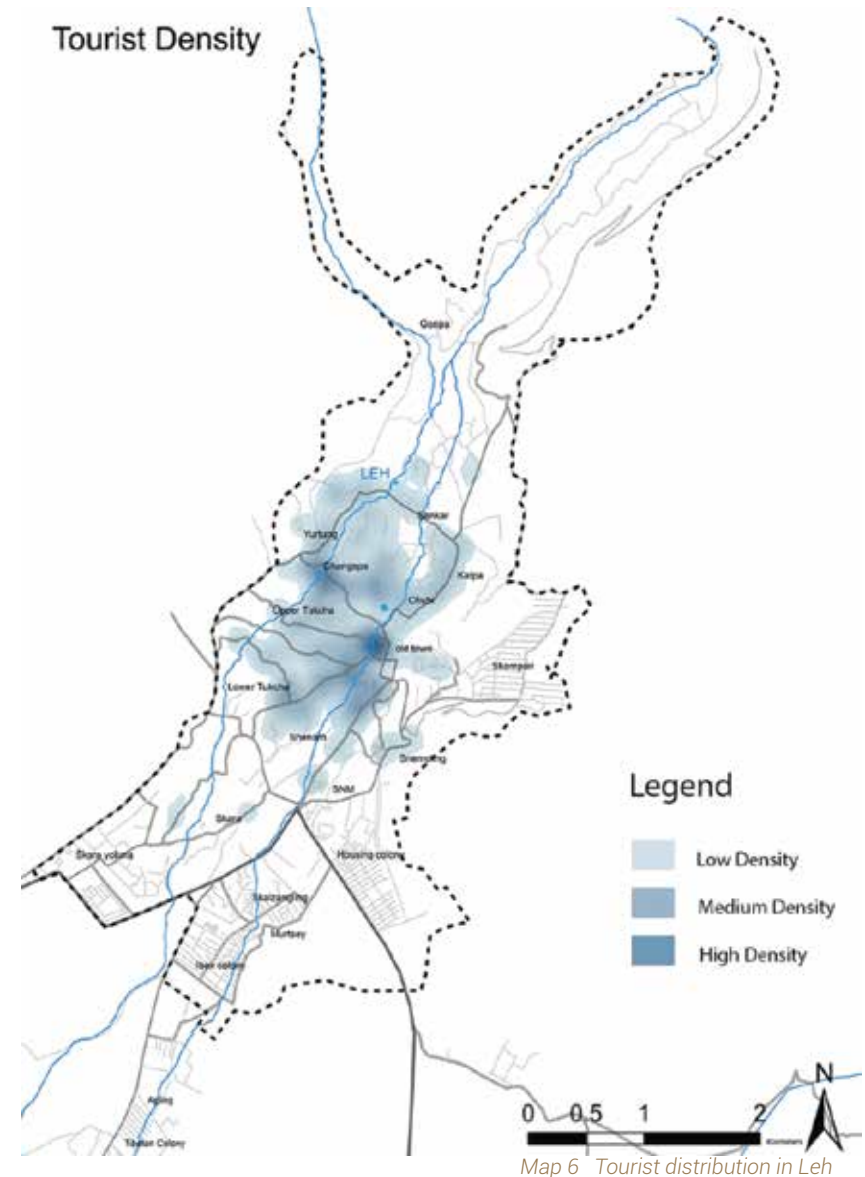
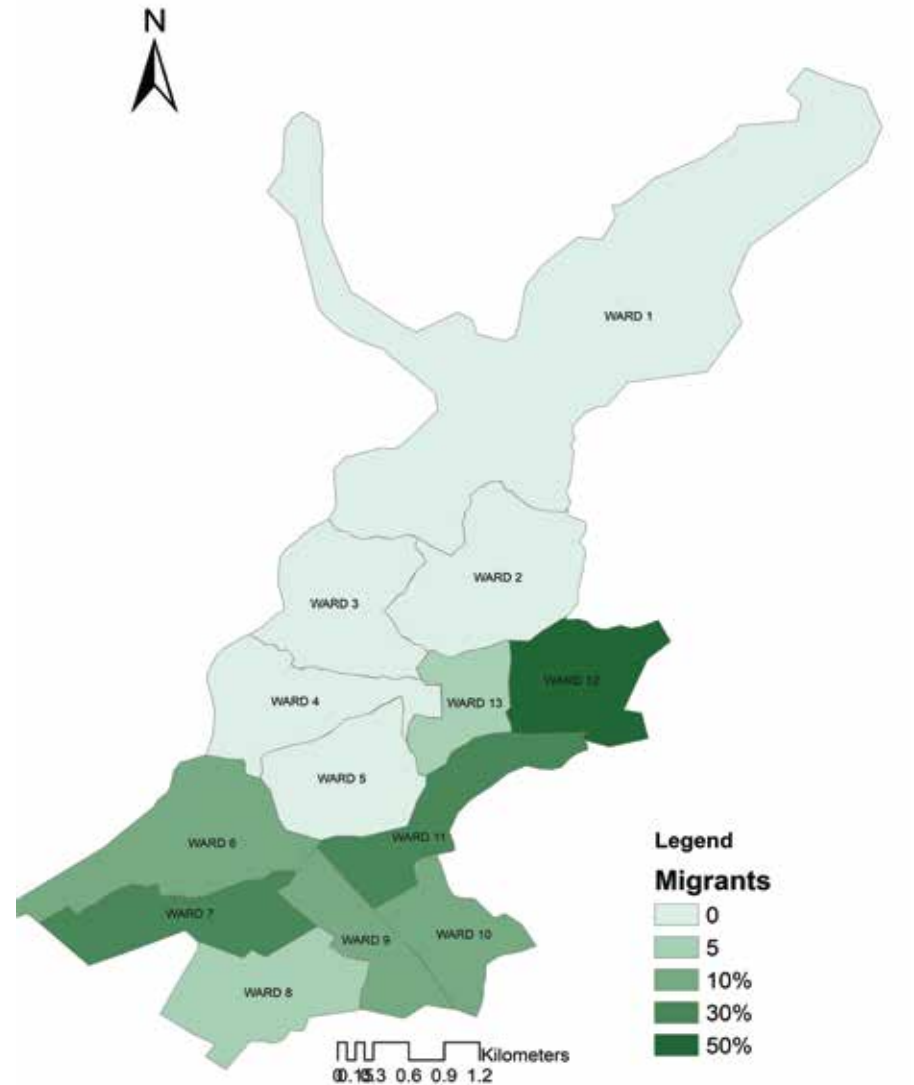


Figure 5 Tourist visiting Leh town, Tourism Department, J&K



## Migrant population

Migrant labourers in Ladakh originate from distant places such as Nepal, Bihar, and Uttar Pradesh. There has been an occupational shift from primary sector to secondary and tertiary sectors. In addition, the presence of defence establishments also exerts pressure on civic amenities. There are two main types of migrants: Migrant labourers and local villagers. Labourers are concentrated in areas with lower rents, especially Skampari or Ward 12. The villagers who reside in the city are here for employment and access to education institutions or have shifted from primary to tertiary activities. The migrant population is distributed along the eastern and southern part of the town.



Map 7 Migrant population distribution map

## Analysis

### Existing Open Space inventory

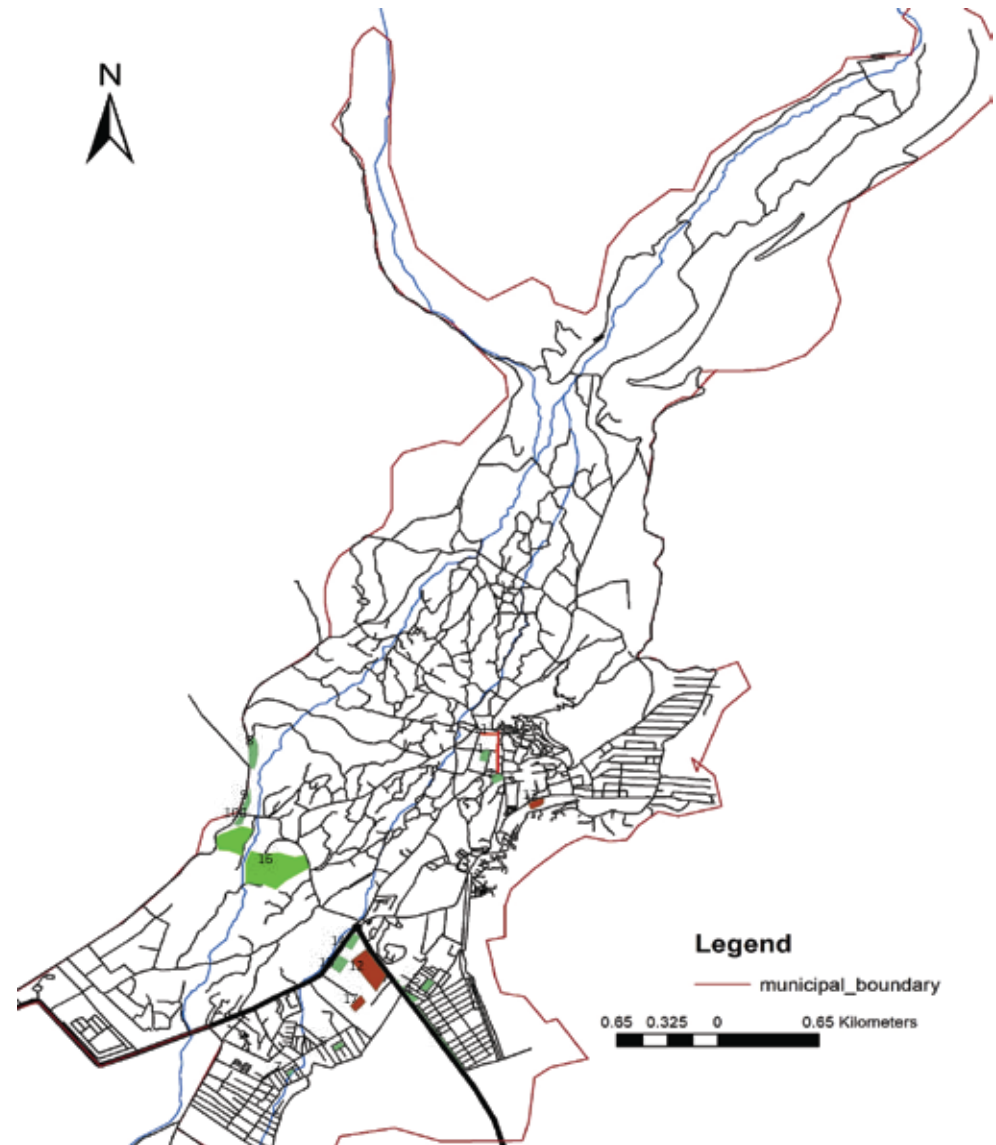
Over the last century, public open spaces in Leh have decreased due to urbanisation. In the late 20th Century, Leh main market was a plaza, where all trade took place and Polo ground, which is now a parking area, was used to host traditional polo matches. There were several other such places spread across the town including Chubi Spang, Karzoo dZing (pond) and Skara Spang. All of these places have changed their use with time. Some of them have been encroached by human to build residential buildings while some meadows and wetlands have dried due to overexploitation of ground water from the nearby places.

In the early 21st Century, the army developed the first park in Leh town. Then in 2015, four neighborhood parks were built under the Atal Mission for Rejuvenation and Urban Transformation. Two community-owned parks were built in 2002 by private owners.

S.No.	Open Space Name	Typology	Area
1.	Skara wetland	Natural open space	111,064 sq.m
2.	Buddha Park	City park	4,369 sq.m
3.	Housing Colony park-1	Neighborhood Park	4,941 sq.m
4.	Housing Colony park-2	Neighborhood Park	2,809 sq.m
5.	Housing Colony park-3	Neighborhood Park	4,152 sq.m
6.	Ibex Colony park-1	Neighborhood Park	2,241 sq.m
7.	Ibex Colony park-2	Neighborhood Park	1,361 sq.m
8.	GH park-1	Neighborhood Park	1,200 sq.m
9.	GH park-2	Neighborhood Park	4,794 sq.m
10.	GH park-3	Neighborhood Park	3,381 sq.m
11.	Leh market	Plaza	6,311 sq.m
12.	NDS Sports stadium	Sports	30,290 sq.m
13.	Indoor Stadium	Sports	4,686 sq.m
14.	Skyatsags Memorial Park	Multipurpose park	5,785 sq.m
15.	Skyatsags Park	Neighborhood park	7,982 sq.m
16.	Ice Hockey Rink	Sports	3,705 sq.m
17.	Changs-pa street	Pedestrianized street	2,423 sq.m

Table 4 Existing Open Space of Leh

Green Surface Brown Surface



Map 8 Existing open space of Leh

Per capita open space

A lot of research has been carried out worldwide to assess the availability of open space per citizen. According to the World Health Organization, there should a minimum of 12 sq. m of green space per capita and 9 sq. m of open space per capita. We need three sets of data to calculate the availability of green space and public and recreational spaces per capita:

- Total population of the city
- Total area under green space
- Total area under recreational spaces

1. Per capita availability of green spaces:

Total area of green space (sq.m.)	139,584
-----	
Total population of the city	54,467

sq.m.

Per capita availability of green space = 2.5 sq.m

Though Leh's has 6.8 sq. km of area under green cover, the green space per capita remains rather low. According to generally accepted classification of green space, agricultural land are included but they are privately-owned with nothing to prevent people from building on it. Many green spaces are privately-owned or are not open for the public. Similarly, there are many wooded areas that are owned by the government where entry is restricted.

2. Per capita availability of public and recreational places

Total area of public and recreational places (sq.m.)	96,653
-----	
Total population of the city	54,467

sq.m.

Per capita availability of public and recreational places = 1.7 Sq.m

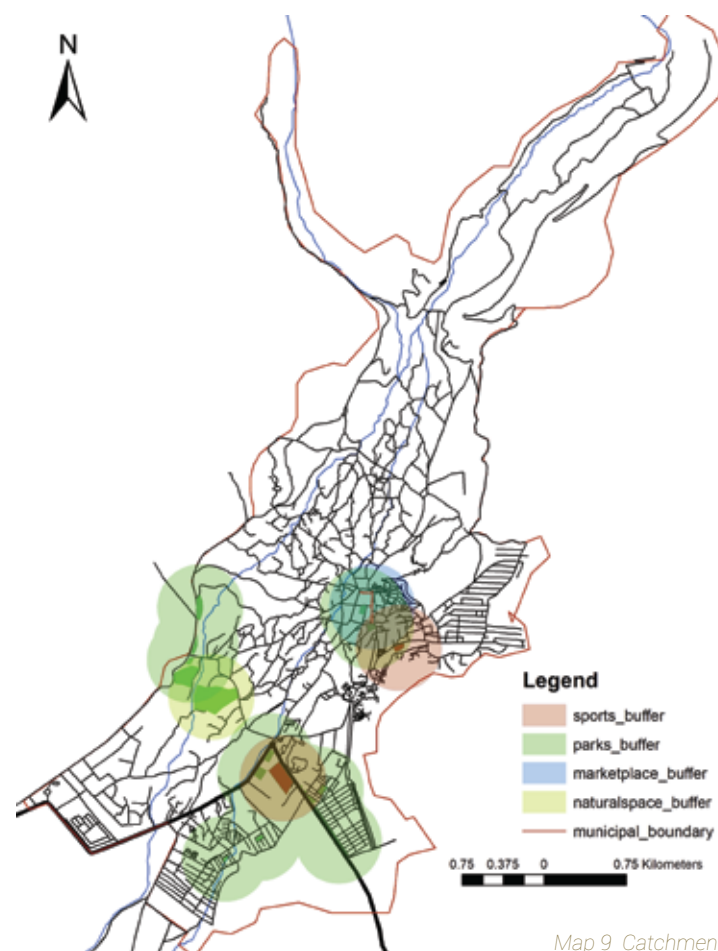
In the context of the global standard of 15 sq. m per capita, Leh's performance on public and recreational spaces per capita is very low. Similarly, the global standard for open spaces per 1,000 people is four hectares. In this regard, Leh has 0.34 hectare per 1,000 persons.



Figure 6 : one of the prominent open spaces, Skara spang

## The catchment area of each open space:

A buffer of 400m was taken around all open spaces to assess the population it is serving. The town is distributed into different spines based on their land use, built up density and population density. We assessed existing open spaces in each spine.



Map 9 Catchment area of existing open spaces

## Spine- wise analysis

### 1) Residential spine:

In the city, 3.9 sq km is under residential spine. The residential spine was identified in Ward 5, Ward 6, Ward 7, Ward 8, Ward 9, Ward 10, Ward 11, Ward 12 and Ward 13.

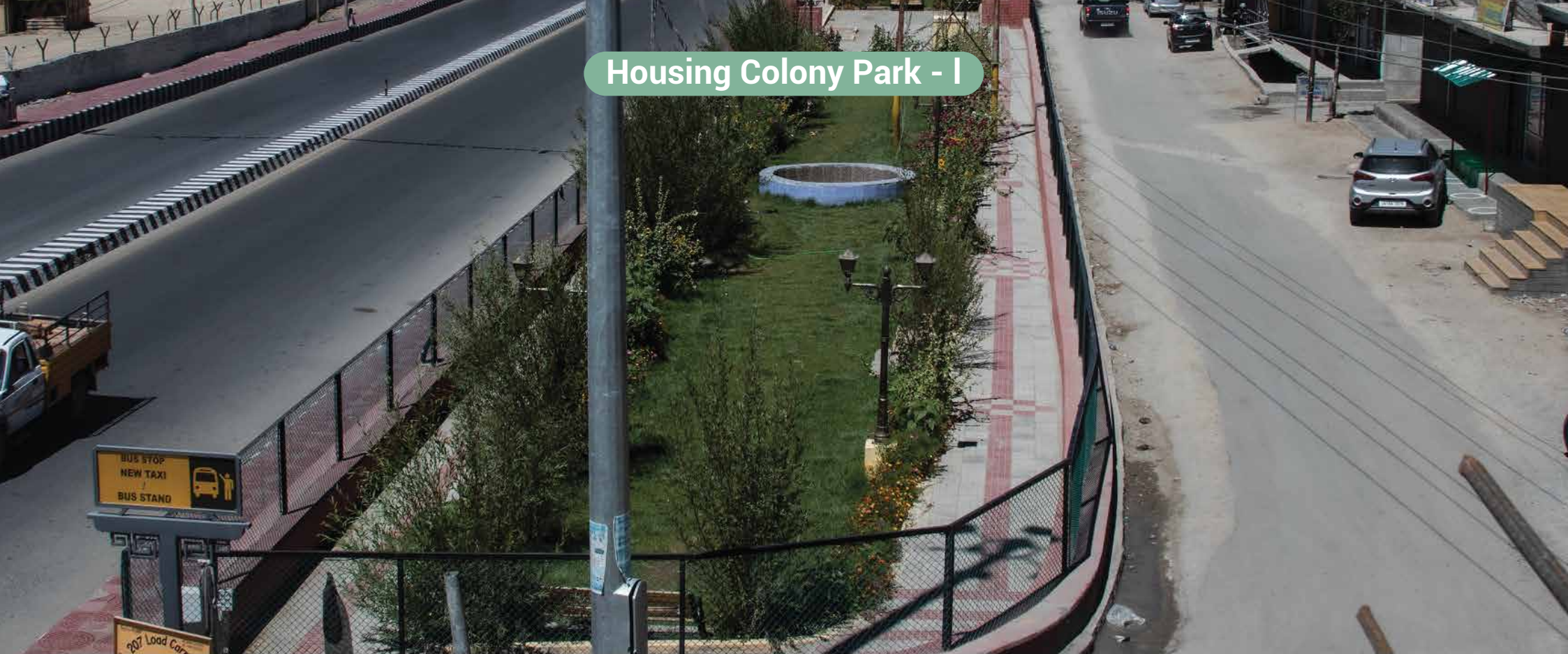
Eight open spaces are located in this spine:

- Housing Colony park-1
- Housing Colony park-2
- Housing Colony park-3
- Ibex Colony park-1
- Ibex Colony park-2
- NDS Sports stadium
- Indoor Stadium
- Ice hockey Rink



Map 10 Open spaces located in residential spine





## Housing Colony Park - I

### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

### Use

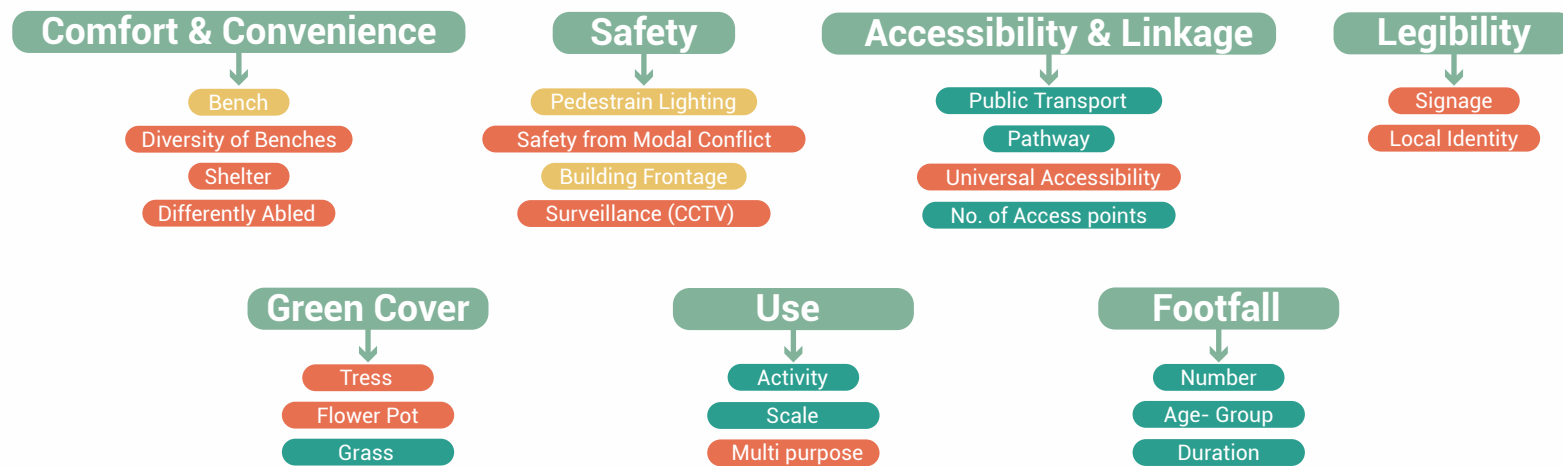
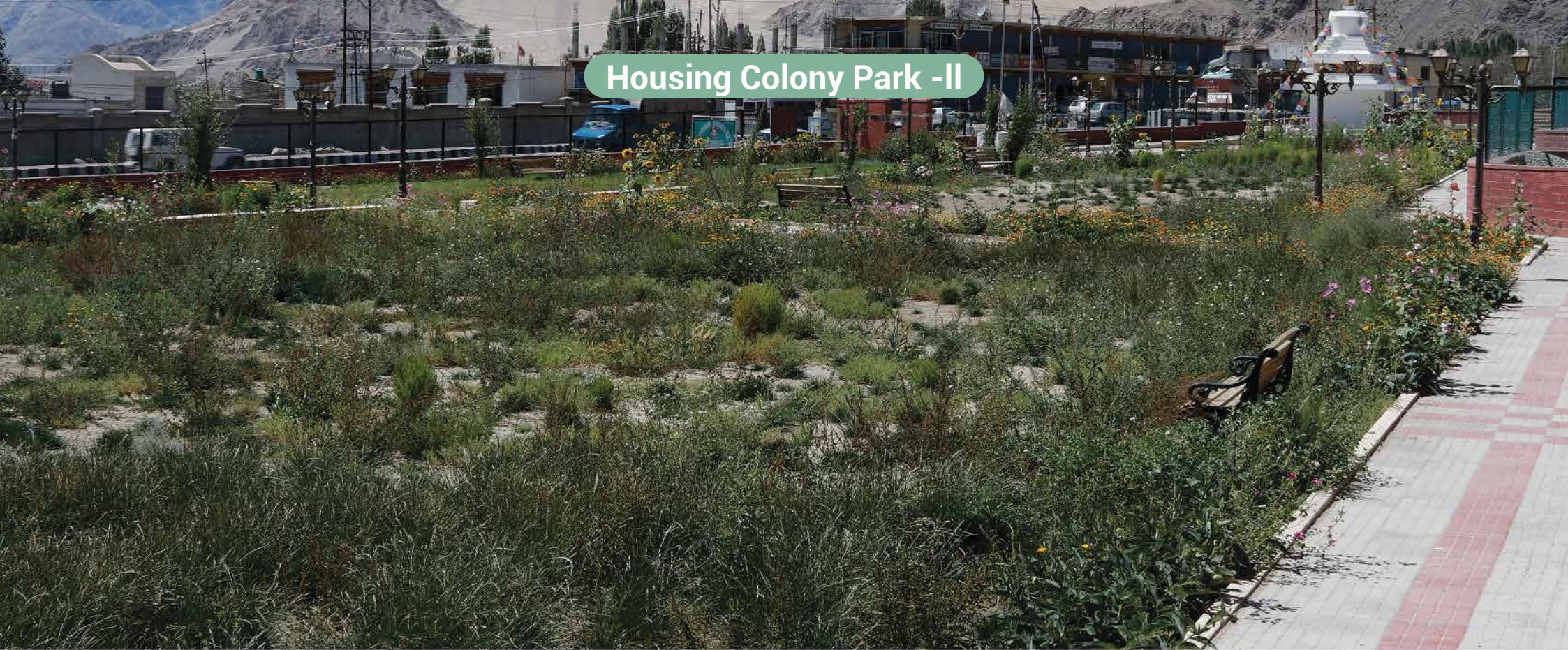
- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration

Present Partial Absent









## Housing Colony Park -III

### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

### Use

- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration





## Ibex Colony Park-I

### Comfort & Convenience

Bench

Diversity of Benches

Shelter

Differently Abled

### Safety

Pedestrian Lighting

Safety from Modal Conflict

Building Frontage

Surveillance (CCTV)

### Accessibility & Linkage

Public Transport

Pathway

Universal Accessibility

No. of Access points

### Legibility

Signage

Local Identity

### Green Cover

Tress

Flower Pot

Grass

### Use

Activity

Scale

Multi purpose

### Footfall

Number

Age- Group

Duration

Present

Partial

Absent



## Ibex Colony Park - II



### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

### Use

- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration

Present

Partial

Absent





## NDS Sports stadium

### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

### Use

- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration

Present

Partial

Absent

## Indoor Stadium



### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

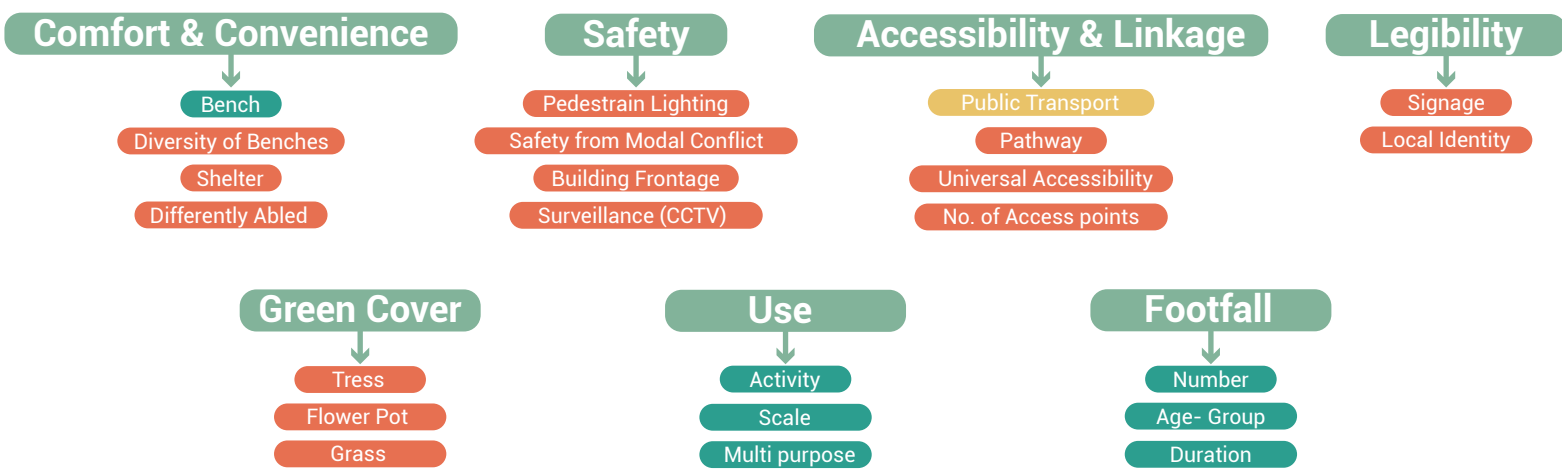
### Use

- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration



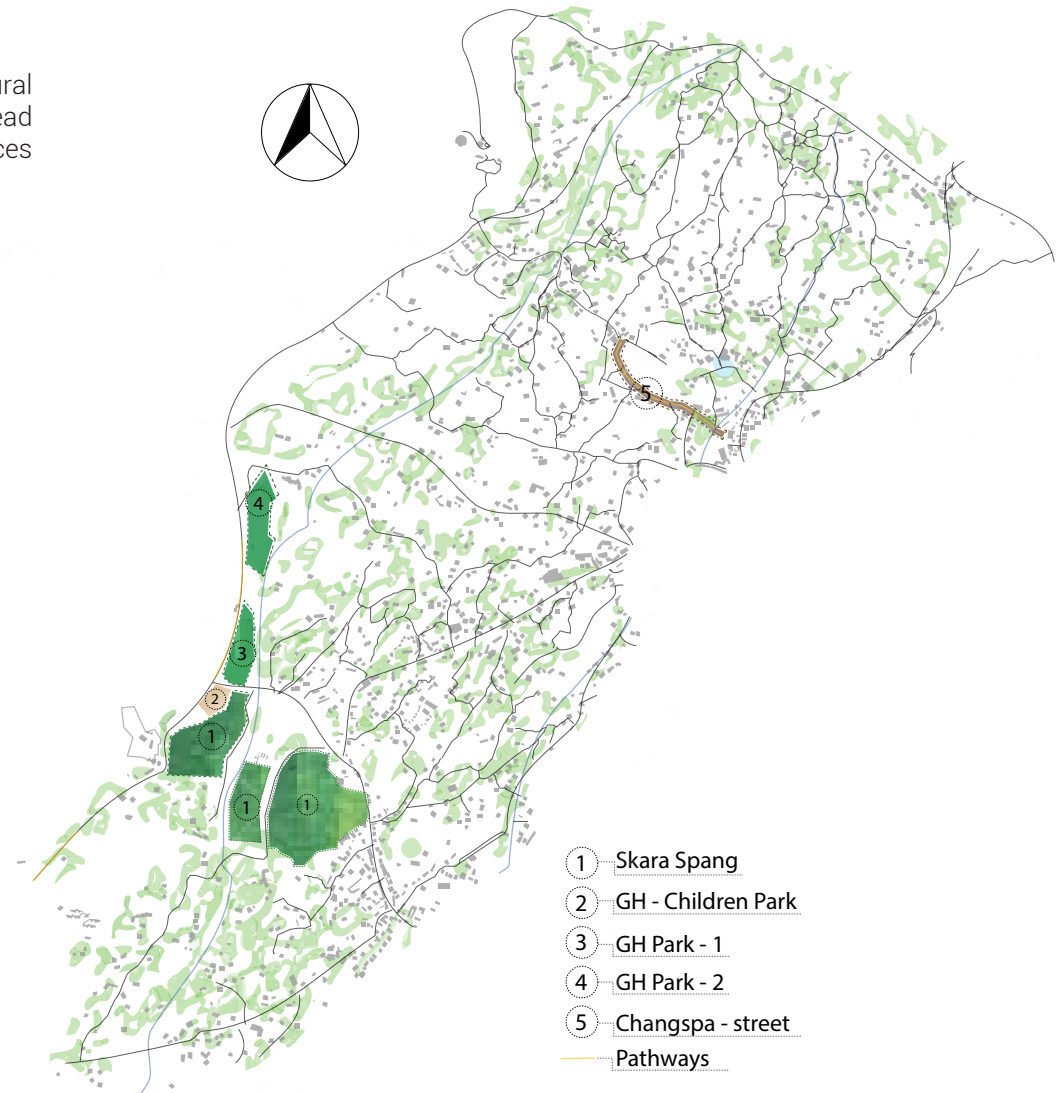




## 2) Soft spine:

In Leh town, 3.2 sq km is under soft spine with residential and agricultural use. The soft spine was identified in the western part of the city, spread across Ward 2, Ward 3, Ward 4 and Ward 5. There are three open spaces located in this spine:

- GH park-1
- GH park-2
- GH park-3
- Skara wet land
- Changs-pa street



Map 11 Open spaces located in soft spine

## GH Park - I



### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

### Use

- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration

Present

Partial

Absent



## GH Park - II



### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

### Use

- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration

Present

Partial

Absent



## GH Park - III



### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

### Use

- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration

Present

Partial

Absent



# Skara Wet Land



## Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

## Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

## Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

## Legibility

- Signage
- Local Identity

## Green Cover

- Tress
- Flower Pot
- Grass

## Use

- Activity
- Scale
- Multi purpose

## Footfall

- Number
- Age- Group
- Duration





## Changs-pa Street

### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

### Use

- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration



### 3) Hard Spine:

In Leh town 1.17 sq km is under hard spine with a large concentration of commercial activity. The hard spine was identified in two different parts of the city: The first in the core town centre in Ward 13, Ward 5 and Ward 4 and the second in southern part of the town along NH 1D in Ward 7 and Ward 6. There are five open spaces located in this spine:

- Leh market
- Buddha park
- Skyatsags Park
- Skyatsags memorial park



Map 13 Open spaces located in skalzangling market

Map 12 Open spaces located in main commercial centre



## Leh Market

### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

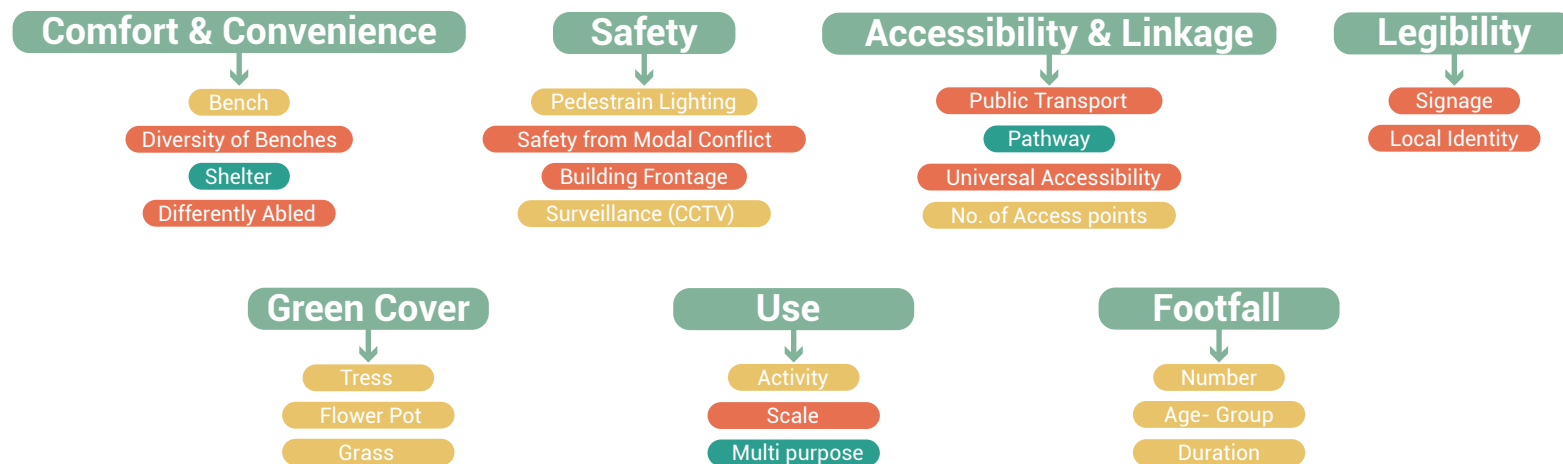
### Use

- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration









## Skyatsags Park

### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

### Use

- Activity
- Scale
- Multi purpose

### Footfall

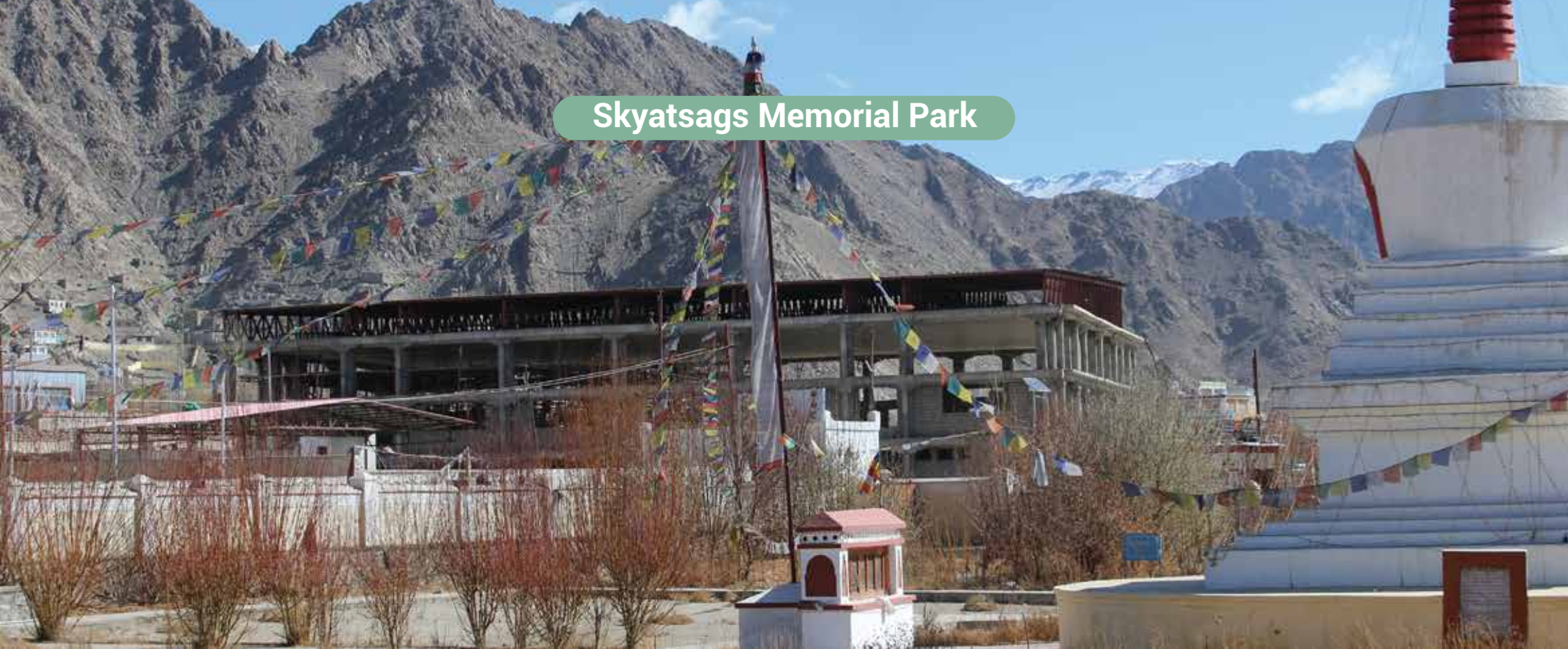
- Number
- Age- Group
- Duration

Present

Partial

Absent





## Skyatsags Memorial Park

### Comfort & Convenience

- Bench
- Diversity of Benches
- Shelter
- Differently Abled

### Safety

- Pedestrian Lighting
- Safety from Modal Conflict
- Building Frontage
- Surveillance (CCTV)

### Accessibility & Linkage

- Public Transport
- Pathway
- Universal Accessibility
- No. of Access points

### Legibility

- Signage
- Local Identity

### Green Cover

- Tress
- Flower Pot
- Grass

### Use

- Activity
- Scale
- Multi purpose

### Footfall

- Number
- Age- Group
- Duration

### Conclusion

In Leh town, 5.8 sq km is under green spine, which comprises primarily of agricultural fields. The green spine is located in the northern part of the town in Ward 1. There are no open spaces in this area. The area under working spine is 0.6 sq km with a concentration of public buildings. The working spine was identified in two parts of the town in Ward 11 and Ward 10. There are no open spaces in this area.

### Citizens perspective

We conducted a survey to understand people's experience. The COVID-19 pandemic forced us to conduct this survey online. A questionnaire containing 30 questions were circulated on several sites. We had hoped to get inputs from 200 people but managed to get responses from 178 people only.

### Where Do they live ?

Majority of the respondents were from *Housing Colony*, followed by *Skalzangling* and *old town*.

### Do people have public space in their neighbourhood?

Most localities in Leh do not have public spaces in their neighbourhood. Out of 178 people, 114 people do not have access to public spaces around their neighbourhood. This means they have no place to visit in the evenings and over weekends to rejuvenate themselves.

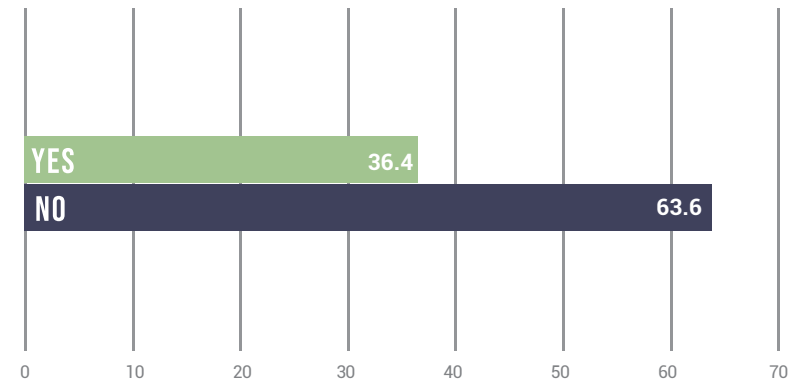


Figure 7 : Percentage of people with and without neighbourhood park

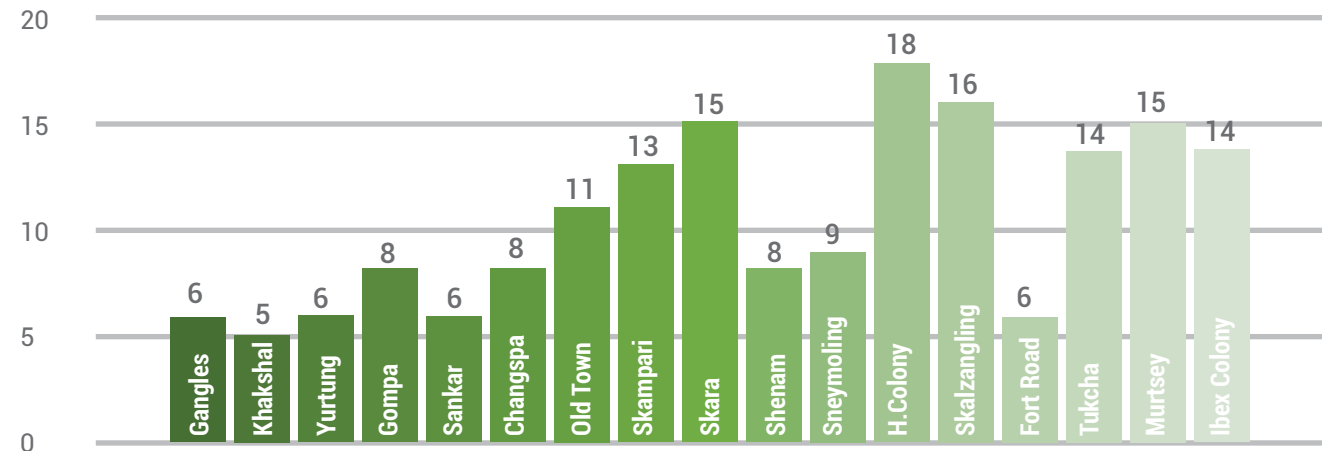


Figure 8 : The localities of people surveyed



Based on physical and public surveys we conclude that a majority of places in Leh do not have open spaces in their neighbourhoods. These include spaces such as:

- Skampari
- Gangles
- Khakshal
- Lower skara
- Skalzangling
- Lower murtsey colony
- Old Town
- Yurtung
- Sneymoling
- Gompa

These places have no open space for their citizens. We assume that people who have replied 'No' in response to the question about open spaces live in these places.

## Type of open space present in Leh town

A total of 64 people said they had open spaces in their area. A majority of them are from the Housing Colony and Murtsey Colony. In these areas, the government has built five parks under the Atal Mission to Rejuvenate India (AMRUT). Most of the other open spaces are private lands that are accessible to the public for the time being. People have also mentioned water fronts, mountains and wetlands, which have great potential to be developed as open spaces.

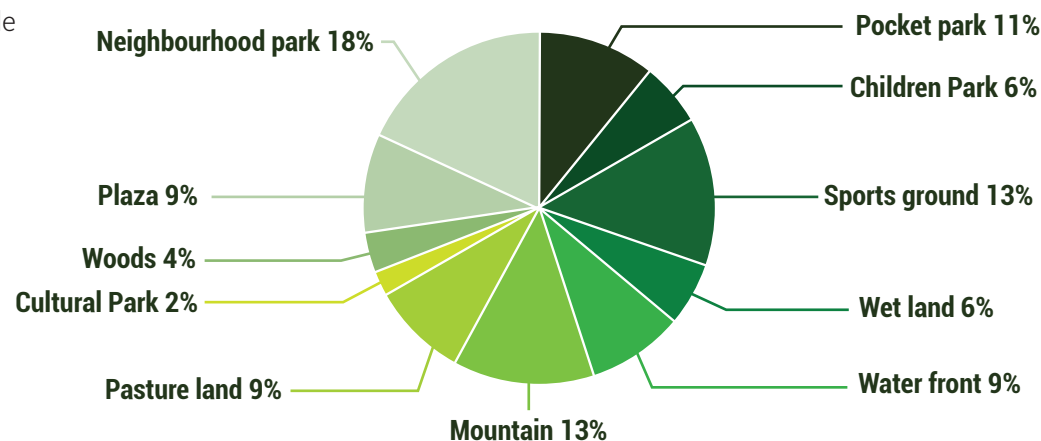


Figure 9 : Types of open space in Leh town

## How frequently do people visit the space?

Of 64 people who said they have an open space in their area, a majority reported that they hardly use it. This can be due to many reasons, including:

- Safety
- Comfort & convenience
- Accessibility
- Cleanliness
- Welcoming
- Legibility

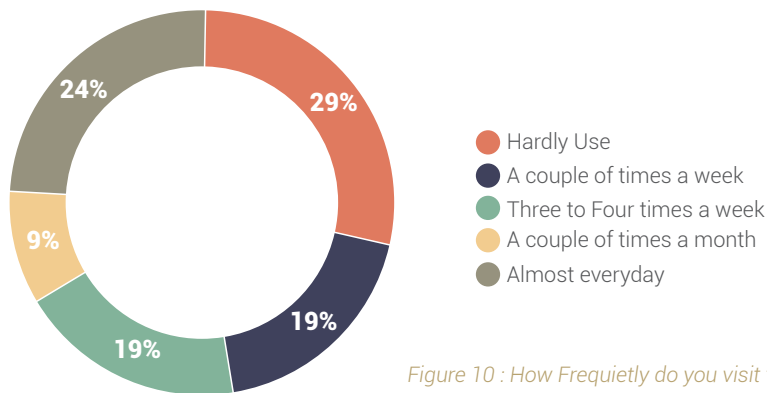


Figure 10 : How Frequently do you visit the Space

## Why do people visit the public open space?

As evident from the graph, most people visit parks and other open spaces for relaxation, walking and to meet friends. Our physical surveys reveal that most of the open spaces are designed and used for these purposes. Activities related to sports, education, community service etc. are not carried out in these areas as the open spaces lack infrastructures needed for such tasks.

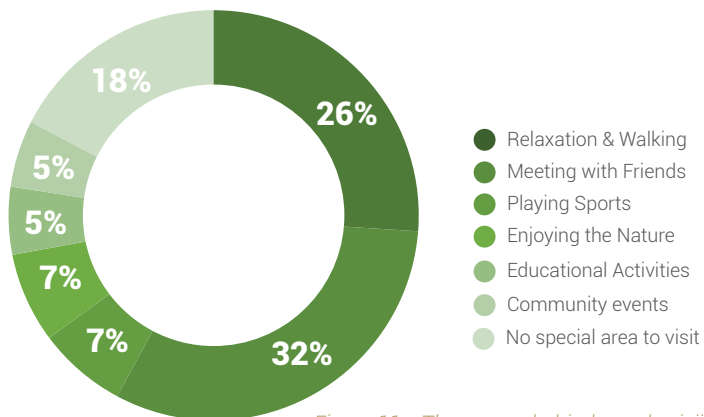


Figure 11 : The reason behind people visitng the public space

## How long does it take poeple to reach the public space?

A majority of the respondents reported that they have to walk more than 10 minutes to reach open spaces. This means that people have to walk more than 800m. Global Street Design guidelines say that every utility in a neighbourhood should be within 800m to make the city walkable. Open spaces are far in Leh town.

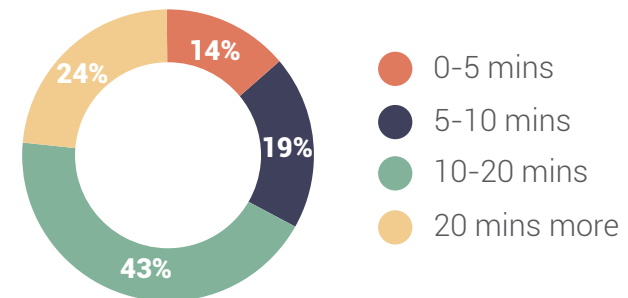


Figure 12 : Time taken to reach the public space

## How do people travel to their park or open space?

Leh has a very good walking culture as there were very few vehicles in the region till the last decade of the 20th Century. The boom in the tourism sector after 2010 resulted in an increase in private vehicles. Prior to that, people in Leh used to walk for most journeys. People would use ponies for the purpose of trade and commerce.

This walking culture is still common in Leh with 51% of our respondents reportin that they walk to the open spaces. However, this does imply that thw infrastructure is conducive for walking. In our surveys, we have observed that people are not comfortable walking on residential streets due to the poor infrastructure.

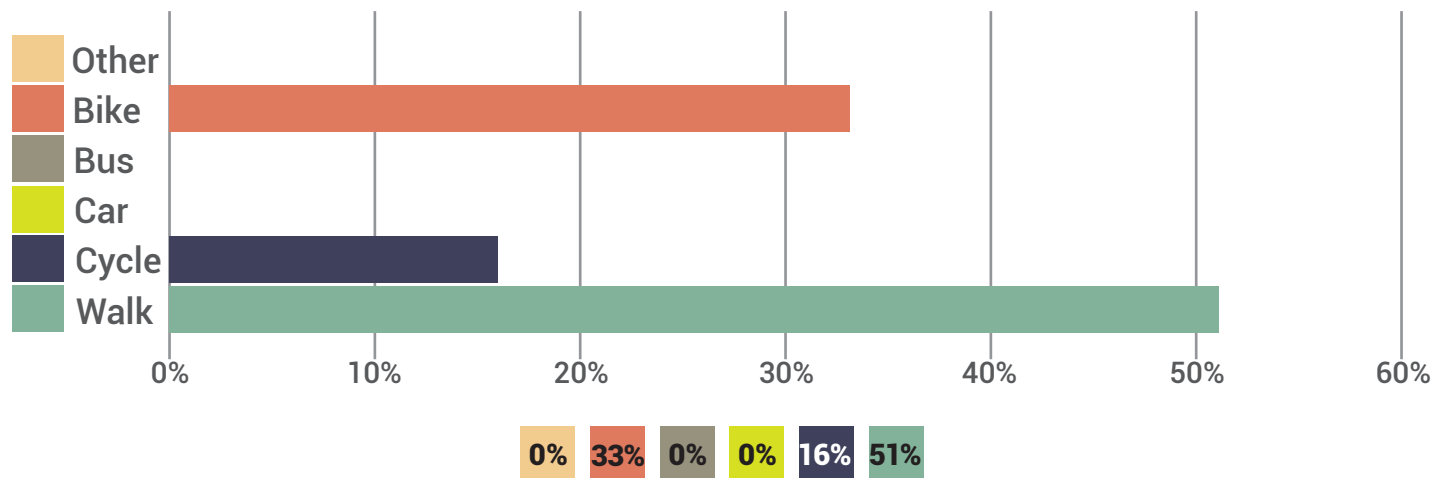


Figure 13 : Mode of travel to the park or public space

## Issues with streets and footpaths

**Stray dogs** - Leh has many stray dogs who become rather ferocious at night, which makes it difficult to walk after dark. There have been three cases of stray dog-related fatalities over the last five years in the town.

**Poor lighting** - only 17% of the road network has street lights, that only on highways and major roads, there are no street lights in any of the residential street which people use most at night.

**Conflict with cars**- Streets have no footpaths or pedestrian infrastructure, and crossings are not safe and many streets lack crossing facilities leading to conflict with vehicles resulting in pedestrian fatalities.

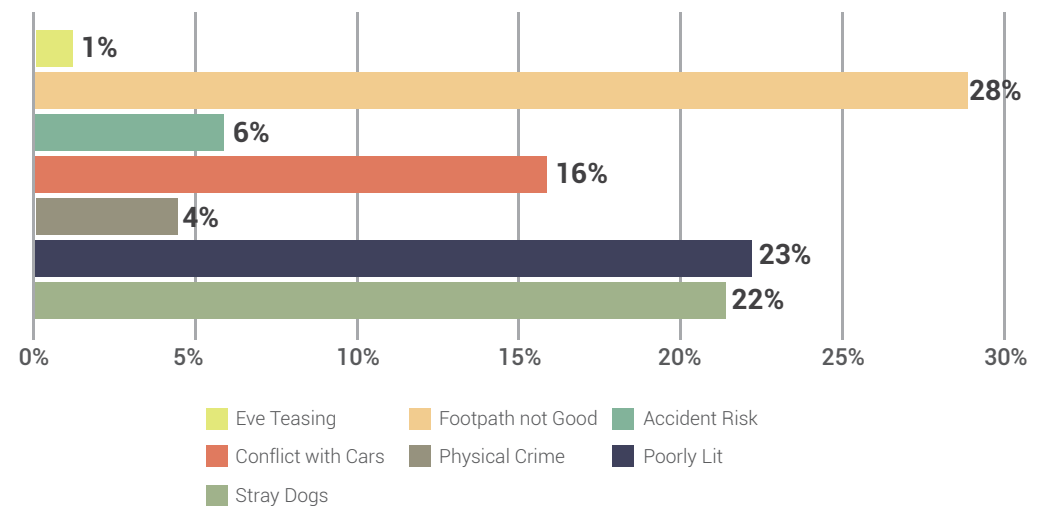


Figure 14 : Types of issues with the streets and footpaths



- Conflict with cars
- Poor lighting
- Stray dogs

**Issues with streets  
and footpaths**



## On a scale of 1-5, How easy is it for people to access and get around the park or open space?

Through our physical survey and the public survey, we conclude that people feel that it is not easy to get in and reach the park. We have seen that parks have one or two gates, which forces some people to walk around the park to enter it.

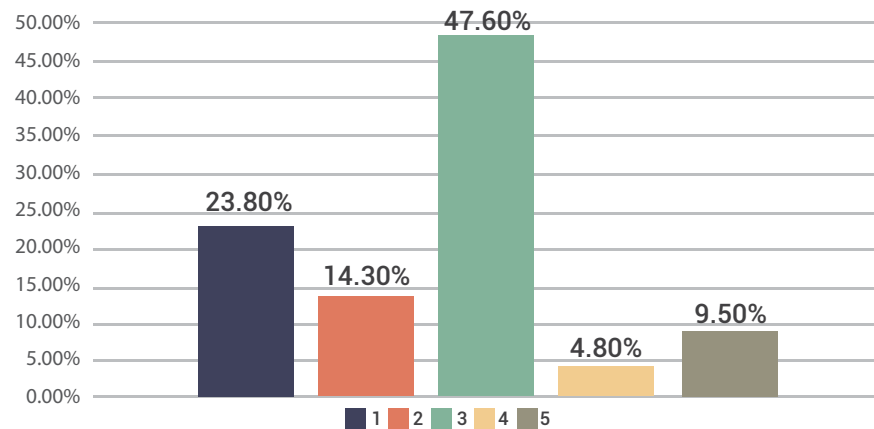


Figure 15 : Ease of accessing the parks or public space

## What do people think about the place ? (1 = Poor, 5 = Excellent)

In terms of ranking open spaces in their neighbourhood nine attributes were taken into consideration. These are comfortability, attractiveness, safety, welcoming, interesting, cleanliness, place to enjoy time, spending time with friends and talking to strangers. More than 50% of the respondents chose poor, which implies that it is a state of disrepair and is not 'comfortable'. Similarly on the point of the park being 'attractive, welcoming and interesting', most people have ranked them as poor. However, in terms of 'spending time with friends' more than 50% have ranked the park as excellent. Interestingly, in the case of a 'place to enjoy time', more than 50 people have ranked it as excellent while more than 40 people have ranked it as poor.

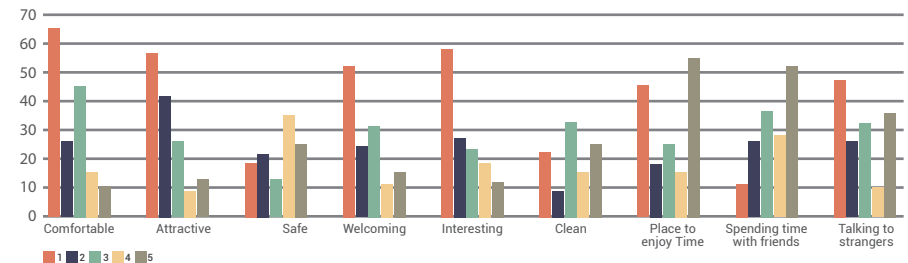


Figure 16 : The rating of parks given by people based on different attributes



## Leh Market (case study) :

The historical Leh market is still one of the major markets in Ladakh. It was an important markets on a feeder route to the the Silk Route trade connected the Indian subcontinent and Central Asia. The market has undergone many changes before it reached its current state.

Currently, it is the only pedestrianised plaza in Leh town with the highest pedestrian footfall throughout the year compared to other areas in Ladakh. Almost 90% of the trips in Leh town are made to this area as it functions as the core of the town with a concentration of all major commercial, economical, tourist and employment centres in and around it.

It plays an important element of the town's urban structure along with important social, spatial and economic roles. It also has a significant impact on the quality of life for the inhabitants of Leh town and adds to the attractiveness of the town as a whole. Leh market represents the town's identity and image and also serves several other functions.

### Existing condition

#### *Legibility, image and character*

- It is legible with its unique buildings and locations.
- It emphasises local identity with its architectural details and facades.
- It lacks proper signages to facilitate orientation.

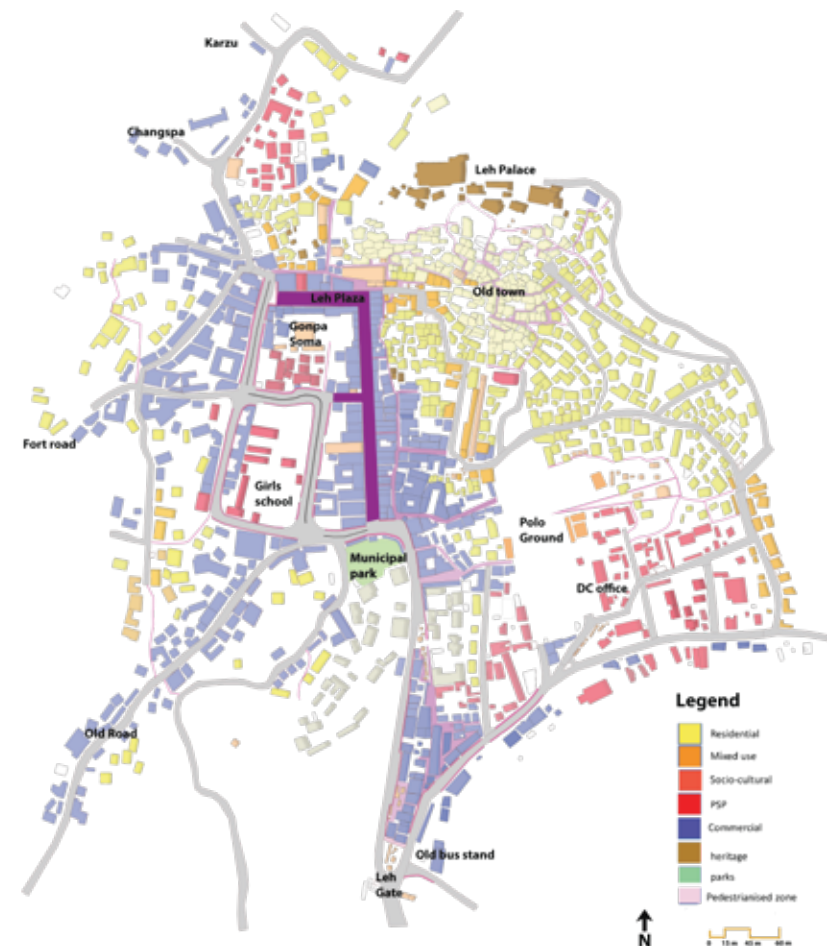
### Comfort and convenience

- There are no facilities for shade and shelter from un-favourable weather conditions.
- There is a diversity of seats making it convenient for conversations and isolating oneself.
- It is not designed to meet the needs of the elderly and differently-abled people.

### Accessibility and ease of movement

- It is accessible by public transport as the nearest bus stop is at the distance of 460m but the route between bus stop and plaza is not safe for pedestrian movement.

- Pedestrian movement has priority over any mode in this area.
- Bicycle permeability is limited with no facilities for bicycle access and parking.
- Accessibility is limited for differently-abled people.
- There are multiple entry routes to the plaza.



Map 14 : Land use around the main market

## Why do people visit Leh market?

Most people visit Leh for work, followed by shopping and residents living in areas in the vicinity. Leh has always been the main commercial centre of the entire district. The boom in the tourism sector has spawned many tourist service centres in the town.

Leh Market has become one of the tourist hotspots due to its unique characteristics and importance to the entire town.

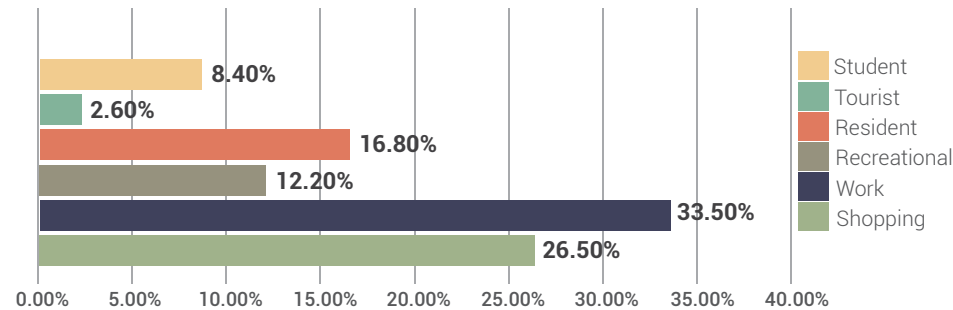


Figure 17 : The various reasons behind people visiting leh market

## What do people think about Leh market?

Though Leh market has a unique character, people perceive it as 'not very comfortable', 'interesting', 'not enjoyable for spending time', and 'attractive'. These responses are understandable due to the lack of shaded areas, limited benches, lack of greenery and rigid design that can only accessed by the youth. The design lacks universal accessibility, infrastructure for the elderly and a children's play area.

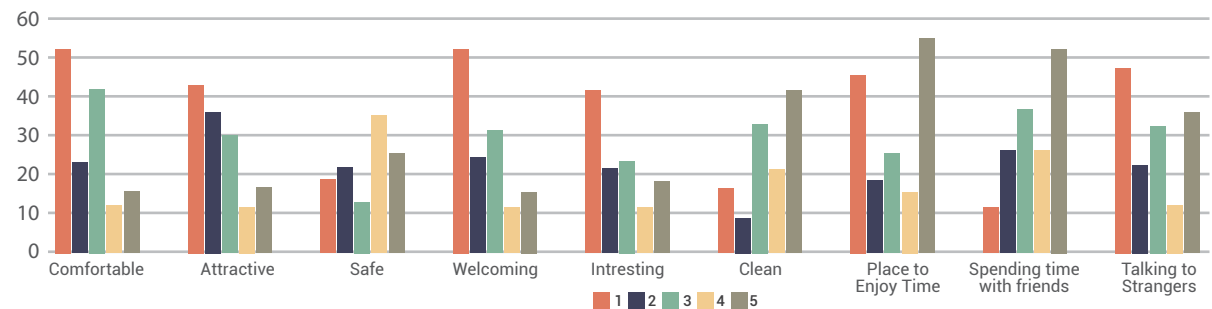


Figure 19 : The ratings given to Leh market by people based on different attributes

## What do people like the most about Leh Market ?

Many people feel it is a good place to sit and meet with friends and lunch time and in the evenings. Furthermore. The commercial establishments in the area attract a lot of people who visit the area to shop and eat.

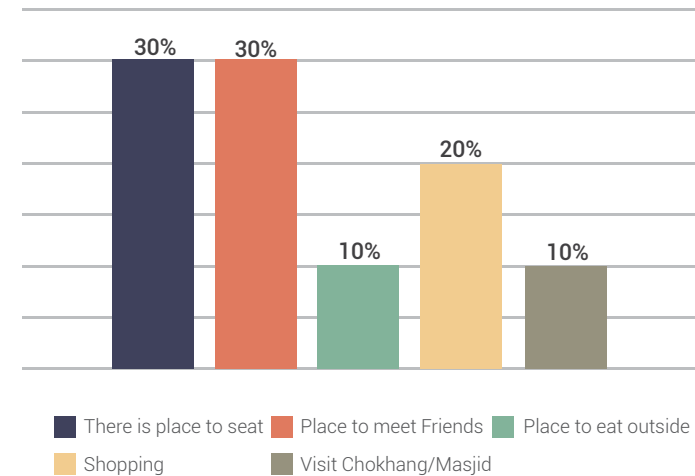


Figure 18 : Features of Leh market due to which people like to visit it

## What are the suggestions of people to improve Leh market?

Our physical and public surveys reveal that Leh market lacks shaded area and green spaces. Changing weather means that summers in Leh are now hotter, which forces people to sit and rest for longer periods of time as compared to the past.

Places having green areas and tree shade tend to be more appealing and relaxing.

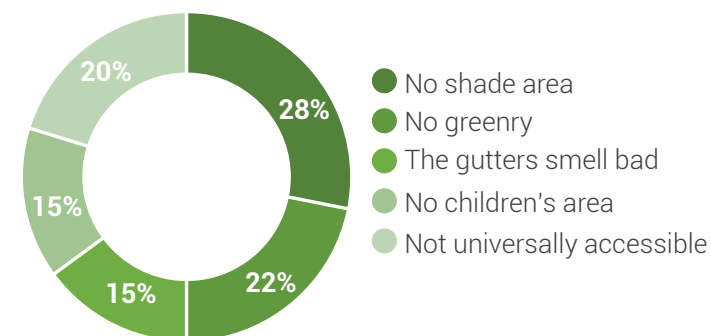


Figure 20 : Suggestions given by people to improve Leh market

## Requirements of the residents

### What type of public space do they desire?

Leh is located in the Trans Himalayas and has glaciers which ensure an abundance of water in the summer. Thus, Leh is dotted with wetlands, grasslands and water fronts. People feel that these places can be a good place for open spaces. A majority of the people feel that every neighbourhood in town should have their own open space.

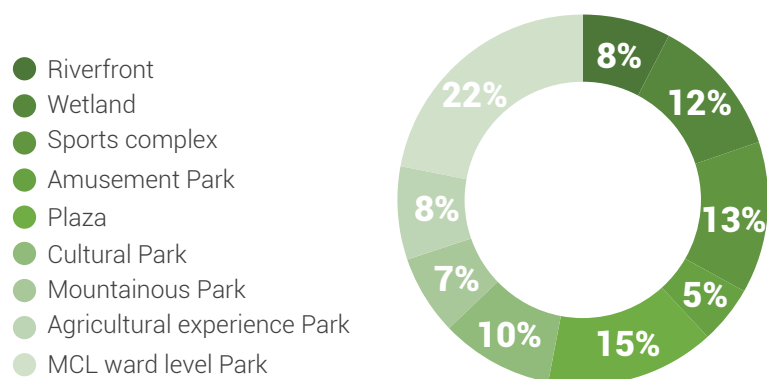


Figure 21 : Type of public spaces people of Leh desire

### What type of facility do they require in the parks?

Leh being situated in the base of Himalayas, it has glaciers and abundant of water in the peak summer time. It has helped Leh to form wet lands, grass lands around water fronts. People feel that these places can be a good place for open spaces. Majority pf the people feel that every neighbourhood in the town should have their own open space .

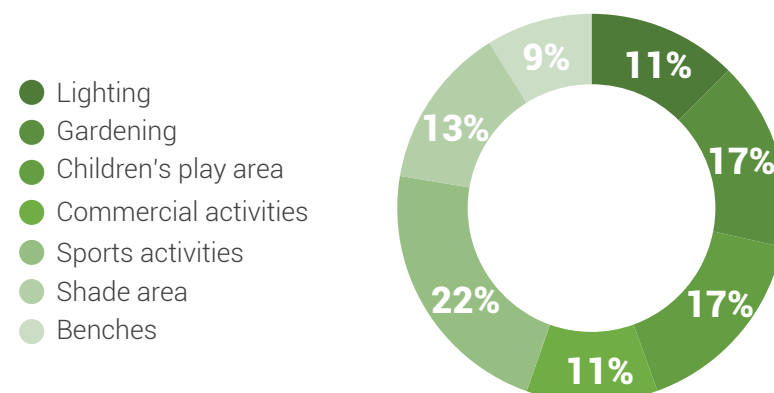


Figure 22 : Type of facilities people want in public spaces



## What are the opinions of people on importance of parks and green spaces?

Many people feel that open spaces help relax the mind. It helps one relax after completing all one's daily chores. It also makes the town look beautiful.

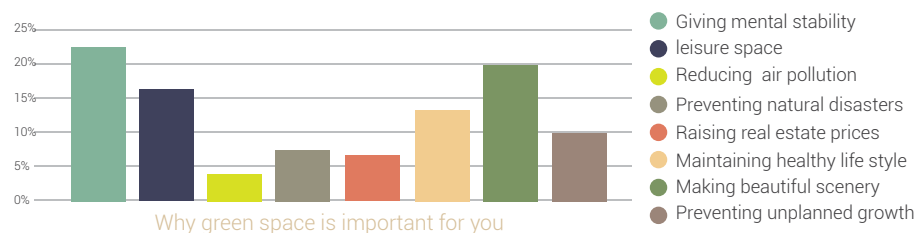
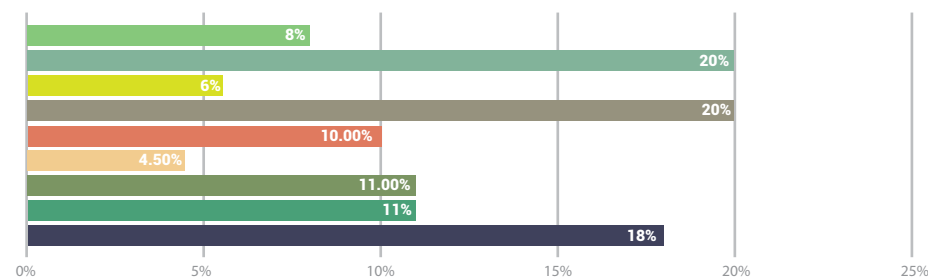


Figure 23 : The opinions of people on the importance of public spaces

## What are the opinions of people on expansion of parks and green spaces?

Leh being situated in the base of Himalayas, it has glaciers and abundant of water in the peak summer time. It has helped Leh to form wet lands, grass lands around water fronts. People feel that these places can be a good place for open spaces. Majority pf the people feel that every neighbourhood in the town should have their own open space.



How we can expand parks & green spaces in Leh

- Making waterfront & ecological parks with surrounding areas of the river & reservoir
- Making parks with areas of cultural assets
- Making parks with legally protected trees & empty lots in the neighborhood
- Conservation of the wet & dry field as a green space
- Making parks with public buildings & schools
- Greening rooftop, walls of building & fence
- Expanding natural parks
- Creating bicycle paths
- Expanding pedestrian paths

Figure 24 : The opinions of people on expansion of parks and green spaces in Leh town

# GREEN & LIVELY FEA

## Chapter 4

### Proposals

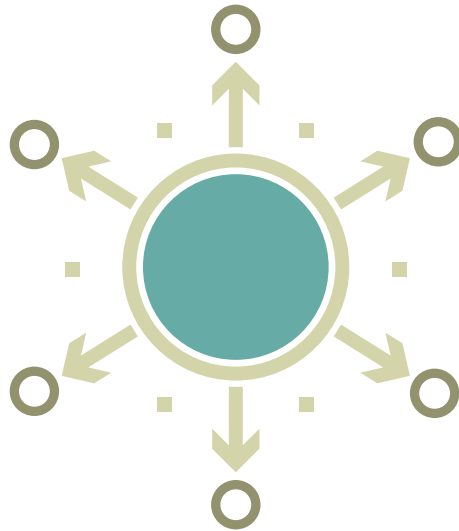
## Parameters for the proposal

Certain parameters were derived to develop a proposal for public open and green spaces for Leh. These parameters were derived from the vision of the project which include:

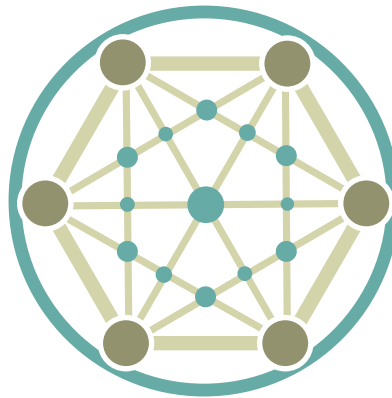
*Enhancing the amenity value of the town by creating and upgrading an interconnected network of green spaces, parks and recreation centres, especially for children, and the elderly for making Leh town attractive, sustainable, liveable and resilient.*

The parameters are:

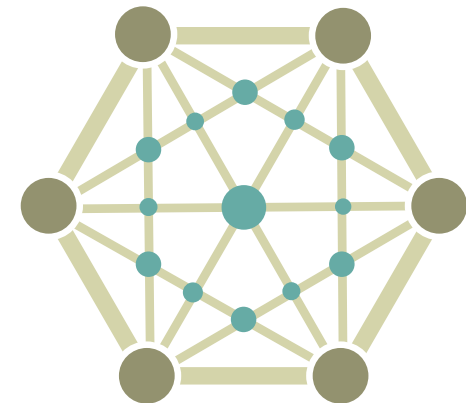
- Decentralisation
- Citywide coverage
- Inter-connectivity



Decentralisation



Citywide coverage



Inter-connectivity

Figure 25 : Open space parameters



According to the concept of compact cities, amenities should be decentralised so that it can be accessed from every corner of the town. The interconnection of the amenities is very important for the whole town.

To achieve the upper determinants of the vision, we have planned five major public places in the town with respect to five town-planning principles.

These town planning principles were derived by understanding the spatial characteristics of the town:

- **Foci**
- **Landmark**
- **Paths**
- **Nodes**

**Foci** : It is the major open space in the area. This open space is identified by its prime location in a specific area. All other secondary open spaces and nodes are connected to it via paths. Five foci were identified for Leh town:

- 1) Gompa (Upper Leh)
- 2) Leh market
- 3) Skara Spang (wet land)
- 4) Housing Colony
- 5) Skalzangling

**Landmark**: It is the secondary open spaces around the foci point. They are the most memorable or unique in their existence. The landmark is connected with the foci and other nodes via paths.

- 1) Parks
- 2) Religious and historic buildings
- 3) Woods
- 4) Markets

5) Community spaces

6) Sports facilities

**Paths**: It is the street, pathways, trails and roads that will serve as the interconnectivity mode for open spaces. Paths itself act as open spaces if we integrate them with the concept of place-making.

- 1) Streets
- 2) Walkways
- 3) Roads
- 4) River
- 5) Trails

**Nodes**: These are small parks, street junctions, courtyards and bus stops that act as small pocket parks for the town. These could be large areas that you can enter, which serve as pocket areas for the neighbourhood. They offer multiple perspectives of other core elements.

- 1) Street junctions
- 2) Courtyards
- 3) Bus stops
- 4) Small parks

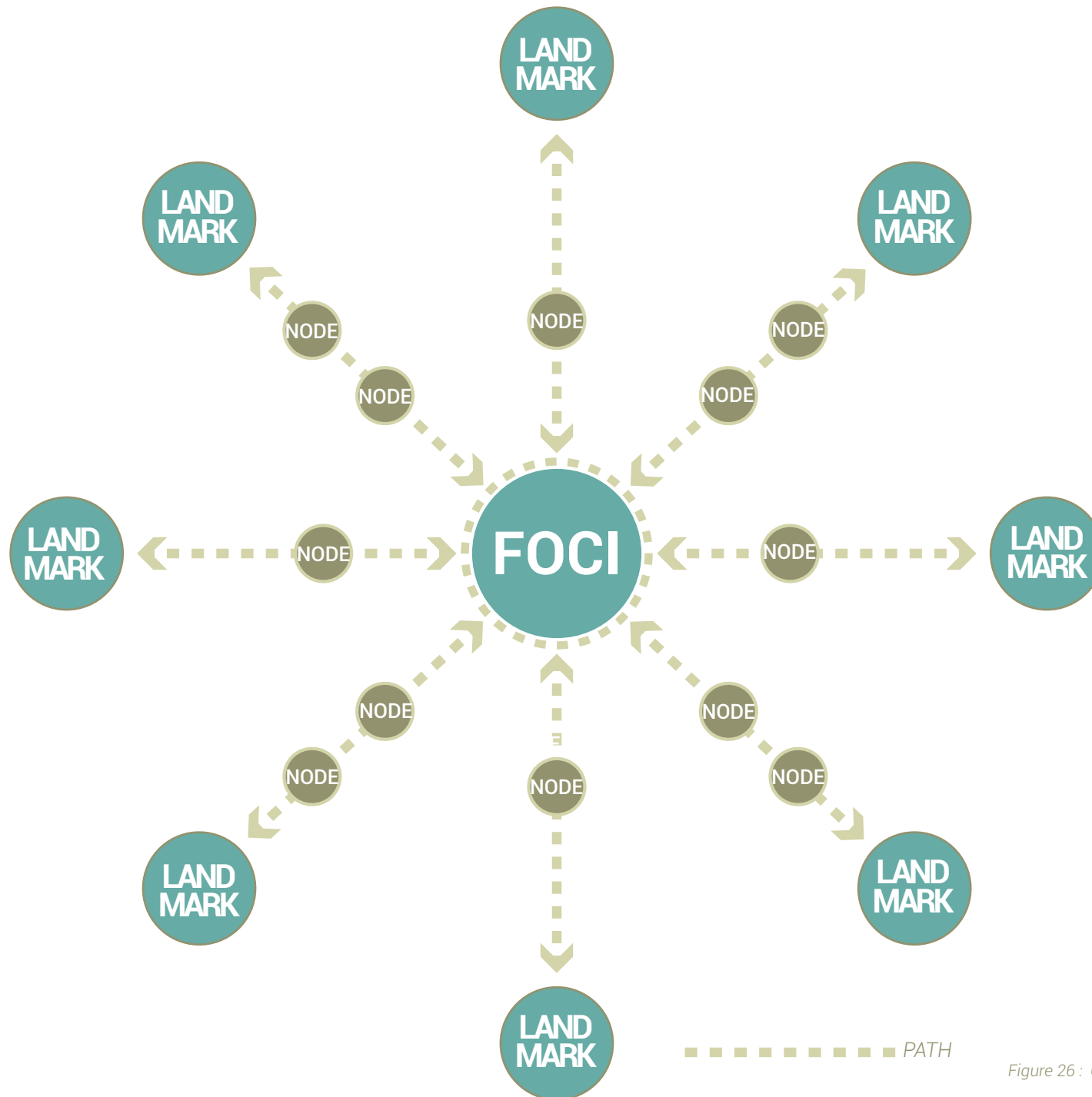


Figure 26 : Open Space proposal concept

In the proposed plan for public green and open spaces, we have taken a major open space, which has or will have the highest pedestrian footfall. **This major open space will be called Foci.**

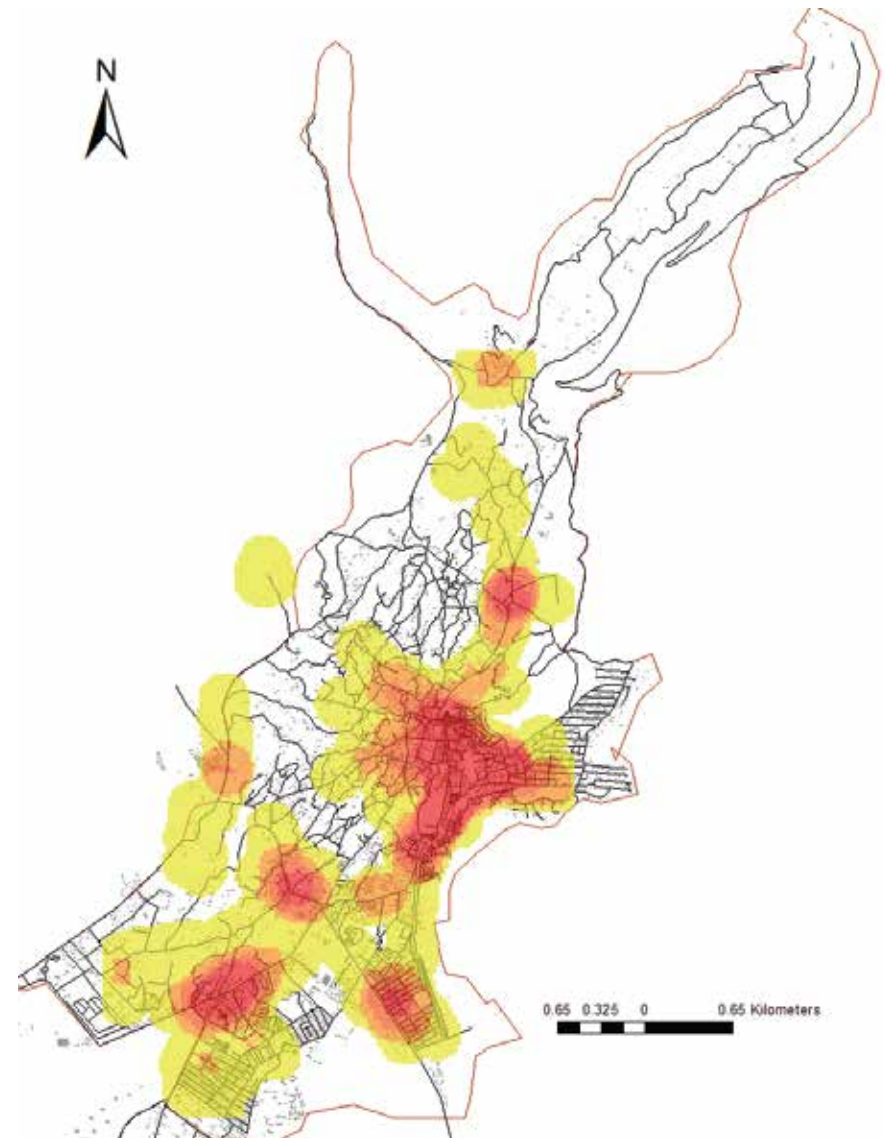
Specific landmarks have been identified around the foci, which will serve as secondary open spaces. These secondary open spaces are unique in their existence.

These foci and landmarks are connected to each other via pathways. In between the pathways, pockets or areas with latent potential will be converted to small open spaces known as nodes.

Eventually, with five foci and many landmarks connected to each other with pathways. It will form a town-wide network of open spaces, scattering most of the population of the city.

## Pedestrian flow heat:

A pedestrian heat analysis was carried out to identify the foci/focal points of the town. We analysed the pedestrian flow network for the town through a pedestrian count survey at 27 points across the town. These points are compiled into five major areas, which are the foci. The survey was conducted for 10 minutes at each point.



Map 15 : Pedestrian flow heat map



Foci	Survey Point	MORNING / 10 min both sides	EVENING / 10 min both sides	Infrastructure status
Leh Market	Leh market	120	326	Good
	Balkang Chowk	96	423	Bad
	Girls School Chowk	56	256	Bad
	J&K Bank Chowk	38	198	Bad
	Changs-pa Street	32	96	Good
	Lower Tukcha Road	56	89	Bad
	Upper Tukcha Road	48	165	Bad
	Skampari Road	41	105	Bad
	Leh Gate	126	509	Bad
	Bus Stand	156	456	Bad
	Old Road	28	798	Bad
	Fort Road	24	86	Bad
	Lamdon School	201	509	Bad
Gompa	Gompa	18	32	Bad
	khakshal Road	12	29	Bad
	Shanti Stupa	26	76	Bad
Skara Spang	Skara Market	34	98	Bad
	GH Road	26	49	Good
	Skara Road	12	34	Bad
Skalzangling Market	Skalzangling Market	108	307	Bad
	Industrial area	12	36	Bad
	Agling Road	53	108	Bad
	Ibex Road	12	56	Bad
	Murtsey Road	24	45	Bad
Housing Colony	1st Road	38	89	Bad
	2nd Road	32	75	Bad
	3rd Road	29	86	Bad

Table 5 : Pedestrian count on different roads across the town

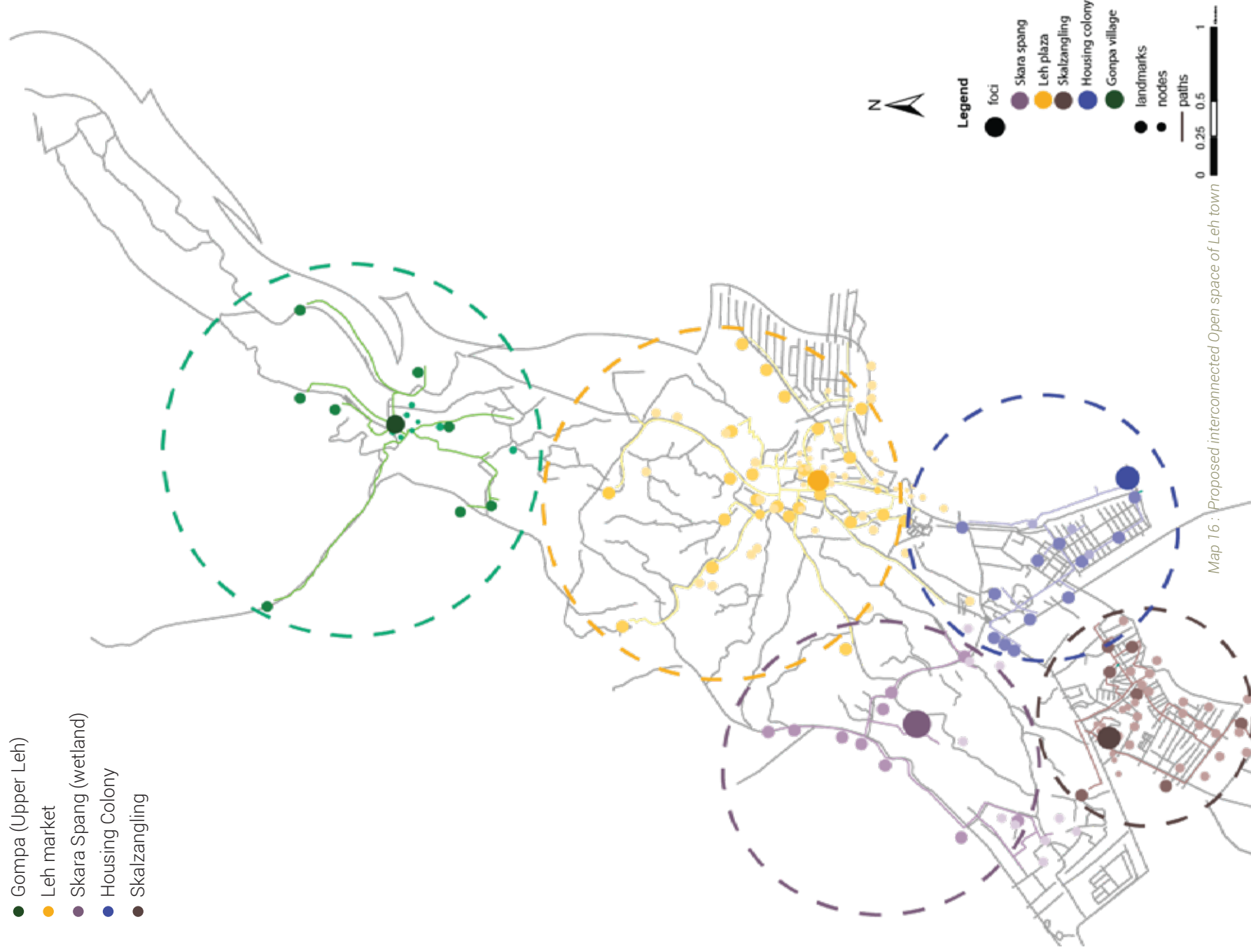
As pedestrians are the main element of an open space, we conducted surveys in different part of the town to estimate the number of pedestrians. There are many pedestrians in most parts of the town. With the exception of Leh market, Changspa street and GH road, all other roads have poor infrastructure for pedestrians.

A majority of the pedestrians can be seen in the market area and near schools. As evident in the map, the pedestrians flow network forms a vertical line from the north to the south. It starts at Lamdon school in the north and reaches Skalzangling market in the south And passes through Leh and Skara markets.

## 4.2. Detail proposal

The network of open spaces will be distributed across town to decentralise its amenities. Decentralisation allows every citizen of the town to participate in public gatherings and recreational activities. These five locations have been identified based on their importance in the area.

- Gompa (Upper Leh)
- Leh market
- Skara Spang (wetland)
- Housing Colony
- Skalzangling



In the chaos of the concretised town, Gompa is an area that resembles a village. It has bright sunshine, water bodies, nature-centric and a wide range of open spaces. This area is accessible by car and on foot, it is about 2.5 km from the town-centre. It is a longish walk on a path that meanders through agricultural fields, streets covered with trees and along streams. Gompa has several potential picnic spots around wetlands and water bodies. It also has cycling routes for MTB and leisure cyclists, hiking routes, climbing walls and monasteries and stupas for those interested in spiritual pursuits. This area ideal for nature lovers.

Firstly, the development of public convenience at regular intervals will help a lot of people, especially women. We also need to create safer streets for pedestrians and cyclists with proper lanes, street lights and rest spots. Small cafes at various places will help people regain their lost energy. Improve legibility, which is one of the main elements to make a city liveable, through proper signage along the route to help outsiders reach their destination and spend more time enjoying the place.







Gumpa Village





This place has nine landmarks and eight nodes.

Foci:

➤ **Gompa Village**

Landmarks:

- **Gyamtsa valley :**

This is a very sparsely populated area with a single household in the entire valley. The valley is dominated by wetlands. It is accessible by car, cycle and on foot. Presently, it is used as a pasture land. However, it is not maintained properly, and visitors often leave thrash in the valley. The following steps need to be taken to maintain the greenery of the wetland:

- A management team should be set up in the administration level to manage the area.
- Develop public convenience in the valley and en-route.
- **Establish a café cum management office.**
- A proper solid waste collection and segregation area.

- **Rock climbing spot :**

Rock climbing is a popular adventure sport. Leh has great potential for rock climbing due to its rocky landscape. Presently there are several spots in Leh district for boulders climbing in summers. Only one of these spots is located in Leh town.

The following steps need to be taken to promote rock climbing:

- Proper route from the main road to the rock climbing area with proper lighting
- Proper lighting at the spot for people wanting to climb after dark.
- Dust bins to maintain the cleanliness of the area.
- **A management team at the administrative level to maintain the environment and organise tournaments.**
- A small room to store safety equipment.

- **Ganges wet land, Gompa wet land & Kakshal wet land:**

Wetlands are very important for biodiversity and it is, important to conserve them for the environment and for people.

The following steps need to be taken to conserve wetlands in Leh:

- Encroachments and construction of any kind should be restricted.
- Ground water extraction around a buffer of a minimum distance should be mandated and implemented.
- **The management team should be set up in the government administration.**
- Public conveniences should be constructed at periodic intervals.
- A café cum management office should be constructed for all the wetlands of northern Leh at one spot.

- **T-seru**

This is a historical monument that was constructed in the 16th Century. It is currently being managed by Archaeological Survey of India. Though it is open to the public, it lacks infrastructure for safety, security and recreation. The following measures need to be taken:

- Install proper pedestrian lighting in and out of the stupa
- Develop public convenience cum café near the stupa compound.
- Hire a team of security guards to prevent people from misusing the area.
- The stupa should be to host exhibitions.
- Landscaping should be done around the stupa.

- ***Ganges monastery***

Monasteries have great value for local communities. The following steps need to be taken to make better use of such monasteries:

- Proper landscaping should be done around the monasteries.
- Pedestrian connectivity and accessibility from the village should be developed on a priority basis.

- ***Sindu auditorium***

The following steps must be taken to make better use of this auditorium:

- Host monthly exhibitions, festivals and film festivals.
- Landscaping should be done around the auditorium.
- The place can be rented to various organisations for their events.

**Nodes:**

- ***Wet land (Gyamtsa), wet land (Gangles), wet land (Gangles), wet land (Gangles) & wet land (Kakshal).***

Wetlands are very important elements for biodiversity and conserving them for the environment and human being is very important.

Following steps should be taken to preserve the wetlands of Leh town:

- Prevent encroachments by preventing any construction around wetlands.
- Strictly regulate ground water extraction in buffer area of a minimum distance.
- A management team should be set up at the administrative level.
- Public conveniences should be constructed at regular intervals.
- Café cum management office should be constructed for all wetlands of northern Leh.

- ***Maney – 1 (Gompa), Maney – 2 (Gompa), Maney – 3 (Gompa) & Maney – 4 (Gompa):***

Maneys are recreational spots for the older generation of Leh town. The elderly gather around maneys and go around them in a clockwise manner while chanting. The following measures should be taken to make maneys more inclusive and welcoming:

- Proper pedestrian lighting along maneys.
- Proper footpaths along the maneys.
- Resting spots at regular intervals.



## Leh Market

Leh Market is the heart of the town and its main centre for doing business. Most of the commercial activities of the town occur in this part of town. In response to rapid urbanisation and influx of private vehicles, the administration of Leh decided to convert the main spine of the market into a pedestrian zone. This area is accessible from all parts of the town through motor vehicles and on foot. Once you reach this area, it has potential to provide space for social gatherings and conduct business. There are many places in the town centre to make open cafes, farmers market and plazas.

It is important to develop linkages between immediate neighbourhoods to the market along with public conveniences in areas with high pedestrian footfall. This must follow universal accessibility standards for pathways to ensure that people visit and enjoy Leh market. Safety is a major concern in a town like Leh. Since this is now a tourist town, people tend to spend more time outside of their houses and hotels. Thus, safety is a major concern in the market areas, especially for women. It is also important to improve legibility, which contributes to making a town liveable, through proper signage along the route to help outsiders reach their destination.

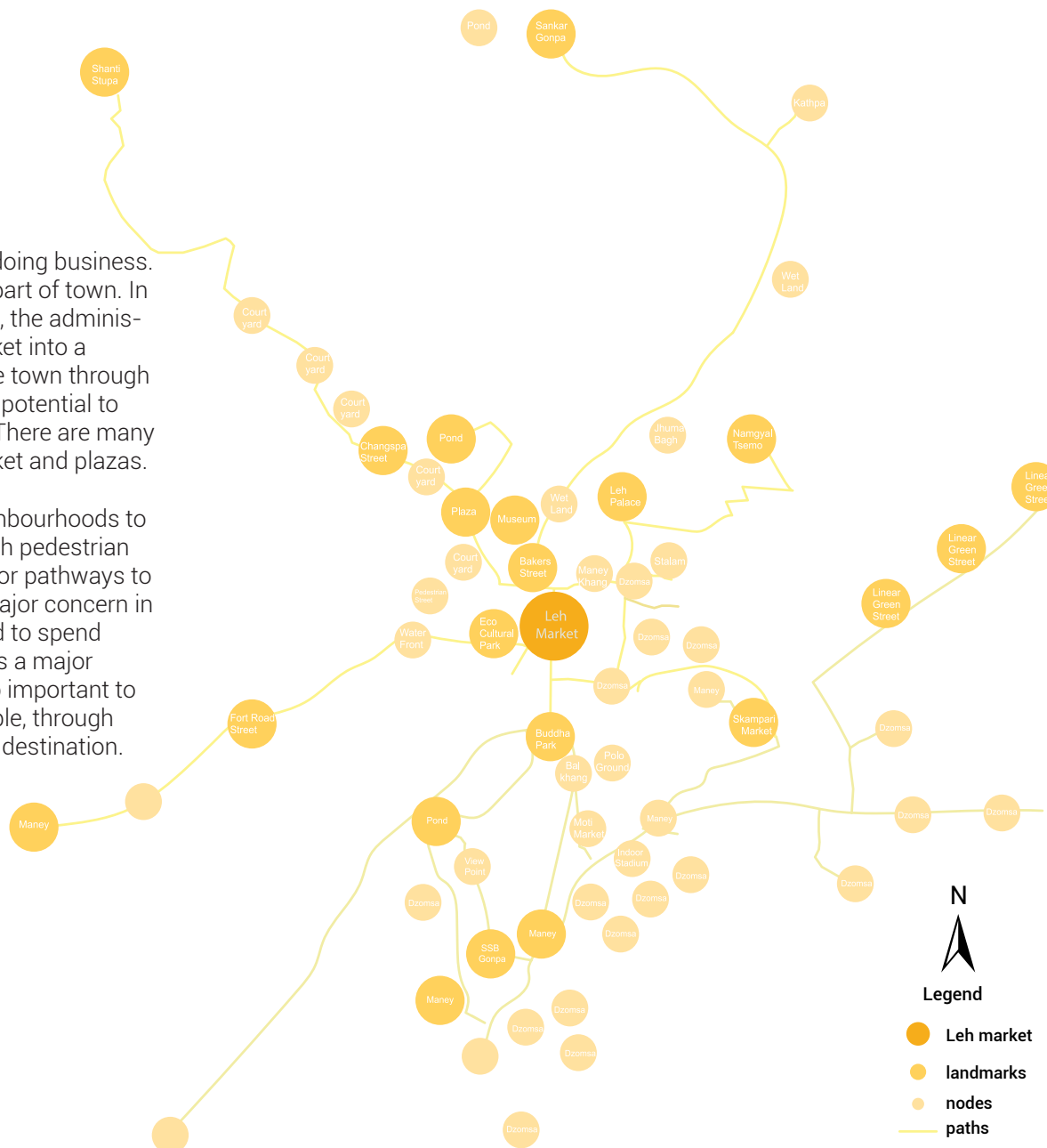


Figure 28 : Leh market as Foci and its nodes and landmarks





Leh Market





**This place has 18 landmarks and 36 nodes:**

**Foci:**

➤ **Leh market**

**Landmarks:**

- **Shanti stupa:**

It is located on a mountain and offers great views of the town. It is a very popular site for tourists. It is a Japanese monastery and is one of the important stops on Buddha Jayanti, when Buddhists go around the town in a clock-wise manner with stops at various religious spots. The following steps should be taken to make the place more vibrant and safer :

- Develop public conveniences near the stupa.
- Install drinking water taps at several locations.
- Develop adequate parking space for visitors.
- Safer steps for people willing to climb the stairs with railings, pedestrian lighting, and drinking water points.

- **Sankar Gonpa :**

Monasteries have great value for local communities. The following steps need to be taken to make better use of such monasteries:

- Proper landscaping should be done around the monasteries.
- A proper public convenience spot near the stupa.
- Drinking water taps at several locations.
- Adequate parking space for visitors.

- **Karzoo pond, Shynam pond, Khakshal pond & Changspa pond :**

Ponds are very important elements for biodiversity and we must conserve them for the environment and human beings. Ponds in Leh have historically been used for multiple purposes including agriculture and irrigation.

It has now emerged that such ponds are ideal for ground water recharge. They are also used as swimming pools. The following steps need to be taken to conserve the ponds of Leh town :

- Restrict any form of construction around the pond.
- Rejuvenate all ponds, with proper seating area and reliable channels connecting them to agricultural fields
- A management team in the government administrative.
- Public conveniences at periodic intervals.

- **Complete streets (Changspa street, Fort road, Skampari road, Baker's street, Now shara street, Moti market)**

Complete streets is a transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities irrespective of their mode of transportation. Complete streets allow for safe travel for people walking, cycling, driving automobiles, riding public transport, and delivering goods. Elements of complete streets:

- Medians
- Public transit accommodation
- Cycling accommodation
- Lively Frontage
- Pedestrian lighting
- Furniture
- Parklets
- Outdoor cafes
- Vendors



- **Maney (Bus stand, Skara road, Housing colony road)**

Maneys are recreational spots for the older generation of Leh town. The elderly gather around maneys and go around them in a clockwise manner while chanting. The following measures should be taken to make maneys more inclusive and welcoming:

- Proper pedestrian lighting along the maneys.
- Proper footpaths along the maneys.
- Resting spots at regular intervals.

- **Monuments (Leh palace, Namgyal tsemo, Chokhang Vihara, SSB gompa, Central Asian museum)**

- Proper landscaping should be done around the monuments.
- Public conveniences at relevant spots around the monuments.
- Drinking water taps at some spots.
- Adequate parking spots for visitors.
- Adequate seating spaces for the visitors.
- Cycle parking.

- **Municipal Parks (Eco cultural parks, Buddha park, Mugha Court, Pocket parks)**

Many public and private open spaces have been converted to parking or have been built up as part of the town's urbanisation. In an effort to develop municipal neighbourhood parks, the following steps need to be taken to make a park-use a part of the town's culture:

- There should be a local park in every neighbourhood within a radius of 800m and should cater to around 1,000 people.
- Every park should be permeable, inclusive, and sustainable especially in the context of water scarcity in the region.
- These parks should have enough space to accommodate all kinds of activities from children's sports to walking and seating for the elderly.

**Nodes :**

- **Courtyards (Shopping complexes at Changspa road, Gompa complex, Super market, LBA complex)**

These courtyards are mostly left vacant without being used for anything. The following steps need to be taken to make these courtyards more vibrant:

- Café cum sitting area can be evolved in these spaces.
- In the summer, these areas should be used to organise small concerts for the public.
- Winter seating areas are very essential in places like Leh, where temperatures plummet well below freezing.

- **Dzomsa (pocket parks)**

These are small parks meant for social gatherings in high density neigh-bourhoods. The following steps should be taken to promote these kinds of parks in the town:

- Street junctions should be kept empty by ensuring that adjacent houses do not encroach on them.
- Seating furniture should be provided at these spots.

## Skara Spang:

Skara Spang is the only wetland near the town centre. Initially, it was spread over 36 hectares of wetland, which has now shrunk to 20 hectares. There is a big ground water extraction point near it, which is used by the army for collecting water. Since 2020, people of Leh town have started using this wetland for recreational purposes. This place is accessible by car and on foot.

This is a fascinating place so close to the town. It includes several places of interest, including Zorawar fort, army parks, Skara monastery etc.

Certain intervention need to be taken to develop this area into a great location for nature lovers.

Firstly, the development of public convenience at regular intervals will help a lot of people, especially women. We also need to create safer streets for pedestrians and cyclists with proper lanes, street lights and rest spots. Small cafes at various places will help people regain their lost energy. Improve legibility, which is one of the main elements to make a city liveable, through proper signage along the route to help outsiders reach their destination and spend more time enjoying the place

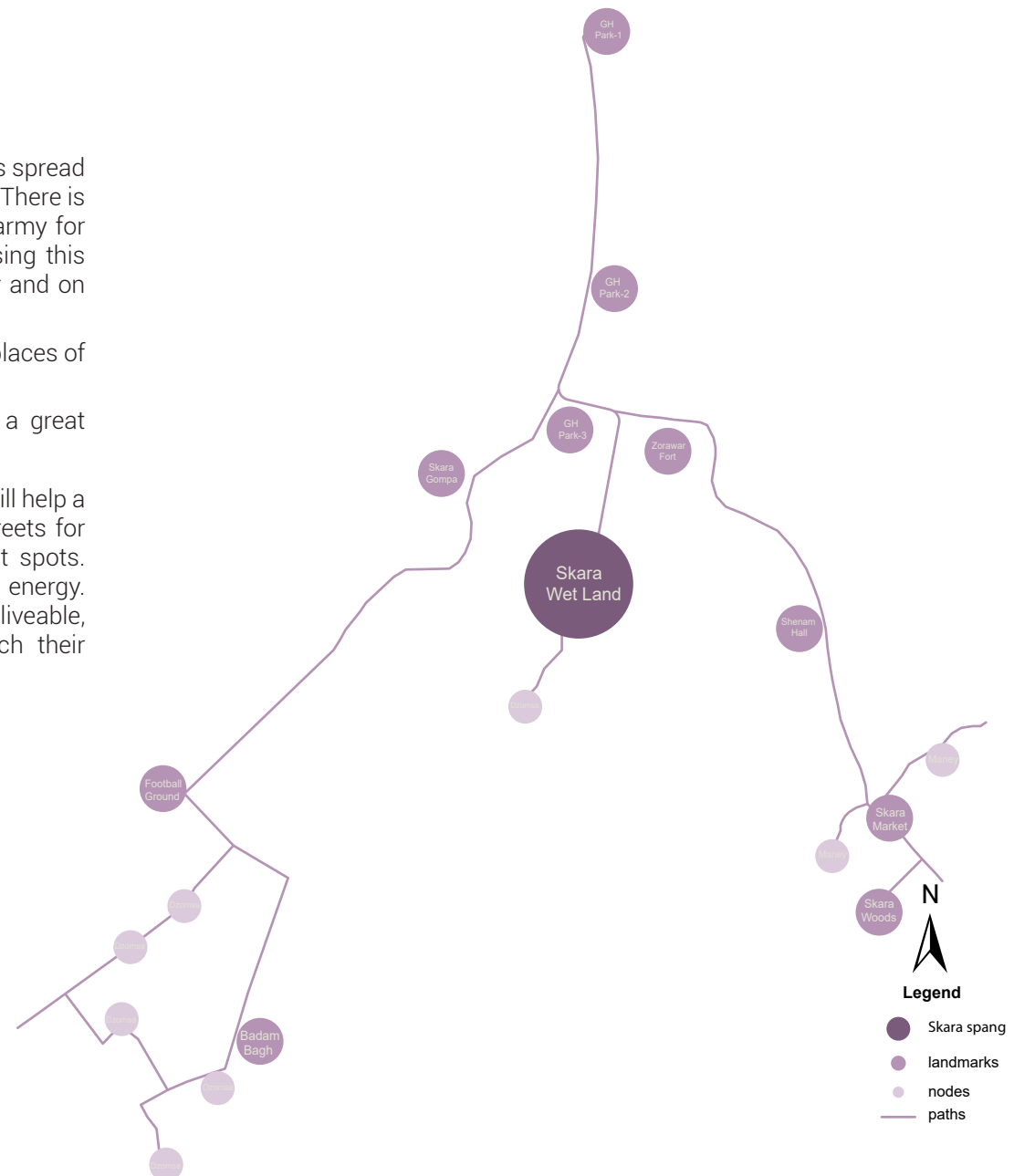


Figure 29 : Skara spang as Foci and its nodes and landmarks



Skara Spang



**This place has 9 landmarks and 8 nodes:**

**Foci:**

➤ **Skara Spang**

**Landmarks:**

• **Parks (GH park-1, GH park-2, GH park-3):**

The following steps need to be taken to make the place more vibrant and safer:

- A proper public convenience at the parks.
- Drinking water taps at several locations.
- There should be local parks in every neighbourhood within a radius of 800m and should cater to around 1,000 people.
- Every park should be permeable, inclusive, and sustainable in the context of water scarcity in the region.
- These parks should have enough space to accommodate all kinds of activities from children's sports to walking and seating space for the elderly.
- Safer steps for people willing to climb the stairs with railings, pedestrian lighting, and drinking water points.

• **Skara Gompa:**

Monasteries have great value for local communities. The following steps need to be taken to make better use of such monasteries:

- Proper landscaping should be done around the monasteries.
- Develop public convenience facilities near the gompa.
- Drinking water taps at several locations.
- Adequate parking space for visitors.

• **Skara pond:**

Ponds are very important elements for biodiversity and we must conserve them for the environment and human being. Historically,

in Leh have been used for multiple purposes including agriculture. It later emerged that these ponds helped recharge ground water. They are also used as swimming pools. The following steps should be taken to preserve the ponds in Leh town:

- Restrict any form of construction around the pond.
- Rejuvenate all ponds, with proper seating area and reliable channels connecting them to agricultural fields
- A management team in the government administrative.
- Public conveniences at periodic intervals.

**Complete streets (Skara market)**

- Complete streets is a transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities irrespective of their mode of transportation. Complete streets allow for safe travel for people walking, cycling, driving automobiles, riding public transport, and delivering goods. Elements of complete streets:

- Sidewalks with universal accessibility concept
- Medians
- Public transit accommodation
- Cycling accommodation
- Lively frontage
- Pedestrian lighting
- Furniture

• **Monuments (Zorawar Fort)**

These monuments are a part of Leh's history. The following need to be taken to make these monuments more friendly for visitors. These monuments have been in Leh for many centuries and are among the

main attractions for tourists in Leh town. The following steps should be taken to make these monuments more visitor-friendly.

- Proper landscaping should be done around the monuments.
- Public conveniences at regular intervals around the monuments.
- Drinking water taps at regular intervals.
- Adequate parking spots for visitors.
- Adequate seating space for visitors.

- **Woods (*Badame bagh, Mangley forest park*)**

Leh town has very few woods and two of them present in Skara's foci area. This includes Badami bagh and Skara woods. Till recently, these woods were only meant for research and to spread awareness. These places have great potential to become a jogger's park with other essential infrastructure. The following steps need to be taken to make these places successful open spaces :

- Recreational activities should be set up at the open spaces.
- Flora and fauna information should be provided on information boards.
- Public conveniences at regular intervals .
- Drinking water taps at regular intervals.
- Adequate parking area for visitors.
- Adequate seating space for visitors.

- **Nodes:**

- ***Dzomsa (pocket parks)***

These are small parks mainly for social gatherings in high density neighbourhoods. The following steps should be taken to promote these kinds of parks in the town :

- Street junctions should be kept empty without allowing adjacent houses to encroach on them.
- Seating should be installed at these spots.

- ***Maney ( Skyastags, Skara road)***

Maneys are recreational spots for the older generation of Leh town. The elderly gather around maneys and go around them in a clockwise manner while chanting. The following measures should be taken to make maneys more inclusive and welcoming :

- Proper pedestrian lighting along maneys.
- Proper footpaths along the maneys.
- Resting spots at regular intervals.

## Housing Colony

The Housing Colony area is the only planned localities in Leh town. This area is planned according to a grid-iron pattern. A major portion of the locality is under residential use and there are public places and recreational spaces in nearby areas. In the coming years, major utilities of the town have been proposed in this area including the Lieutenant-Governor's office, a new bus stand, and public offices. Presently, this area already has essential infrastructure (parks, schools, community areas, shopping complexes, sports grounds) for a liveable neighbourhood but these elements can be made more usable. For the future, this area has the potential to be developed as central sports area.

Many of the potential and new open space locations are in this locality, like the open space near the Ladakh UT administration

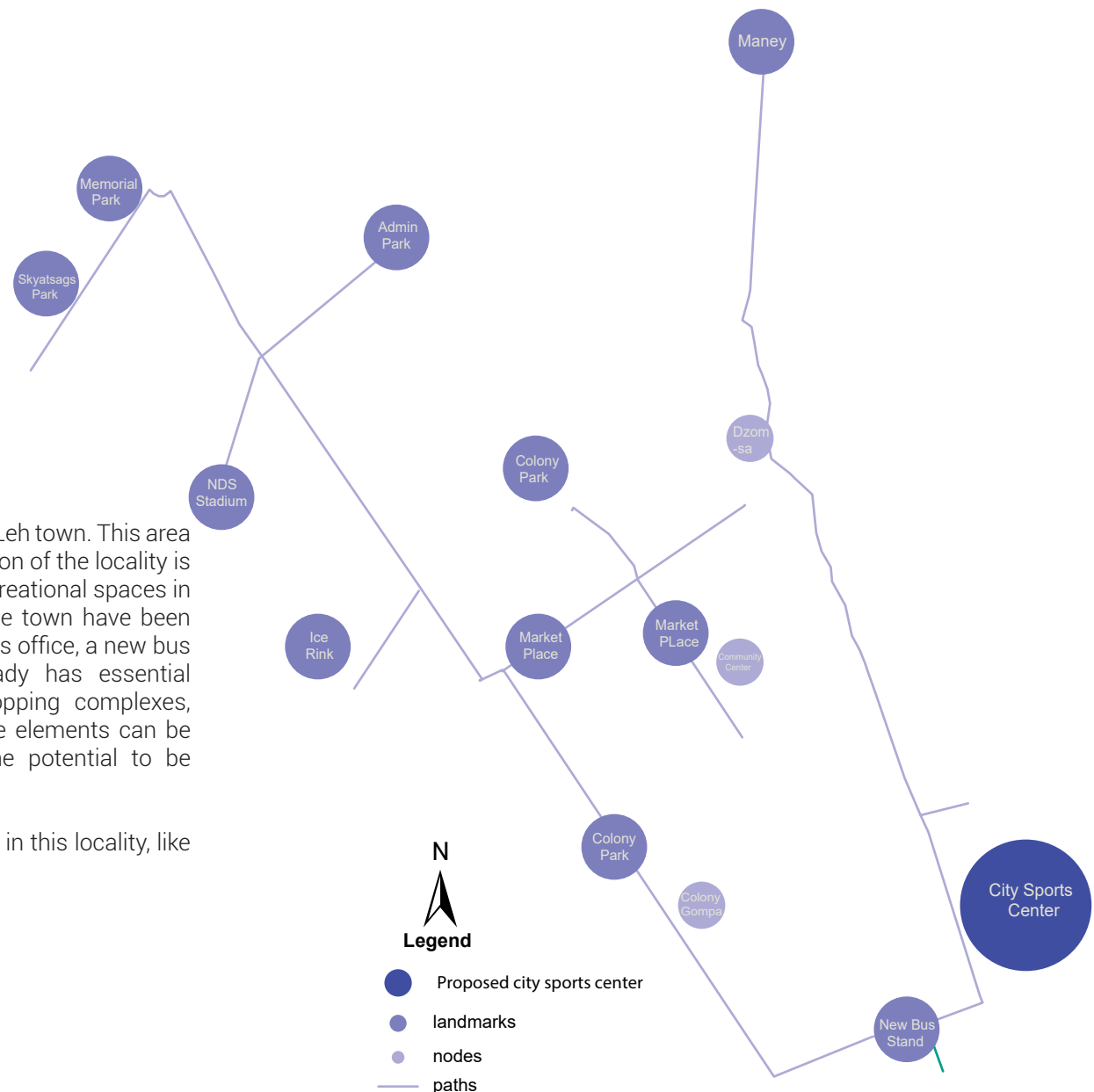


Figure 30 : Proposed city sports center as Foci and its nodes and landmarks





Housing Colony



**Foci:**

➤ **Housing Colony**

**Landmarks:**

- **Parks (Colony park-1, Colony park-2, Colony park-3, Administration park, Skyatsags park, memorial park):**

The following steps should be taken to make the place more vibrant and safer:

- Develop public convenience facilities in the parks.
- Install drinking water taps at several locations.
- There should be a park in every neighbourhood within a radius of 800m to ensure that each park caters to around 1,000 persons.
- Every park should be permeable, inclusive, and sustainable given the importance of water in the region.
- These parks should have enough space to accommodate all kinds of activities including children's sports to walking and seating space for the elderly.
- Develop safer steps for people willing to use them, with railings, pedestrian lighting, and drinking water points.

- **Complete streets (Colony Market)**

Complete streets is a transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities irrespective of their mode of transportation. Complete streets allow for safe travel for people walking, cycling, driving automobiles, riding public transport, and delivering goods. Elements of complete streets:

- Sidewalks with universal accessibility concept
- Medians
- Public transit accommodation
- Cycling accommodation

- Lively frontage
- Pedestrian lighting
- Furniture

- **Maney (Housing Colony road)**

Maneys are recreational spots for the older generation of Leh town. The elderly gather around maneys and go around them in a clockwise manner while chanting. The following measures should be taken to make maneys more inclusive and welcoming :

- Proper pedestrian lighting along maneys.
- Proper footpaths along the maneys.
- Resting spots at regular intervals.

- **City sports centre:**

Leh town has a very limited scope for active recreational open spaces. The land adjacent to the housing colony still has potential to become an active open space. The following steps should be taken to develop this sports arena:

- Football ground
- Basketball ground
- Archery area
- Jogging track
- Children's park
- Elder's park
- Cricket practice pitch
- Adequate parking facilities
- Public conveniences
- Café cum management office

- **Woods (*Badame bagh, Skara woods*)**

Leh town has very few woods which is under the town administration, among these two are in skara foci area is Badame bagh and skara woods. Till now these woods has been used for research purposes to know what all plants can be grown in Leh. These places have a great potential to become a jogger's park with other essential infrastructure.

Following steps can be taken to make these places successful open space.

- Recreational activities should be set up at the open space.
- Flora and fauna information should be provided at information boards at several spots.
- Public convenience at relevant spots.
- Drinking water tapes at some spots.
- Adequate parking spots for visitors.
- Adequate sitting spaces for the visitors.

**Nodes:**

- **Dzomsa (*pocket parks*)**

These are small parks for social gatherings in high density neighborhoods. The following steps need to be taken to promote these kinds of parks in this area:

- Street junctions should be kept empty with regulations to prevent adjacent houses from encroaching on it.
- Seating furniture should be installed at these spots.

- **Colony gompa:**

Monasteries have great value for local communities. The following steps need to be taken to make better use of such monasteries :

- Proper landscaping should be done around the monasteries.
- Pedestrian connectivity and accessibility from Housing Colony should be developed on a priority basis.
- Drinking water taps at several locations.
- Adequate parking space for the visitors.
- Develop convenience facilities near the gompa.



## Skalzangling Market :

This is one of the main centres in lower Leh and is primarily a commercial area. Most of commercial activity of the town takes place in this area. This area is accessible from all parts of the town by motor vehicles and on foot. Once you reach there, this area also has potential to provide space for social gatherings and to conduct business. There are many places in this area to make open cafes, farmers market and plazas.

It is important to develop linkages between the market and neighbourhoods around it to optimise its commercial potential. Public convenience is high in pedestrian footfall areas. In keeping with universal accessibility standards one needs to make pathways to enable people to visit Skalzangling market. Safety is a major concern in a town like Leh, which is a tourist hub and people tend to spend more time outside of their houses and hotels. So, safety in the evening is a major concern in market areas, especially for women. Legibility is one of the main elements to make a city liveable and this area requires proper signage along various routes to help people reach their destination easily.



Figure 31 : Skalzangling market as Foci and its nodes and landmarks



Skalzangling



**This place has 18 landmarks and 36 nodes:**

**Foci:**

➤ **Skalzangling Market**

**Landmarks:**

- **Woods (*Dambuchan woods*)**

Leh town has very few woods within its municipal limits. Among these are Dambuchan woods in Skalzangling.

Following steps can be taken to make these places successful open space.

- Recreational activities should be set up at the open space.
- Flora and fauna information should be provided at information boards at several spots.
- Public convenience at relevant spots.
- Drinking water taps at some spots.
- Adequate parking spots for visitors.
- Adequate sitting spaces for the visitors.

- **Complete streets (*Ibex market, Murtsey market*)**

Complete streets is a transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities irrespective of their mode of transportation. Complete streets allow for safe travel for people walking, cycling, driving automobiles, riding public transport, and delivering goods. Elements of complete streets:

- Sidewalks with universal accessibility concept
- Medians
- Public transit accommodation
- Cycling accommodation

- Lively frontage
- Pedestrian lighting
- Furniture

- **Water front**

Water fronts are important elements for biodiversity conservation and social gatherings. The following steps should be taken to develop such water fronts in Leh town.

- Restrict any form of construction around the pond.
- Rejuvenate all ponds, with proper seating area and reliable channels connecting them to agricultural fields.
- A management team in the government administrative.
- Public conveniences at periodic intervals.

- **Municipal Parks (*Murtsey park-1, Murtsey park-2*)**

Rapid urbanisation of Leh town has resulted in many public and private open spaces being converted into parking areas or built up. There is an urgent need to develop municipal neighbourhood parks across Leh town

The following steps need to be taken to encourage a park use culture in Leh town:

- There should be a local park in every neighbourhood within a radius of 800m, which can cater to atleast 1,000 persons.
- Every park should be permeable, inclusive, and sustainable in the context water scarcity in the region.
- These parks should have enough space to accommodate various activities including children's sports and walking and seating space for the elderly.



- ***Knowledge park (open library)***

Presently, there are very few libraries in Leh town and most of these are private with one exception. These libraries are rarely visited by the public. In an effort to make such places more interesting and vibrant, we have proposed an open public library.

**Nodes:**

- ***Courtyards (Skalzangling Gompa, Market courtyard, Shopping complexes)***

These courtyards are mostly left vacant and not put to any productive use. The following steps should be taken to make these courtyards more vibrant:

- Café cum sitting area can be evolved from these spaces.
- In summer these areas can be used to host small public concerts.
- In winter, these areas can serve as important seating areas for people to sun themselves.

- ***Dzomsa (pocket spaces)***

These are small parks meant for social gatherings in high density neigh-bourhoods. The following steps should be taken to promote such parks in Leh:

- Street junctions should be kept empty and adjacent houses should not be allowed to encroach this space.
- Seating furniture should be installed at these spots.

## Recreational facilities: City-level, ward-level and neighborhood-level

The term 'recreational facilities' refers to parks, playgrounds, gymnasiums, swimming pools, field houses, bathing water front spaces, stadia, golf courses, public campgrounds, arboretums, bicycle paths, senior citizen centres, community centres and other recreational facilities. These are places where people can indulge in some kind of leisure activity. In Leh town, we need to focus on parks, playgrounds, senior citizen recreational spaces, winter sports and knowledge parks.

1. Parks-cum-play areas
2. Sport facilities
3. Knowledge park
4. Senior citizen recreational centre

### Parks-cum-play areas

As per the planning guidelines, facilities must be distributed in a hierarchical order across a settlement. Similarly, parks should be distributed in a hierarchical order in the following order :

1. Tot lots
2. Housing unit park
3. Neighborhood area park
4. City level park

Presently, there are very few neighbourhood-level parks/playgrounds and a town-level playground. As the town is not densely populated, tot lots and housing unit area parks or playground can be neglected to an extent. However, with rapid urbanisation of the town, most public and private open spaces have been converted into parking or have been built over. Thus, there is a need for municipal neighbourhood parks. In this regard, the following steps should be taken to make a park use culture in the town:

- There should be a local park in every neighbourhood within a radius of 800m to ensure that each park caters to around 1,000 people.
- Every park should be permeable, inclusive, and sustainable given the importance of water in the region.
- These parks should have enough space to accommodate all kinds of activities including children's sports and walking and seating space for the elderly.
- There are eight bogs/wetlands in Leh town's municipal area, which can be used as ward-level parks.
- Skara bog/ wetland can be proposed as a town- level as there are many other places of interest in its vicinity including Zorawar Fort, army park, Skara monastery, and Skara dZing.

These bogs or wetlands and ponds are discussed later in section 4.2.7, which also includes a detailed map of these areas.

### Sports facilities

NDS stadium is the only town-level sport facility available in the city, which is not properly maintained. Ladakh requires recreational facilities for winter season. Ice skating is the main sport and recreational activity during the winter. Otherwise, people generally remain indoors during the winter. Presently there are total 12 ponds in the city. The following steps can be taken to improve sports activities in the town during the summer and winter:

- All the 12 dZngs/ ponds in the town can be used as ward-level recreational spaces, while Karzoo can be used as a town-level recreational space due to its proximity to the town centre.
- Develop a town-level sports centre. Land adjacent to Housing Colony can be used for active sports activity as it has enough space to accommodate different kinds of sporting activities and a café-cum-management office.
- Leh's Polo ground can be used for parking as well as a sports centre.
- There is a proposed Multi-Utility Games Area at the Government Girl's Higher Secondary School which should be open to the public after school hours.
- Improve existing town-level sport centre i.e. NDS.

## Knowledge park

Presently, there are very few libraries in the town and with the exception of one, the others are all privately-owned. People rarely visit these libraries. It is important to develop a space in the form of an open library that is interesting and vibrant. This library should have the following elements :

- Open library with open Wi-Fi to allow people to explore knowledge bases online, a café-cum-management office to ensure proper maintenance of the library, seating areas with shelter above to generate a good learning environment for users.
- Develop an eco-cultural park with open air theatre facility for cultural events along with other amenities and public conveniences that are maintained well.

We have proposed the development of four open libraries and one eco-cultural park in the town. Potential locations for these facilities are shown on the adjoining map. They include :

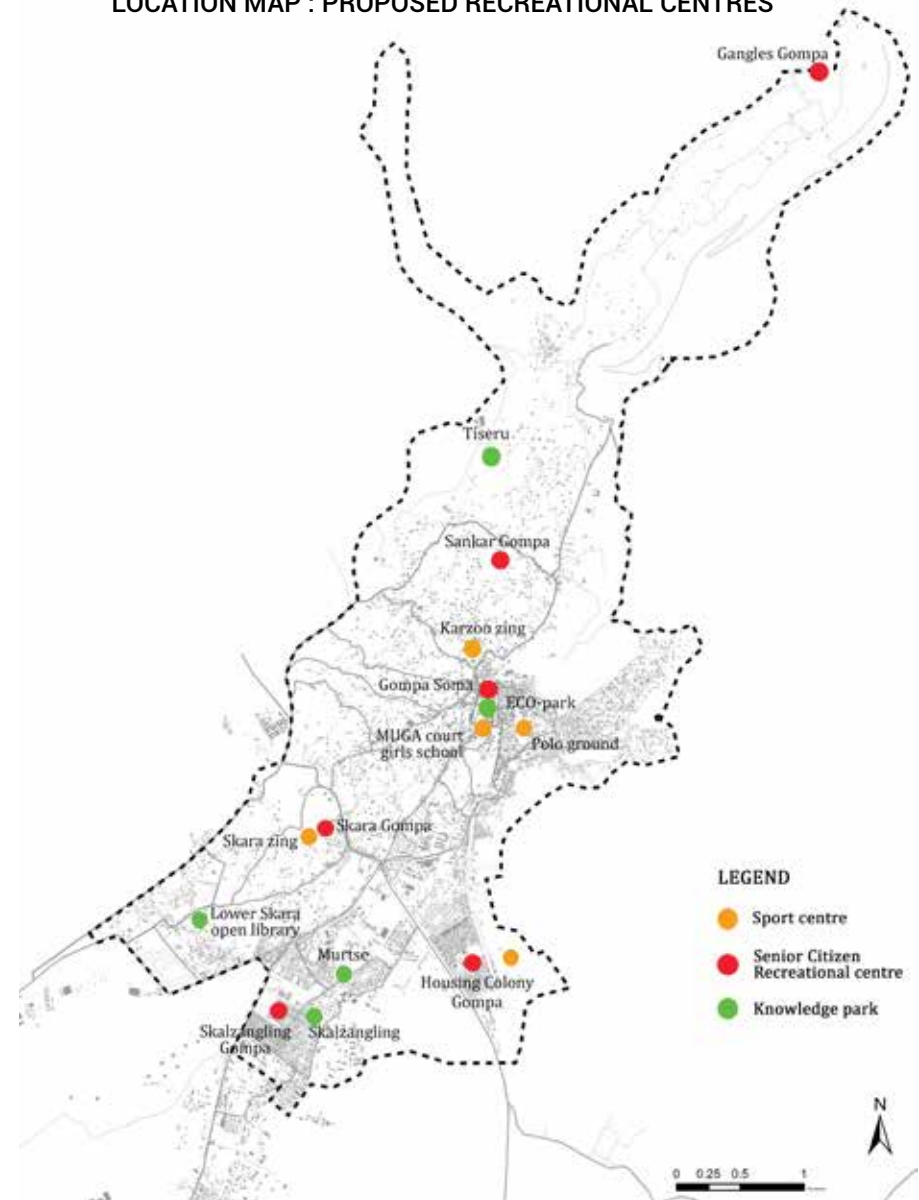
1. Shasthang
2. Skara
3. Murtse
4. Skalzangling

## Senior citizen recreational space

Maneys and monasteries are recreational spaces for people of different age-groups especially the elderly. These maneys can be more inclusive and welcoming with a footpath, lights, resting areas etc. There is at least one monastery in each neighbourhood or locality, which can be converted into recreational spaces, especially for the elderly with proper landscaping around the actual monastery structure. The following monasteries have the potential to be developed as senior citizen recreational spaces :

1. Gangles Gompa
2. Sankar Gompa
3. Skara Gompa
4. Housing Colony Gompa
5. Skalzangling Gompa

## LOCATION MAP : PROPOSED RECREATIONAL CENTRES



Map 17 : Location map of proposed recreational spaces



## Recreational Walk

Leh town has a great scope for recreational walks around the town. Around 50% of the land cover is still under green cover be it trees or agricultural fields. A large number of tourists visit the town each year and it has great potential to attract more tourists with a recreational walk network to explore the whole area. For instance, one can walk all the way from the top of the town to the lower areas along the Leh stream. The walking network can include agricultural fields, the bank of the stream, narrow streets etc.

These walking tracks can also include space for cyclists as these two activities often overlap and most of the pathways do not coincide with vehicular traffic.

Leh town is surrounded by mountains on three sides and there is scope to develop hiking and trekking trails. Presently, only one route has been identified. Based on the success of this route, several other routes have been identified. These include :

### Longer routes:

#### Route – 1:

Starting from Gyamtsa valley the route travels along the wetland to reach the stream. It then follows the stream till it reaches Leh airport.

#### Route – 2

It starts from Gangles, which is an urban-rural area dominated by agricultural fields, wetlands, fresh water stream, and trees. This route travels along the stream side crossing ponds, agricultural fields.

### Shorter routes:

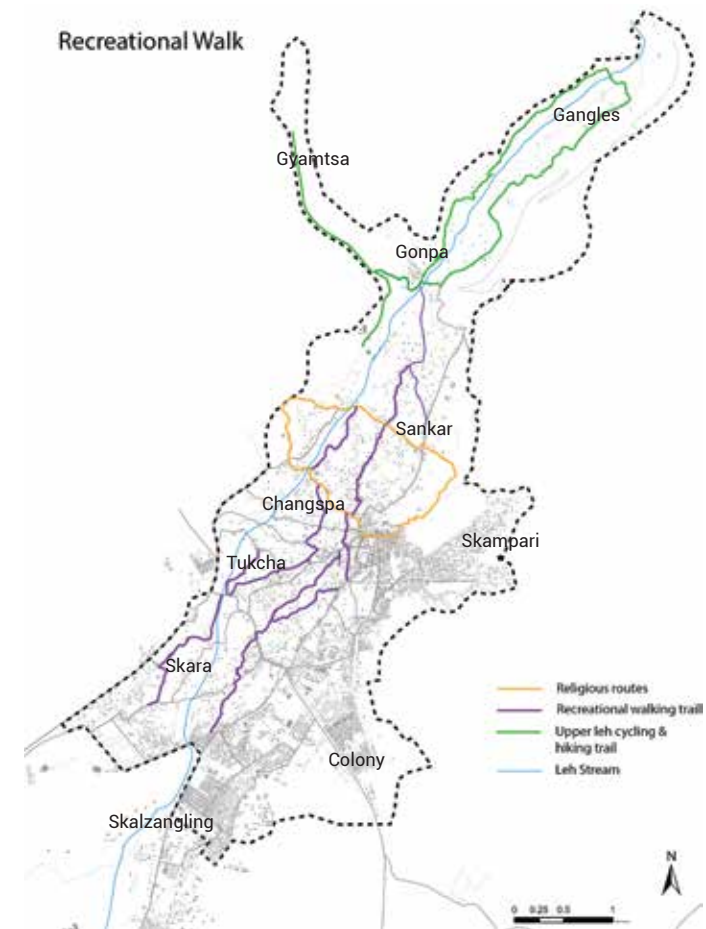
#### Route – 1

Leh Palace to Shanti Stupa via Namgyal Tsemo and Sankar gompa. This route is popular with elderly folks who enjoy walking.

## Hiking route:

### Route – 1:

Leh district attracts trekkers from around the world. Popular adventure activities include trekking, rafting, and hiking. While Leh town does not have long routes for trekkers, it has the ample scope for short treks in upper Leh.



Map 18 : Proposed route for recreational walk

## Wetland corridor :

Leh has a network of off-street trails and pathways that interconnect parks, open spaces, wetlands, libraries, public facilities, and areas of interests. A wetland corridor is proposed to create an open space corridor with wetlands, ponds, major canals and the main stream as the major components. Here, wetlands and ponds will act as nodes and major canals and the stream will act as paths connecting the nodes. There many other recreational spots on these off-street trails and pathways than will serve as sub-nodes. An exclusive survey of all the major wetlands, ponds and major canals was carried out to understand the issues and opportunities related to wetlands and ponds. These opportunities explored are largely in terms of the possibility of using bogs and ponds as recreational spaces, the availability of space to make footpaths alongside the canals and install seating arrangements wherever possible.

### Major wetlands:

- 1) Gyamtsa Spang
- 2) Gangles Spang
- 3) Chorten Spang
- 4) Gompa Spang
- 5) Khakshal Spang
- 6) Yurtung Spang
- 7) Chubi Spang
- 8) Skara Spang

### Major ponds:

- 1) Gangles dZing
- 2) T-trench
- 3) Gompa village
- 4) Khakshal:
  - a) War-dZing
  - b) Khakshal dZing

- 5) Pagal dZing
- 6) Peyok dZing
- 7) Karzoo dZing
- 8) Chutey Raktak dZing
- 9) Sheynam dZing (Chullung)
- 10) Skara dZing:
  - a) There are two ponds

### Major canals in the city :

- 1) Gompa to Khakshal
- 2) Chubi to Changspa
- 3) Malpak to Syatsags
- 4) Syatsags to Dambuchan

## Wetlands in Leh

Wetlands are very important elements for biodiversity and human beings. Bogs are the most common type of wetlands in Ladakh. Bogs are characterised by acidic waters and spongy peat deposits as well as a covering of sphagnum moss. Bogs tend to get their moisture from precipitation rather than waterways such as streams or stream runoffs. These wetlands are ideal for preventing downstream flooding and therefore need to be conserved. There are nine major bogs in Leh town. Since 2019, people in Leh have gained access to more information on wetlands and it has been used for various recreational purposes. The following are the major wetlands of Leh town :

**1) Gyamtsa bogs/ wetlands:** There are six bogs in Gyamtsa valley, which is the highest in Leh town. These wetlands are not continuous and are dispersed in patches across the whole valley. Presently these are used as pasture lands and as picnic spots. This area is not maintained properly and many picnickers leave litter behind in the area. These bogs are near main water sources and it is not in danger of drying up. The following steps need to be taken to maintain the integrity of the wetland:

- It can be used as a recreational space but will require a proper solid waste collection system including sufficient dustbins to prevent pollution. People using the area should be encouraged to use this system with proper signage.
- A base camp should be developed for trekking routes that lead to Phyang village to generate income for locals.



**2) Gangles wetlands:** There are four wetlands/bogs in the valley. Wetlands of Gangles are presently used as pasturelands and picnic spots. People visiting the bogs leave behind a lot of waste. Since these wetlands are near a water source and do not face the risk of drying up. The following steps need to be used to conserve wetlands:

- It can be used as a recreational space with a functional solid waste collection system including sufficient dustbins. The public should be educated about using sign boards in the area.

There is one major wetland in Gangles from where water is supplied to the some parts of Leh town. The wetland is called Chorten (Stupa) in the report as there is a chorten in the middle of the bog. Currently, it is used as a pasture and as a picnic spot. There is a water spring in the middle of the bog from where water is supplied to some parts of Leh town but it is not maintained properly. People visiting the area often leave behind the solid waste in the bog. As there is a water source in the bog, it does assist ground water recharge around the bog. The following steps need to conserve the wetland:

- To maintain the existing ground water level, construction work around the bog should be restricted.
- To retain the quality of water, recreational activities and grazing of cattle should be restricted.





**3) Gompa:** It is presently being used as a pastureland and picnic spot, which leads to a lot of garbage in the area. It is situated near the main stream and does not face the risk of drying up. There is a Chhulam (footpath along the canal) from Gompa bog to Khakshal bog but this pathway is not maintained properly. The following steps need to be taken to conserve the wetland:

- It can be used as a recreational space but requires a proper solid waste collection system including sufficient dustbins. Sign boards should be used to encourage the public to use the dustbins.



**4) Khakshal:** Currently, it is used as public space and maintained by the people who live in the neighbourhood. There is a major canal flowing through the wetland. The following steps need to be taken to conserve the wetland:

- Restrict construction in and around the bog.
- It is a public space and requires a functional solid waste collection system including dustbins and sign boards.



**5) Yurtung:** The wetland is near Leh's main stream but a road has been built through the wetland. It has shrunk over time and has become very small. The following steps need to be taken to conserve this wetland:

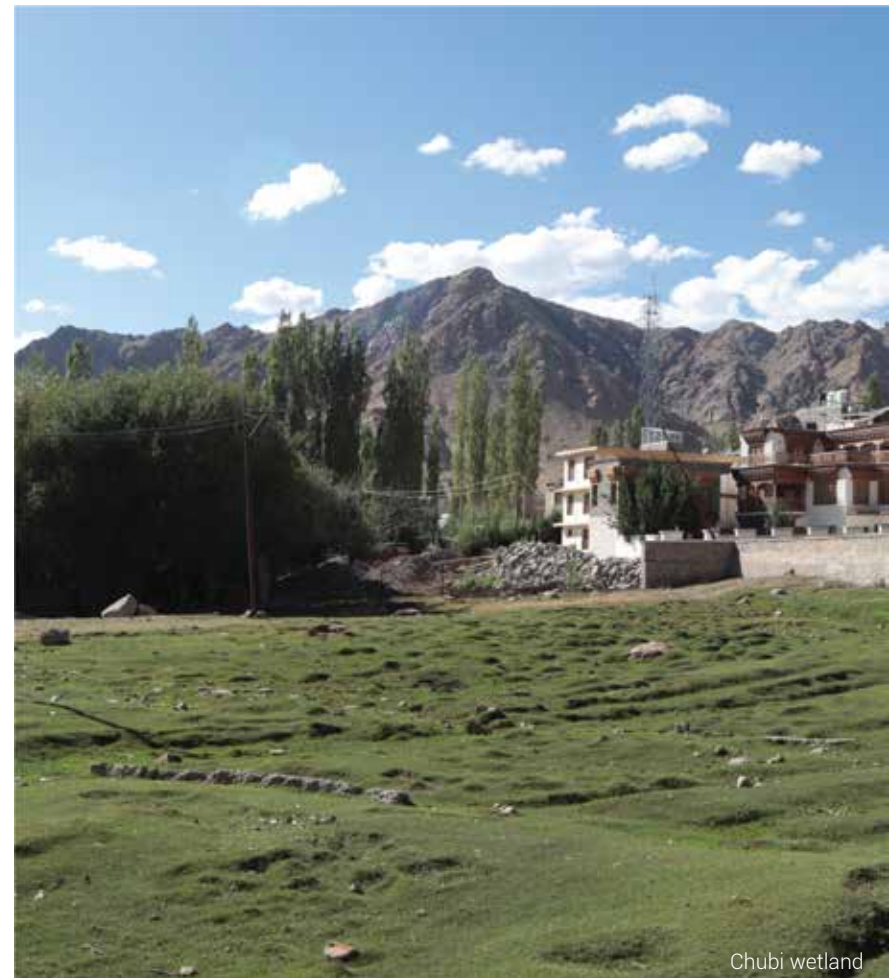
- Restrict further construction work in and around the bog.



Yurtung wetland

**6) Chubi:** Currently, it is not being used for any purpose. Chubi bog has shrunk due to excessive construction in and around the wetland.

- Further construction works should be restricted in and around the bog.



Chubi wetland



**7) Skara spang:** Skara Spang is the only wetland near the town centre. It is the largest bog in the city. Initially, it covered 36 hectares but has now shrunk to 20 hectares due to developmental works. There is a big ground water extraction point near the wetland, which supplies water to the army. Overextraction of ground water has caused some parts of the bog to dry up. This place is accessible by vehicle and on foot.

Skara Spang is located many other interesting places such as Zorawar fort, army parks, and Skara monastery. Certain interventions are needed to optimise the ecological and social value of this area:

- Develop public conveniences in the area.
- Create safer streets for pedestrians and cyclists with proper lanes, street lights and resting spots.
- Legibility is an important element that makes a town liveable. Thus, proper signages should be installed along the route to help people reach their destination easily.
- Prevent over-extraction of ground water by limited water extraction quantities.



Skara wetland



Skara wetland

#### Policy proposal for wetlands:

The following steps should be taken to conserve wetlands in Leh town:

- Restrict construction and development in and around wetlands.
- Ground water extraction should be regulated and restricted in and around the wetland.
- **A management team should be created within the administration and also at the ward level to manage and maintain the wetlands.**
- Public conveniences should be constructed in the area.
- A café-cum-management office should be constructed along with a proposed recreational spaces.



## Ponds

Ponds or dZings are very important elements for biodiversity and people alike. Historically, ponds in Leh have been used for various purpose including agriculture, ground water recharge, and as a swimming pool.

### Major ponds:

**1) Gangles dZing :** Gangles dZng is located on Gangles wetland and is used to store water from the wetland.



**2) T-trench pond:** T-trench is located near Chorten wetland. The pond was made as a water reservoir to supply water to different parts of Leh.



### 3) Khakshal:

a) **War-dZing:** War-dZing was constructed as a water storage facility to source water for irrigation by the residents in the area. Currently, it is not functional due to some structural damage.

b) **Khakshal zing:** Khakshal dZing is used for irrigation by the residents of the area.



4) **Pagal dZing:** Pagal dZing is used for irrigation in the summer and as a rink for ice skating in the winter by the children of Yurtung.





**5) Peyok dZing:** Peyok dZing is used for irrigation purpose by the residents of Changspa but is not functional currently.



**6) Karzoo dZing:** Karzoo dZing is primarily used for ice skating.





7) **Chutey raktak dZing**: It was repaired recently but is not in use.



Chutey raktak dZing

8) **Sheynam dZing**: Sheynam dZing was used for irrigation by the residents of Sheynam but is not functional currently.



Sheynam dZing

**9) Skara dZings:** There are two major ponds on Skara Spang. One pond is located on the left side of the stream and other to its right side (according to the map). Both the dZings are used for irrigational while the one on the left is also used for ice skating in the winter by the people of Leh.



Skara dZing on the right side of the stream



Skara dZing on the left side of the stream

**Following steps should be taken to preserve the ponds of entire Leh :**

- Prevent encroachments by restricting construction around the ponds.
- Rejuvenate these ponds with proper seating areas and channels to agricultural fields while also beautifying the area with green infrastructure.
- Encourage the use of the ponds for ice skating.
- Create a management team in the administration and at the ward-level.
- Construct public conveniences in the area.
- Discourage garbage disposal in and around the pond by installing proper solid waste management systems.
- Improve accessibility to the pond.

## Canals

There is only one major canal i.e., from Gompa to Indus river. The canal consists of following major stretches :

- Gangles to Gompa
- Gyamtsa to Gompa
- Gompa to Khakshal
- Khakshal to Chubi
- Chubi to Gesmo restaurant
- Malpak to Syatsags
- Syatsags to Dambuchan
- Dambuchan to Indus river



## WETLAND CORRIDOR

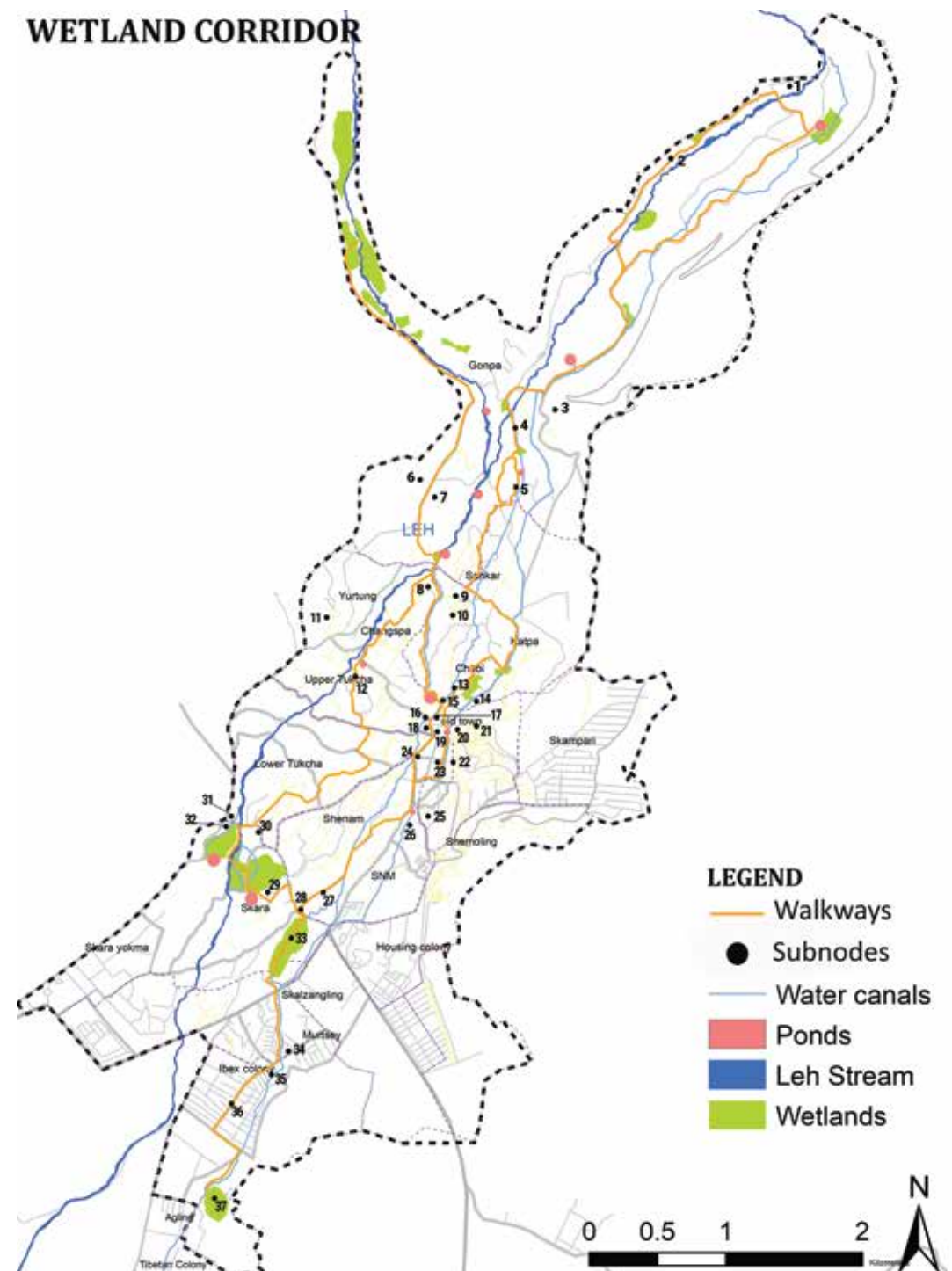
Major paths connecting the wetlands include:

1. From Chubi wetland to Gesmo restaurant via Chutey Rantak dZing.
2. From Peyok dZing to Skara wetland via Tukcha.

The following steps should be implemented to maintain and improve the aesthetics and the water quality of water of these canals:

- These major pathways should be improved to encourage people to walk.
- Pathways alongside the major canals should be developed.
- These pathways should be user-friendly, safe, inclusive, and well-connected.
- These pathways will connect/ link wetlands and ponds while also serving as recreational spaces.
- These pathways should be maintained by the residents of each area.
- Throwing of waste in the canals should be restricted. This is a major issue in Skalzangling and Agling.

As mentioned earlier, opportunities here mean the availability of space to make footpaths alongside the canals and provide seating arrangements wherever possible. After understanding the issues and opportunities of all the ponds, a wetland corridor is proposed with wetlands and ponds as nodes, connected and linked with pathways and other recreational spots on the pathways to be used as sub-nodes, as shown in the map below.



Map 19 : Wetland corridor map





1) Gangles Gompa



2) Pathway from Gangles Wetland



3) Kalachakra



4) Pathway from Gompa Wetland to Khakshal wetland



5) Pathway from Khakshal pond to Sankar



6) Sindhu Stadium



7) T-seru



8) Pathway from Yurtung to Karzoo



9) Sankar Gompa



10) Sankar Maney



11) Shanti Stupa



12) Pathway from Peyok zing to Tukcha



13) Pathway from Chubi to Chutey Rantak



14) Juma Bhag



15) Karzoo zampa



16) Changspa Road





17) Moravian Church



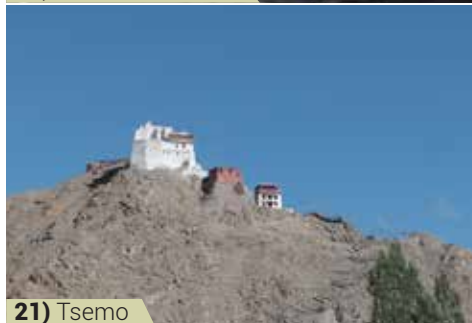
18) Hemis Labrang



19) Zangsti Parking



20) Leh Palace



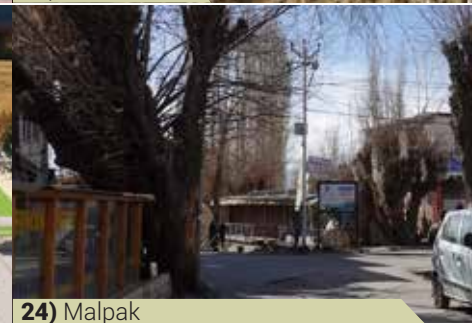
21) Tsemo



22) Leh Market



23) Eco- park



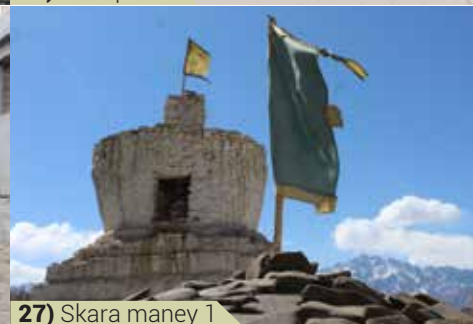
24) Malpak



25) SSB Gonpa



26) Chulung subnode



27) Skara maney 1



28) Skara maney 2



29) Skara Gompa



30) Zorawar Fort



31) Children park army 1



32) Children park army 2





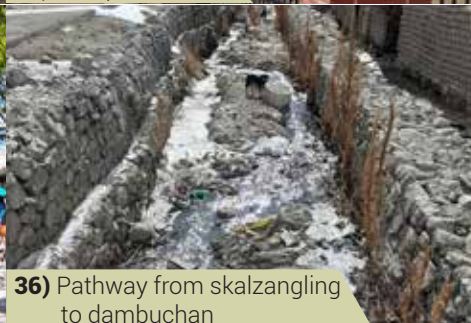
**33)** Skyatsags Bhag



**34)** Ibex park



**35)** Proposed knowledge park



**36)** Pathway from skalzangling to dambuchan



**37)** Dambuchan bhag

## Pilot project

### Eco-Park

The Leh Development Authority (LDA) has undertaken the project of developing an Eco cultural Park in the center of Leh. While the recent pedestrianisation of the Main Market has been a resounding success, the town still lacks a central plaza, a gathering space or park where its citizens can come together to celebrate and strengthen their community. With this proposed civic amenity, the citizens will now have a place to meet for events, festivals, recreation, debate and discussion. Several features are proposed for this park, including a public convenience and cafe, an open-air theater, a play area for small children, a rock-climbing area and an active sports area which will be jointly used with the girl's school. Most importantly, a flexible use promenade is also proposed where festival booths, food trucks and bleachers for people watching are included. With this park, not only will the community have a place to gather, but they will also have the ability to enjoy the serenity of nature in the downtown setting.

The site is located adjacent to the Main Market. Previously a parking lot for taxi cabs, this area is bounded by a two-way street to the east. This street will be converted to a one-way street, and the additional right of way will be used to create a 24 feet wide pedestrian promenade for the enjoyment of the people. The promenade will join the two parcels of land that comprise the park: the taxi parking lot and the small left-over space adjacent to the girls' school. The latter space will now be converted to a joint use facility where both the school and the general public will have access to a modern multi use MUGA (Multi use games area) Court where a variety of sports can be played.





*Eco-park site location*



*Layout of the school play area*

There are three broad principles that guide the planning of this development.

#### **A. Follow Precepts Of Sustainability:**

- Reduce the urban heat island by providing tree cover and reducing large expanses of asphalt and concrete. At a minimum, shade at least 50% of the site ground surface. Shade is the most important driver for the landscape design.
- Promote walking and cycling as preferred mode of transportation rather than the car.
- Create comfortable and inviting car, taxi and bus drop-off and boarding facilities.
- Promote dark sky goals of minimizing light spill and up lighting. Use full cut off fixtures and light sensors to avoid unnecessary lighting of parking lots and streets.
- Increase the native forest by providing the necessary conditions for healthy tree growth.
- Use climate adapted plants that are drought tolerant and use minimal amount of water.
- Use plants that provide habitat value in terms of forage and shelter.
- Recharge all rainwater falling on the site. If possible, also capture rainwater for reuse.
- Create methods and provide space for recycling and sorting of park waste and green waste.

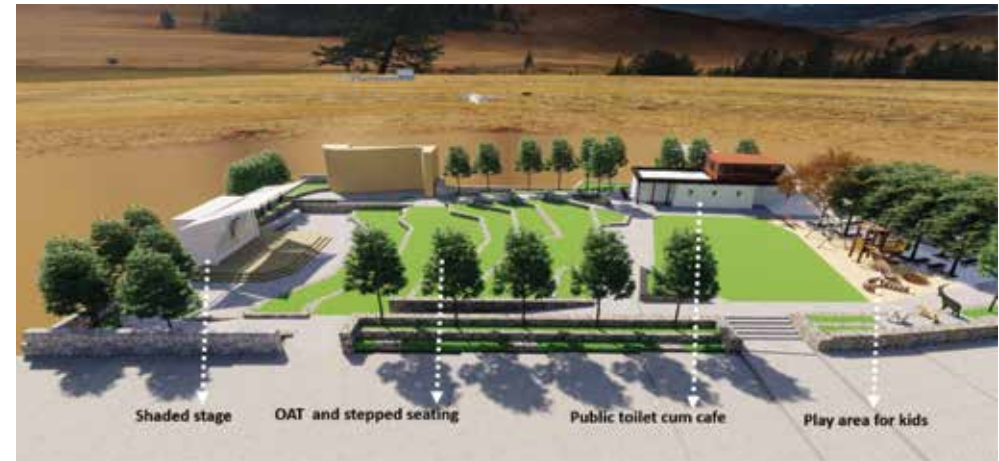
#### **B. Create a Humanistic Development**

- Create human scale spaces that are intimate and climate comfortable.
- Avoid over large, open expanses of un-shaded landscape. Provide shade and protection from sweeping winds, and trees that give a sense of scale to the buildings.
- Develop a variety of spaces at different scales – for large gathering of hundreds of people, for smaller social meetings of 5 to 20 people, and more meditative quiet spaces for solitary enjoyment. All open spaces should support social and cultural activity.
- Provide shaded pathways that promote walking. Allow humans to take the shortest and most direct route between destinations.

- Design for universal access, by avoiding unnecessary level changes, and providing ramps. Provide handrails at all steps and ramps.
- Assist human health by providing places for citizens to interact and recreate. Provide walking and circuits that are comfortable and easy to use.
- Provide well-lit paths and waiting zones that promote safety and security of all residents.
- Provide lots of opportunities for social seating (face to face), and ample number of benches and seat walls for the large population group of this city.

### C. Develop a Sense of Place

- Create a legible design that is memorable and iconic.
- Enhance the unique setting of the Leh mountains by preserving open spaces, using endemic species and inviting low impact activity like walking, jogging, meditation and gardening into these protected zones.
- Strive to make a unique environment with its own distinct look and character.
- Promote visual connections to the glaciers.
- Create a distinct heart for the city, where the large population can gather.
- Provide gardens with food and cafes that can support human life.
- Promote intuitive way finding and circulation.
- Create clear distinct gates and entrances into the park that are logical and visible.
- Create a positive front entrance for the community center building that is easy to find and is well planned.
- Create a visually permeable front boundary wall so that people can look into and appreciate the park setting.
- Create a Nature like atmosphere that supports and softens the city building mass by use of Native Plants.
- Provide outdoor places where humans can connect with nature.



*3D model of the proposed Eco-park*

## Actionable Recommendations

Phase 1 - 2021-2023	
Projects	Time line
<b>Policy</b>	
A wetland conservation rules and regulations/ policy for the Leh Municipal Area.	2021-2022
<b>Ward-level parks/playgrounds</b>	
Rejuvenate the upper Gangles wetlands by expanding its use as recreational space/park.	2021-2022
Rejuvenate the Gompa wetland by expanding its use as a ward- level recreational space/park.	2021-2022
<b>Town-level park</b>	
Develop Skara wetland as town-level recreational space.	2021-2023
<b>Sports facility</b>	
Rejuvenate of Gangles dZing to use it as a ward-level recreational space.	2021-2022
Rejuvenate T-trench pond to be used as a ward-level recreation space.	2021-2022
Rejuvenate Gompa dZing to be used as a ward-level recreation space.	2022-2023
Rejuvenate Khakshal dZing to be used as a ward-level recreational space.	2022-2023
<b>City level sport facility</b>	
Improve the existing town-level sport centre i.e. NDS.	2021
Open the proposed Multiple Utility Games Area in the Governemnt Girl's Higher Secondary School to the public after school hours.	2021



<b>Knowledge Park</b>	
Develop a knowledge park in Murtse as suggested in the document. See Map 17	2021-2022
Redevelop T-seru as knowledge park (open library).	2022-2023
<b>Senior citizen recreational park</b>	
Landscaping of Sankar gumpa to be used as a recreation space, with proper seating area, and other facilities.	2021-2022
Landscaping of Skara gumpa to be used as a recreation space with proper seating area and other facilities.	2022-2023
<b>Other recreational facility</b>	
Sindhu Sanskriti Kendra to be used for monthly exhibitions and festivals with proper landscaping.	2021-2022
Develop a footpath from Gangles wetland to Gumpa wetland.	2023-2024
Develop a footpath from Gyamtsa wetland to Gumpa wetland.	2023-2024
Improve the footpath from Gumpa wetland to Khakshal wetland alongside the major canal.	2021-2022
Improve the footpath from Chubi wetland to Gesmo restaurant via Chutey Rantak dZing.	2022-2023

Phase 2-2024- 2030	
Projects	Time line
<b>Parks / Playgrounds</b>	
Rejuvenate Gyamtsa wetland to be used as a ward-level recreational space/park	2027-2029
Rejuvenate Chubi wetland to be used as a ward-level recreational space	2025-2026
Develop a base-camp at Gyamtsa wetland for trekking route leading to Phyang.	2026-2027
<b>Sports facility</b>	
Rejuvenate Pagal dZing to be used as ward-level recreational space.	2027-2028
Rejuvenate War-dZing to be used as a ward-level recreational space.	2026-2027
Rejuvenate Peyok dZing to be used as a ward-level recreational space.	2025-2026
Rejuvenate Chutey Rantak dZing to be used as a ward-level recreational space.	2025-2026
Rejuvenate Sheynam dZing to be used as a ward-level recreational space.	2025-2026
Rejuvenate upper Skara dZing to be used as a ward-level recreational space	2026-2027
<b>City level sport facility</b>	
Develop Karzoo dZing as town-level recreational space due to its proximity to the town centre.	2024-2025
Rejuvenate lower Skara dZing to be used as a town-level recreational space.	2026-2028

Develop a town-level sports centre at the land adjacent to Housing Colony.	2025-2030
Redevelop pologround to be used as parking space and as a sports centre.	2024-2028
<b>Knowledge Park</b>	
Develop a knowledge park in Skara as suggested earlier. See map 17	2025-2027
Develop a knowledge park in Skalzangling as suggested earlier. See map 17	2027-2029
<b>Senior citizen recreational park</b>	
Landscaping of Gangles Gompa to be used as a recreational space or gathering area with proper seating area and other facilities.	2024-2025
Landscaping of Housing Colony Gompa to be used as a recreational space with proper seating area and other facilities.	
Landscaping of Skalzangling Gompa to be used as a recreational space with proper seating area and other facilities.	2026-2027
<b>Other recreational facility</b>	
Develop SSB Gompa/ Nezer Gompa to be used as a view point of the town with proper landscaping around it.	2024-2025
Develop a footpath from Khakshal wetland to Chubi wetland via Pagal dZing.	2025-2027
Improve the footpath from Peyok dZing to Skara wetland via Tukcha.	2026-2028
Develop a footpath from Gesmo restaurant to Skyatsags bagh via Old road.	2028-2030
Develop a footpath from Skyatsags bagh to Dambuchan bagh along the canal.	2028-2030



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# NOTES

A series of horizontal dotted lines for writing notes.







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