

urban design guidelines  
for  
KRISHNA TEMPLE PRECINCT

**- PILGRIM CENTRE -**



SUBMITTED BY: GROUP 02  
NISHKALA  
DANIEL  
GAUTAM  
SNEHA

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# 1. INTRODUCTION

## 1.1 Udupi

Udupi is sandwiched between the western ghats on the east and the arabian sea on the west. Udupi is well known for its religious fervour and vividity of diverse cultural heritage. Once part of a whole called Dakshin Kannada, which then comprised of the present day Udupi District and Dakshin Kannada district, It now stands as its own entity. Udupi town is the headquarters of Udupi district.

It is well known for the Madhwa Renaissance, founded by sage Madhavacharya. The outcome of which is the Asthamathas, which are located on the car street, around the Krishna Temple. Udupi is an important pilgrimage place (teerthasthal) and is the cultural centre of Karnataka.

Udupi has its own identity in the fields of art and culture. Great littérateurs like the Late Dr. K Shivarama Karanth, Dr U R Ananthamurthy and Girish Karnad hail from this place. Well known artists like Late K K Hebbar, Late B P Bairi dedicated their lives for the promotion and spread of art.

Udupi District is divided into 3 talukas. Udupi, Karkala, and Kundapura.

### **1.1.1 Udupi - Current Day**

Udupi had a population of 165,401 people as of the 2011 census. 49% of the population was male and 51% female. The average literacy rate was 93.89%. The national literacy rate was 59.5%. Male literacy was 86% and female literacy 81%.

Udupi which previously had a town municipal council, and with the separation with Dakshin Kannada in 1997, along with the merging of Manipal, Parkala, Malpe, Udyavar, and Santhekatte, formed the city municipal council. The current Zilla panchayat heads are from the BJP party (Election on 7<sup>th</sup> Aug, 2014).

Tulu is the most widely spoken language in the city. Other languages spoken here are Konkani, English, Kannada and Beary Bashe

### **1.1.2 Climate**

The climate during summers (March - May) reaches a temperature of 40 deg. Cel. And in winters (Dec - Feb), it averages between 32 deg. And 20 deg.

The Monsoon period is from June to September, with average rainfall of 4000mm and heavy winds.

### **1.1.3 Transportation**

National Highway 66 passes through Udupi. It connects Mangalore and Karwar via Kundapur. State highways connect udupi to Karkala, Dharamsthala, and Sringeri.

Udupi has a railway station on the Konkan Railway Line.

The nearest airport is Bajpe airport, located 50km away in Mangalore.

The ports close to Udupi are, Malpe (5km), Gangoli (36km) and The new Mangalore Port (50km).

#### **1.1.4 Economy**

Udupi is becoming a major city in Karnataka. The poverty rate in udupi is fairly low when compared to Bangalore and other districts in Karnataka.

Udupi is also the birthplace of the Syndicate Bank and Corporation Bank.

Udupi's economy depends on mainly agriculture and fishing. Small scale industries like the cashew industry and other food industries are present. There are no large-scale industries in Udupi.

Manipal, is renowned as an education and medical hub. Kasturba Medical College, and Manipal Institute of Technology are situated here.

## 1.2 Krishna Temple

The temple came up around 13th century, the core developed with mathas around .With the invitation of the King to the Brahmins from Madhya Pradesh.

Prior to this was a tradition of Shaivism close to ascetism .They worship of Shiva ,Ganapati along with Nagas, Devi pooja was the popular form of worship .The Brahmins settled along the western coastal region of the south.

The King provided land and infrastructure and role of these were to popularize the then new culture of Vaishnavism in south

Madhvacharya ( 1238–1307 CE), also known as Purna Prajña and Ananda Tirtha, was an Indian philosopher who was the chief proponent of the Tattvavāda "philosophy of reality".

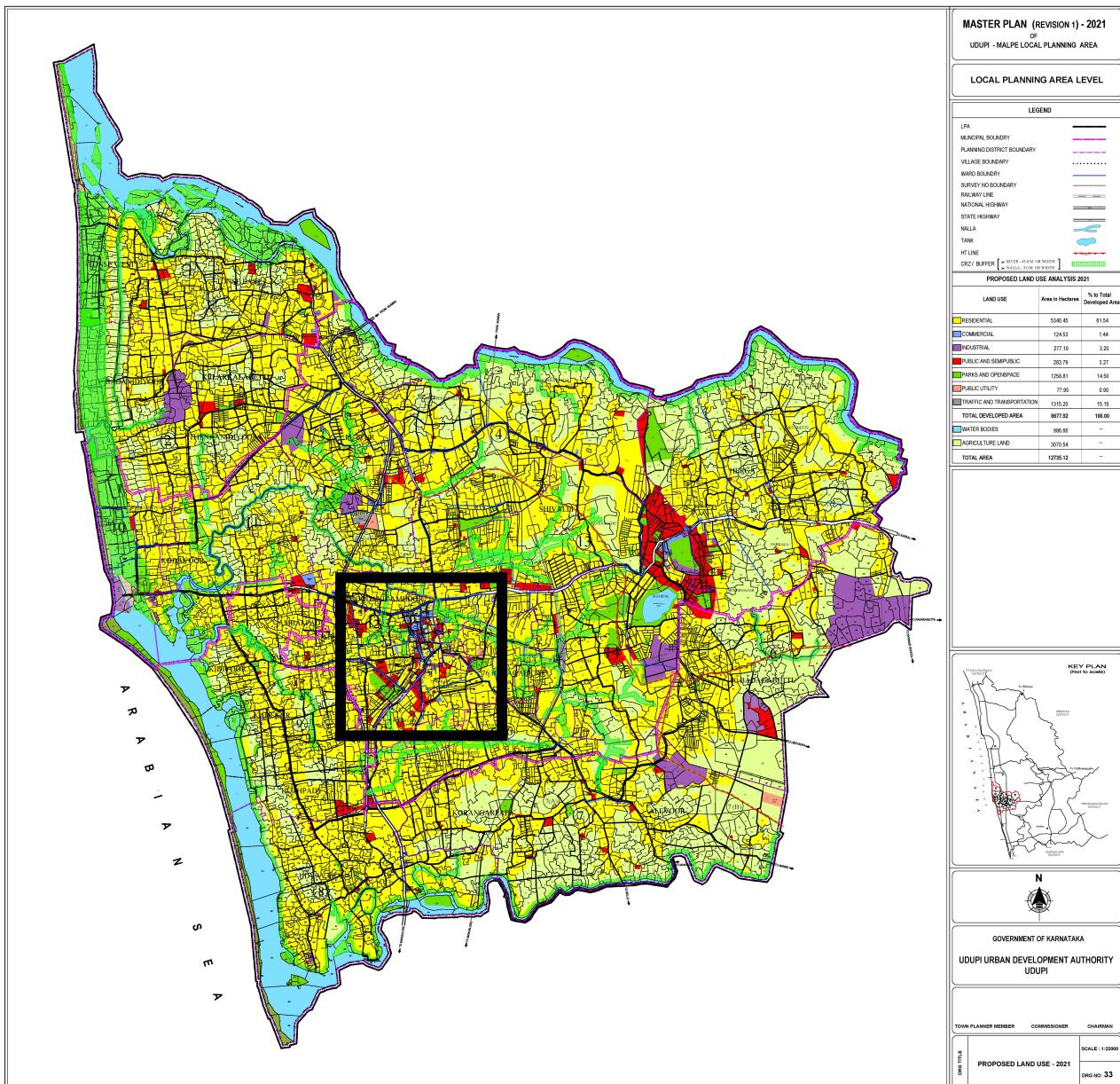
Madhvacharya installed the Krishna idol at Udupi and built the eight mathas

Hrisikesa -tirtha (Palimaru matha)  
Narasimha -tirtha (Adamaru -matha)  
Janardana -tirtha (Krsnapura -matha)  
Upendra - tirtha(Puttige -matha)  
Vamana -tirtha (Sirur -matha)  
Vishnu -tirtha (Sode- matha)  
Srirama -tirtha (Kaniyuru -matha)  
Adhoksaia -tirtha (Pejavara -matha)

He trained various disciple across the country among who eight were too become in charge of eight mathas and were called as Swamiji's. After this he left and started educating the people.

## 2. URBAN FORM

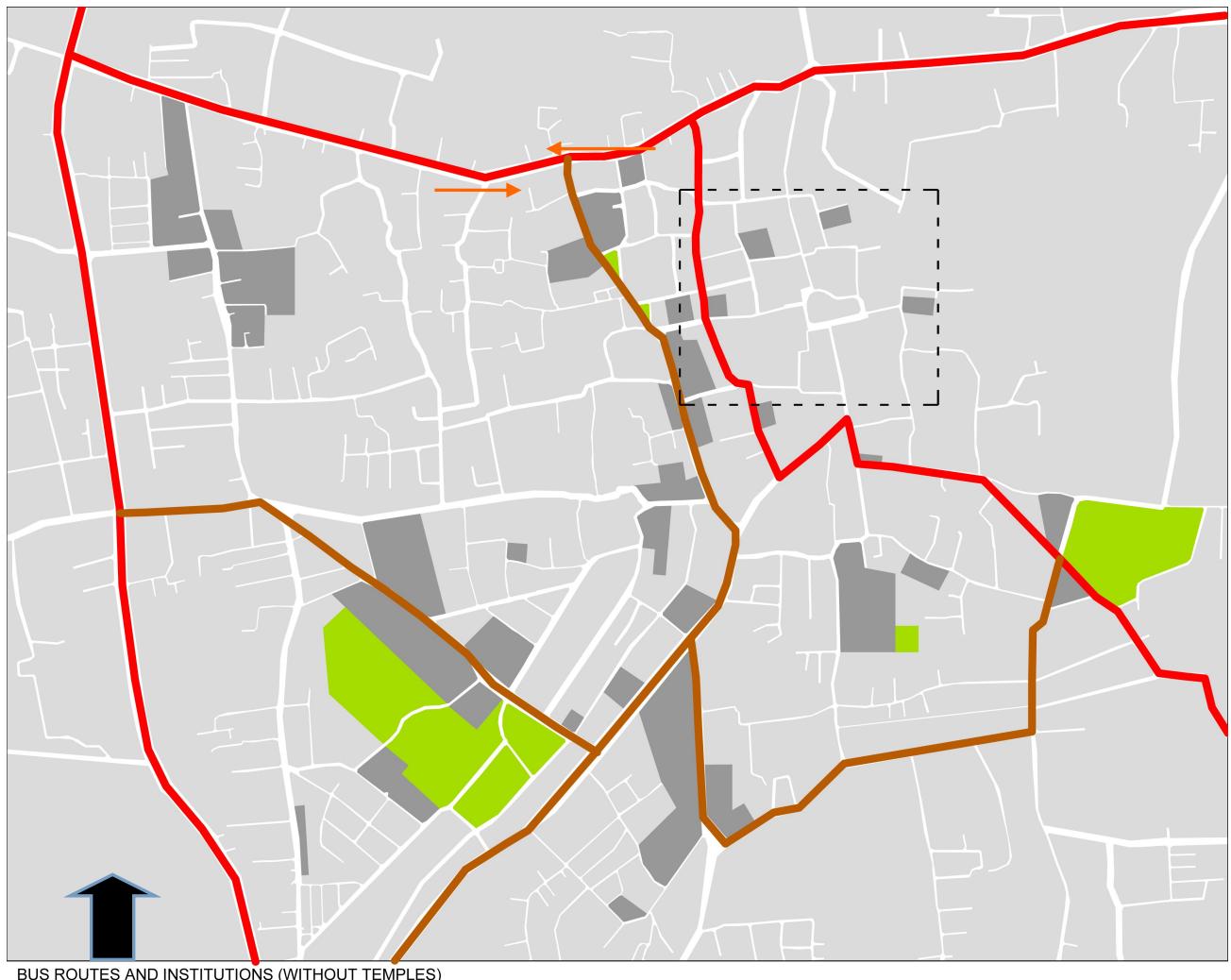
### 2.1 Existing Land Use



The presence of dense commercial activity at the heart of the district is indicative of a strong magnet in the region. The dense radiating network of roads is suggestive of a transport hub in the region.

## 2.2 Town Sample

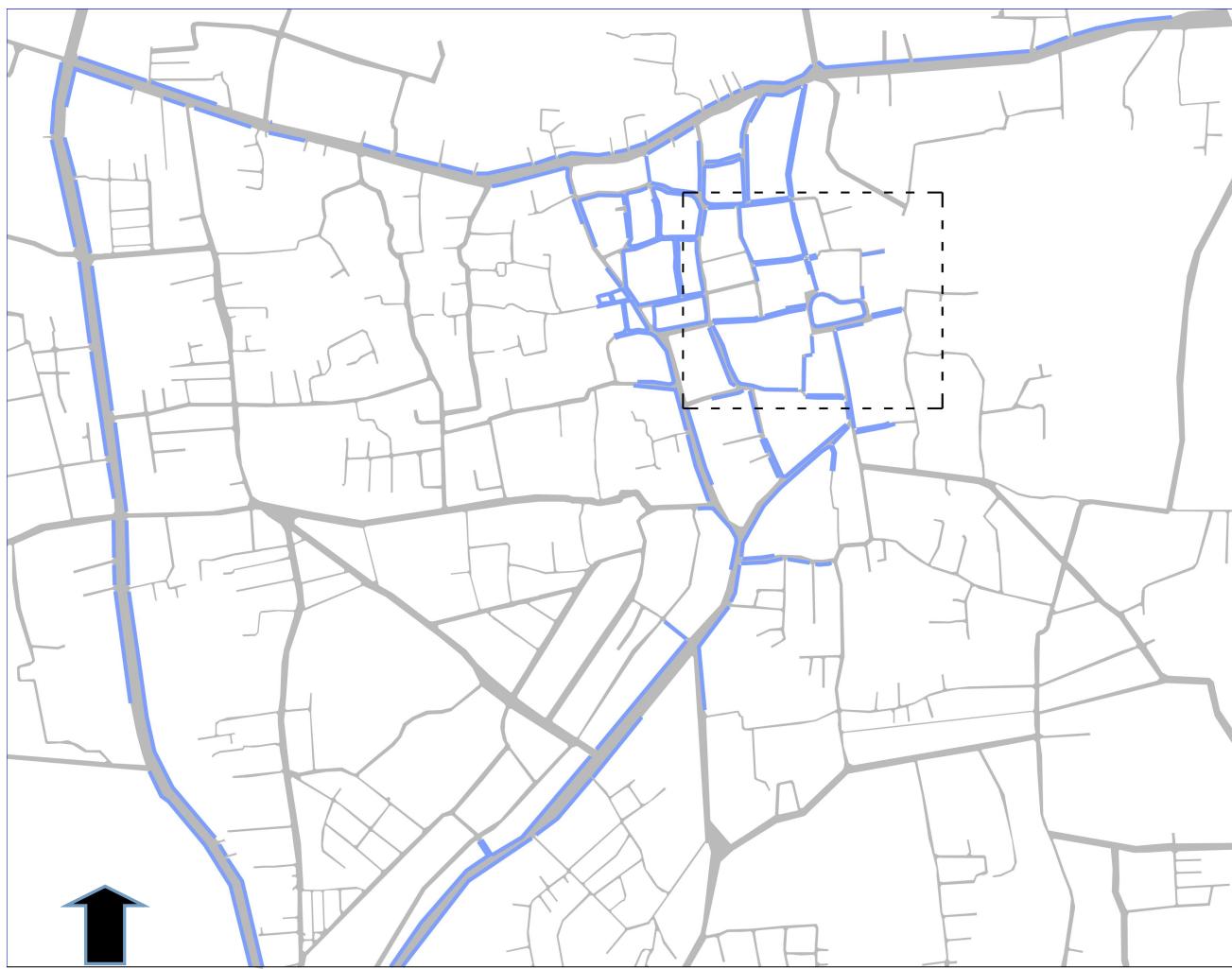
### 2.2.1 Connectivity



The sample taken is the heart of Udupi. It is well connected to the highways (RED). The national highway to the west, and State Highway connects the heart to the rest of the state. Bus Routes (BROWN) cover the major connecting roads.

The City Bus Stand and Service Bus stand provide transport to and fro from the city (RED ARROWS)

### 2.2.2 Commerce zones



The commercial zones are concentrated at the centre of the city. There are commercial activities happening along the main bus routes and highways.

### 2.2.3 Temples



There are 44 temples in the sample taken of Udupi. There are more temples in and around the city. The temples mainly concentrated around the Krishna Matha.

## **2.3 SITE**

### **2.3.1 USERS**

PILGRIMS

MATHA FOLLOWERS

TEMPLE FOLLOWERS

ADMINISTRATIVE STAFF

NON ADMINISTRATIVE STAFF

-COOKS

-CLEANERS

-GARDENERS

-SECURITY

GENERAL PUBLIC

-VENDORS

-PASSERBY

-SCHOOL CHILDREN

-PARENTS

-DRIVERS

-LOCAL ELDERS

### **2.3.2 SET OF ACTIONS**

-FOOD CONSUMPTION

-FOOD PREPARATION

-CULTURAL FUNCTIONS

-PERFORMANCE / RITUALS

-MEETINGS (PUBLIC/PRIVATE)

-WAITING

-BATHING

-TOILET RELATED ACTIVITIES

-RESTING

-MEDITATION

-TRADING + SHOPPING

-PARKING

-SERVICES

-MAINTAINANCE (WASHING/GARDENING/CLEANING)

### **2.3.3 ACTIVITIES**

-CLOAK ROOM

-CAFETERIA + KITCHEN

-ROOMS

-HALL

-ADMIN OFFICE + CONFERENCE

- INFORMATION CENTRE

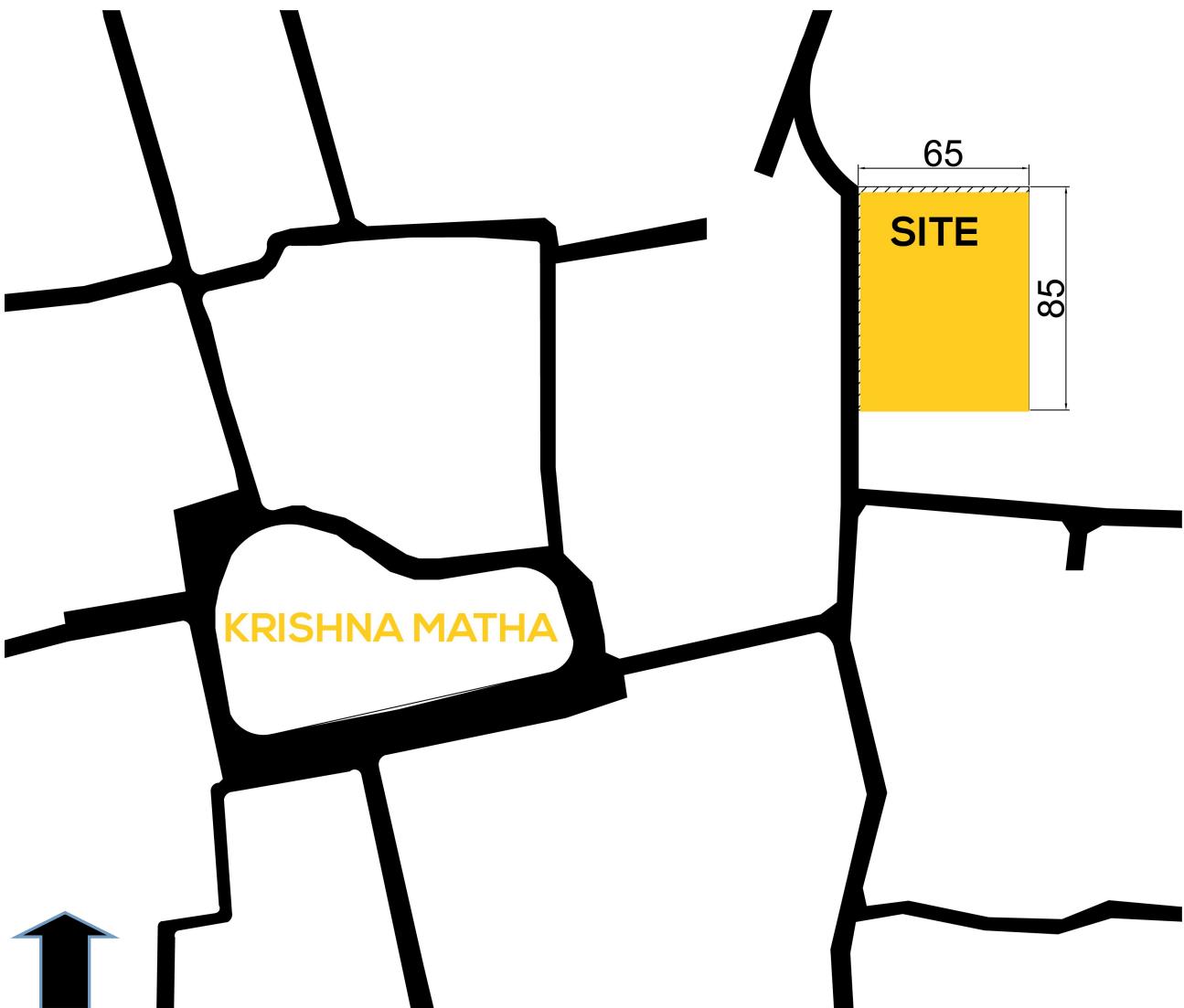
-WAITING PLAZA

-SHOPS

-BATHROOM (FORMAL BATHING AREA)

-W/C + URINALS (PUBLIC USAGE)

INTERPRETATION CENTRE



SITE DIMENSIONS : 65M X 85M  
TOTAL AREA : 59470 SQFT (1.36 ACRES)

### 3. SITE + GUIDELINES

#### 3.1 GRAIN



The plan shows a dense central ring around the car street, with well defined streets. The buildings get denser as they get closer to the centre. The core of the space being the oldest temple of the area (Anantheshwara and Chandramauleshwara).

The density of the structures on the fringe of the car street however, seem to vary. With high density toward the north and west end of the precinct. The streets are well defined by the buildings. To the east, the urban grain is more fragmented. With a lot of vacant sites toward the south east, and north east.

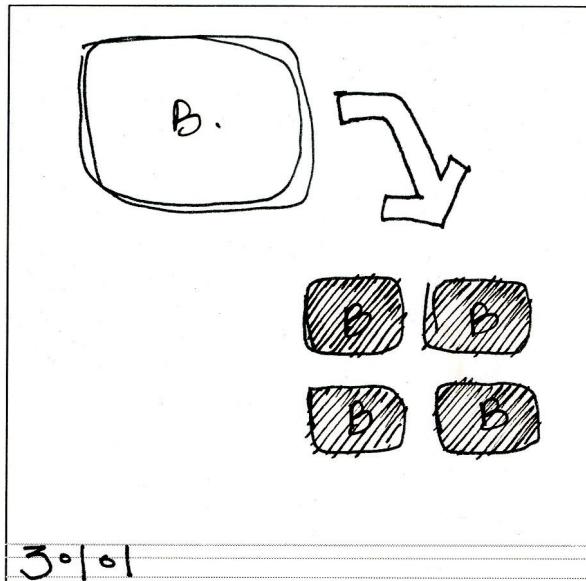
The central portion of each of the quadrants are relatively less dense than the street frontage.

The area Marked in red is the site for intervention.

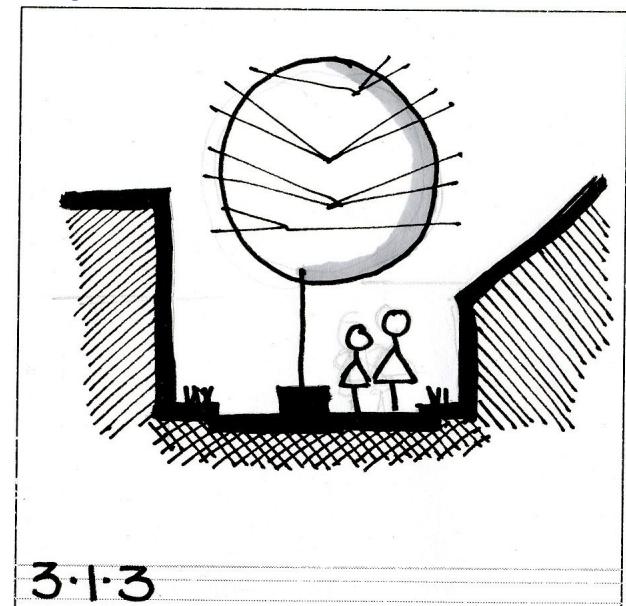
## GUIDELINES:

**3.1.1 Porosity:** the program must be broken down to a series of structures and not one large mass. The grain of the area and porosity should be maintained.

*Justification: To maintain the openness that is perceived in the precinct.*



activity. Many activities are not defined by a space, but rather the user. To maintain this character, it would be necessary to maintain flexibility in the usage scenarios of the open spaces.

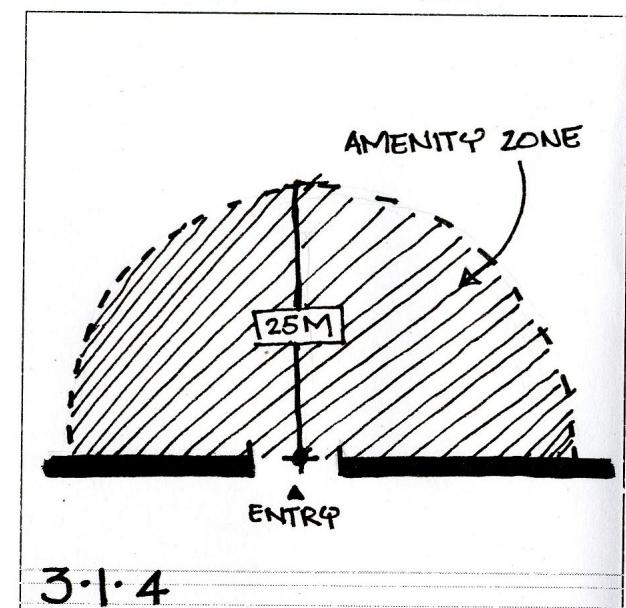


**3.1.2 Setbacks:** Setbacks on site as per the bye-laws are to be strictly followed. Variations in the building line are permitted. But, a visual continuity between blocks within the site is to be maintained. Minimum space between buildings should be in the ratio of 1:1 in terms of height(bldg): width(road). 1:0.75 is also acceptable.

*Justification: There should be enough open space between blocks within the site to give a sense of openness. Blocks clustered together may be allowed as long as care is taken to ensure that the spaces in between are not dead.*

**3.1.3 Open spaces:** Accessible open spaces should be created between the blocks to facilitate spaces for interaction. The spaces may be used for multi purpose events, or gatherings.

*Justification: The character of the precinct involves a lot of informal*



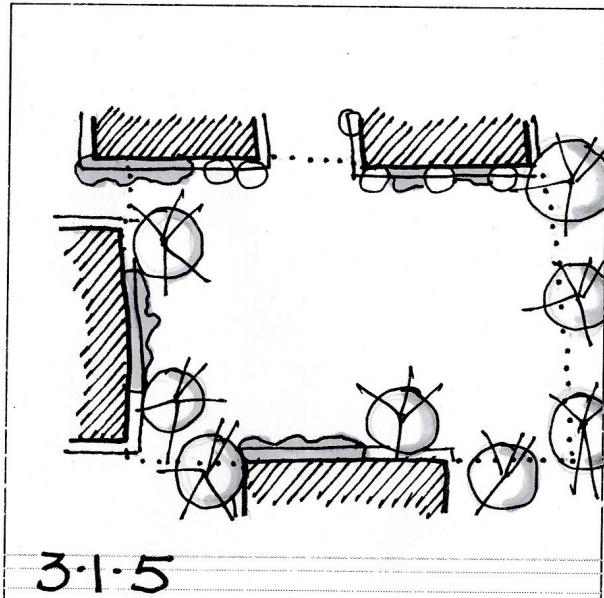
**3.1.4 Amenities:** Access to Amenities such as bathing areas, toilets and locker rooms should be provided within 25m from the site entry.

*Justification: The major user group for the project would be short term visitors who would be travelling from a long distance. They may or may not choose to reside there for the time that they are there. They would need to freshen up as*

soon as possible before they continue to the temple area for worship.

**3.1.5 Open square:** A main central open area should be provided as a formal open space. It should be well defined in terms of its form. Buildings facing the square should have an architectural tying element.

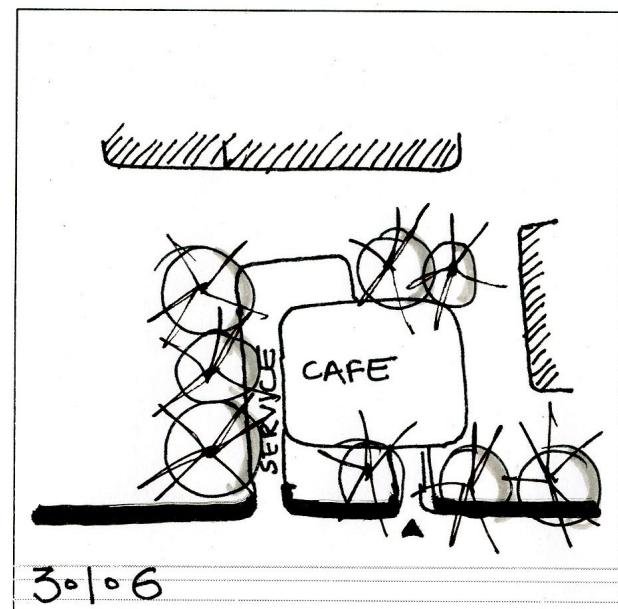
*Justification: There is a need for a formal open square as a gathering space during functions and festivals. The formal square will act as an element that unifies the informal streets. The buildings facing the square would form the enclosure and hence it is necessary for the buildings to have an architectural element that connects it as a whole. The plaza may be 3 sided or 4 sided.*



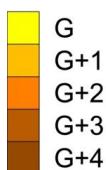
**3.1.6 Cafeteria:** The cafeteria should be easily accessible for the outside and the inside of the plot. It should be located in such a place that its services does not hamper the daily functioning of the road as well as the pilgrim centre. The Cafeteria should be easily identifiable.

*Justification: The cafeteria will cater to the visitors of the temple area as well as visitors to the pilgrim centre. Hence it should be easily accessible and*

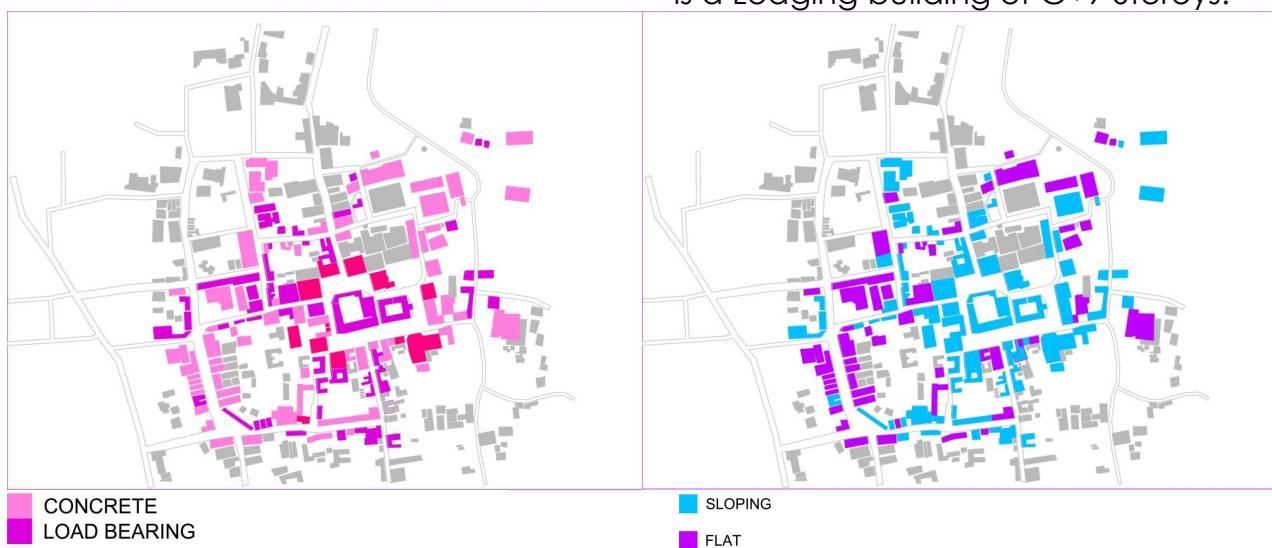
identifiable.



### 3.2 MASSING



Most of the buildings on site are G+2. There are newer constructions of G+3 to G+4. Most of the older structures are G or G+1. The tallest structure near the site is a Lodging building of G+9 Storeys.



## GUIDELINES:

**3.2.1 Max Bldg Ht General:** The maximum permissible height of the structure is **G+4**.

**3.2.2 Max Bldg Ht South:** The maximum permissible height of the structures within 25m from the south plot boundary is **G+1**

**3.2.3 Max Bldg Ht West:** The maximum permissible height of structures within 15m from the west plot boundary is **G**

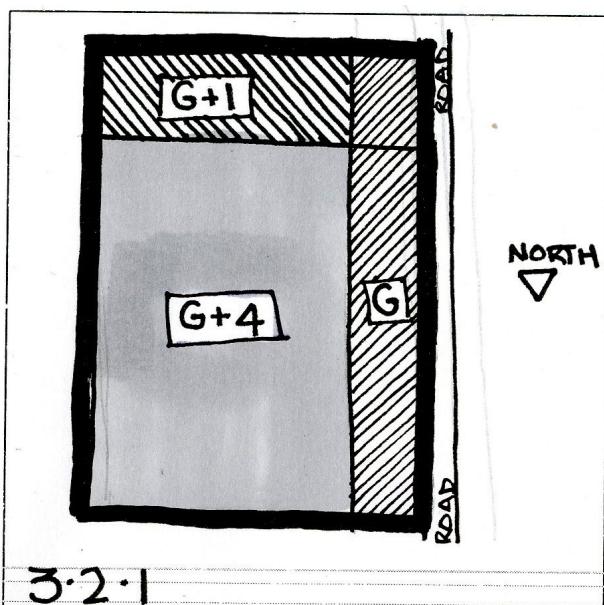
*Justification: In order to not impose the structure onto the neighbouring plots visually, it is necessary to limit the height of the structures in those zones.*

North: Site restriction of G+4

South: Zone restriction of G+1  
(residence in close proximity)

West: Zone restriction of G (Road frontage)

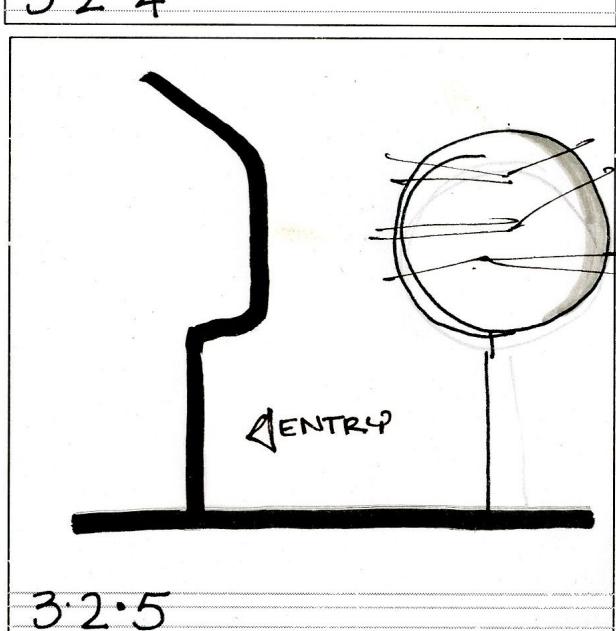
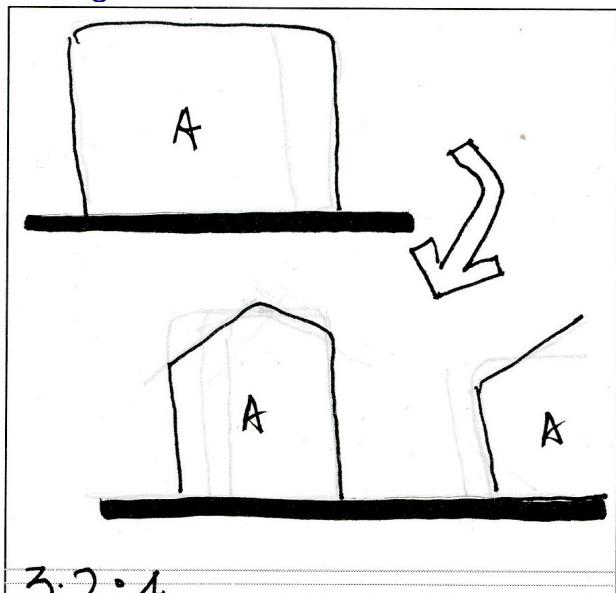
East: Site restriction of G+4



**3.2.4 Area/Volume Restriction:** The volume/area of a block is to be restricted to 15000 sq.ft. Built up. In the case of a programme requirement of more than 15000sq.ft. Additional blocks may be constructed and connected with a building to building space of 1/2 the length of the building or 6m,

whichever is lower.

*Justification: in order to limit the mass of the structure, a volume restriction of 25% of total plot area is imposed. Over 4 floors, this would result in a floor area of 3750 sq ft. Which is desirable. This is done to avoid Excessively large masses for single structures.*



**3.2.5 Street Level access:** Access to the structure from street level should be clearly defined. The entry to the structure should not cause an obstruction to the pathway (if any). In the case of an obstruction, it would be advised to recess the entry.

*Justification : Clarity in street level access is important to facilitate easy and efficient pedestrian traffic though the structure/site.*

**3.2.6 Façade Materials:** All facade materials except Glass Cladding and Steel are allowed. Patina may be used sparingly. Ideal cladding material would be stone or brick. Plaster may also be used. In the case of plaster, the colour chosen for paint should be from the warm colour palette. Light colours are preferred over Darker one. Extra Clear/frosted Glass may be used (doors, windows), But not for cladding. Local materials should be used as much as possible. Local character should be included in the design.

*Justification: most of the structures in the precinct are plastered. A few use stone. Glass and steel, though light, are not earthy materials. The structures on site are earthy coloured. In order to ensure that the structure does not impose on the precinct, but accentuates it, earthy colours are chosen.*

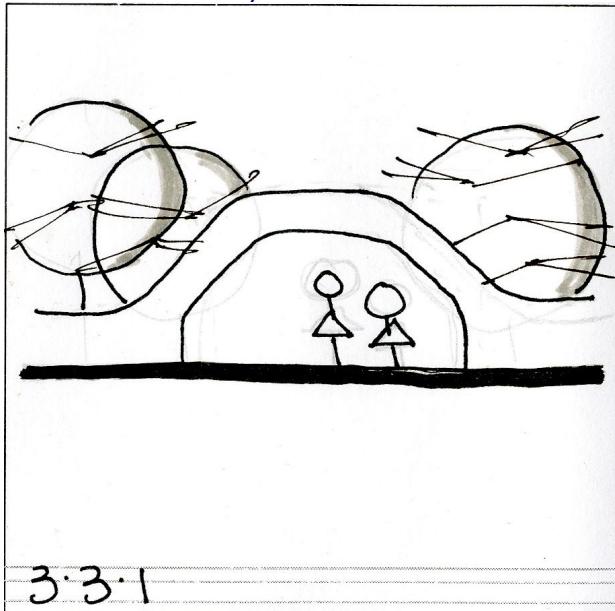
**3.2.7 Roof Form:** 70% of the roof has to be sloping compulsory. The remaining 30% can be sloping or flat. Care should be taken to provide down-take for rainwater.

*Justification: A sloping roof is best suited for the local climate. Downtake to be provided to avoid splashing*

### 3.3 STREETS and LANDSCAPING

**3.3.1 Entry:** The entry feature should be to human scale. It should be easily identifiable. Distinct entries should be provided for pedestrian and vehicular traffic. Distinct Drop off points to be provided close to the administration area. The Entry should be designed as an integral part of the programme and not as a standalone feature.

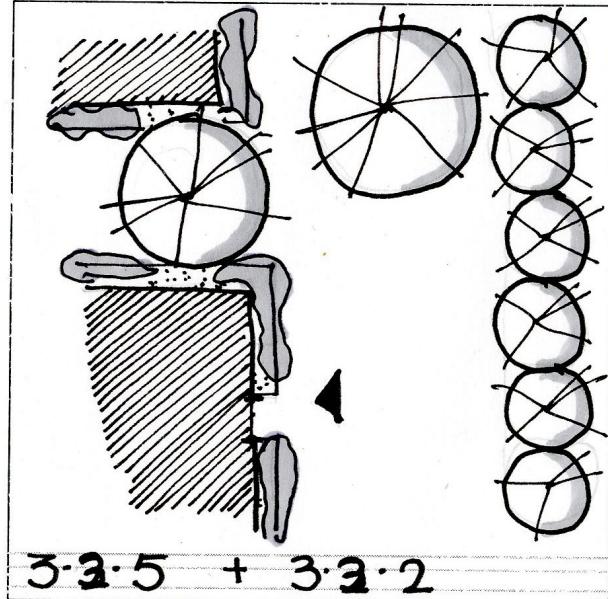
*Justification: The entry provides the first impression to the site. Separation of pedestrian and vehicular traffic is necessary to avoid accidents and to make it more efficient. Drop off points should be clearly demarcated to avoid congestion. The entry feature in itself should be designed to merge with the site and its surroundings while still being a distinct identity.*



**3.3.2 Building Surroundings:** Buildings are required to have a 2' offset for green space. The green space may contain shrubs, small trees or lawn. The offset space should be at a level higher than the internal road grade.

*Justification: The offset space would provide a buffer between the building*

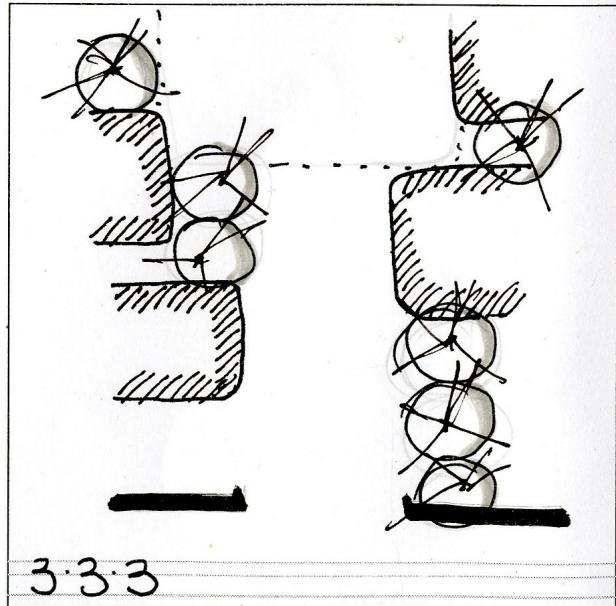
*and the road. It could also act as a informal sitting space for people while waiting.*



**3.3.3 Internal Streets:** Internal Streets to be paved with green paver. Care should be taken to ensure that the street from the entry to the square are wide enough to accommodate a peak time crowd. Both sides of the streets should be lined with shaded trees. Adequate street lighting should be provided. Internal streets should connect to the open square or the main internal street. Street widths can vary based on the character being developed. Street seating to be provided as fixed construction/seating. Minimum width for any street is 3m.

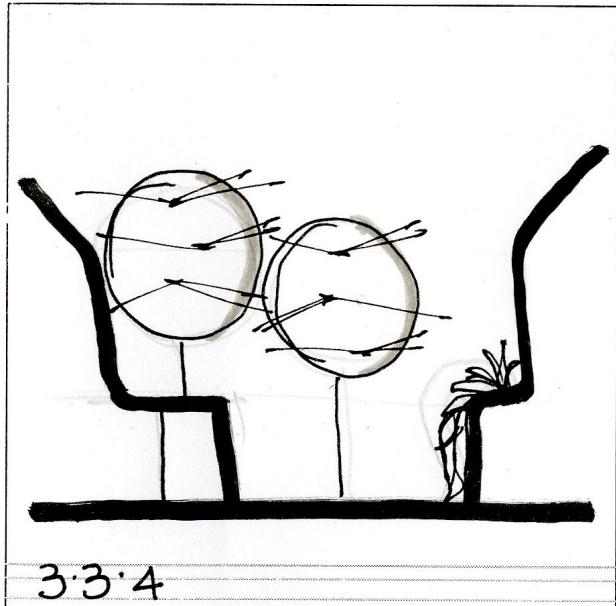
*Justification: Green pavers are permeable and helps with ground water recharge. Streets should be wide from the square to the entry. This is to ensure efficient dispersal of crowds during festivals and events. Shading trees on the street would make the street more inviting during the afternoon hours and add to the comfort level of outdoor interaction. Tertiary and secondary streets within the plot may have different widths based*

on the architects vision for the site. Adequate seating to be provided along the street to facilitate informal gatherings and interactions.



**3.3.4 Green Roofs:** Green roofs to be provided on 30% of the flat roof surfaces. Adequate infrastructure to be provided.

*Justification: Green roofs provide less heat gain than traditional flat roofs. It could also be used to grow vegetables etc.*



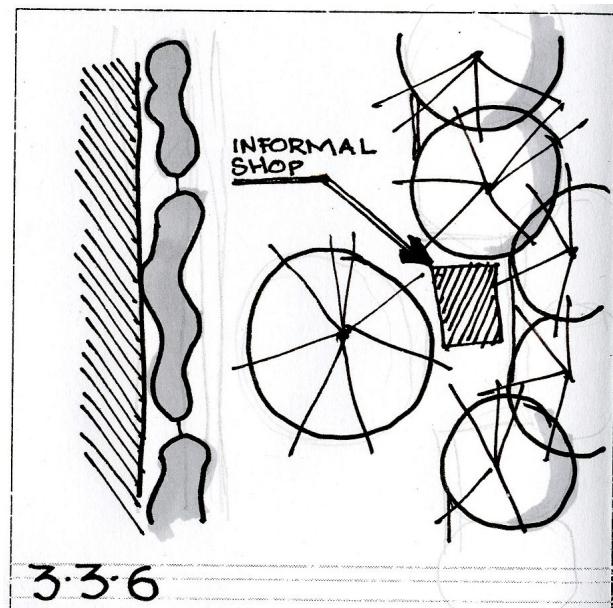
**3.3.5 Street Character:** Buildings that have a face on the main street (internal)

should have their entry through the main street (internal). Character of the street to be maintained using material, texture, or colour.

*Justification: Streets are the most interactive spaces. Having the main entry to buildings on the street would help improve interactions and make the street more active.*

**3.3.6 Informal Shops:** A certain portion of the street should be made available to accommodate informal shops and informal vendors.

*Justification: Street vendors are one of the strongest magnets for a place. Including them in the design would improve the quality of the experience in the street.*



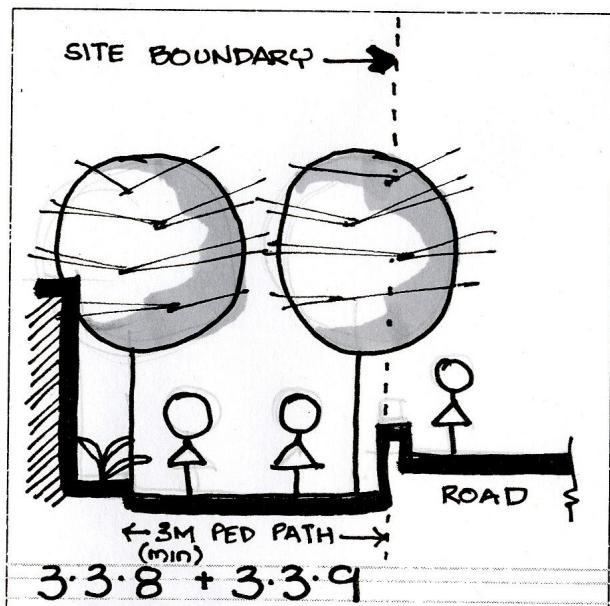
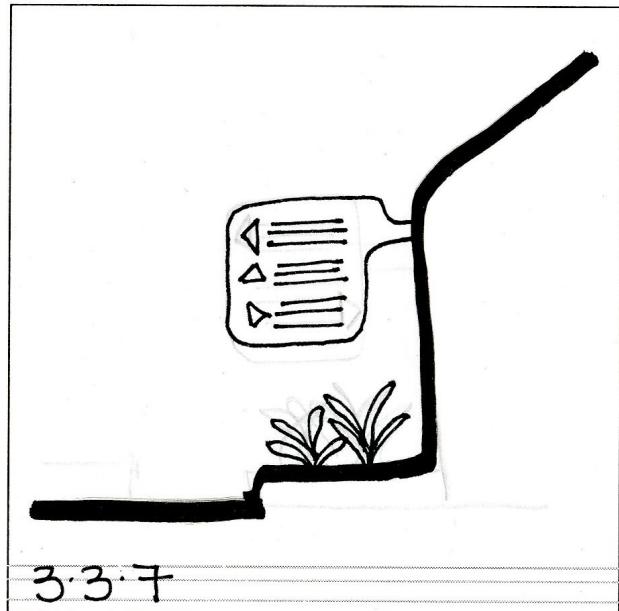
**3.3.7 Signage:** Clear and distinct signages should be provided where required. Signages to be in English, Kannada and Hindi.

*Justification: Since most of the users are going to be short term visitors, signages would be required.*

**3.3.8 Tree Plantations:** Trees to be planted along the main road. West edge of plot as sound and pollution

barrier. Trees to be planted on north edge of plot. Internal trees as per architects discretion. 80% of the trees to be planted should be indigenous to the region. High foliage trees should be used where necessary.

*Justification: The Main road from kalsanka crosses through the west edge of the plot. There is traffic on that road throughout the day. In order to shield the site from the constant noise, trees should be planted along that edge. It would also act as a physical barrier from vehicular traffic. On the north edge of the plot, there is a constant inflow of vehicles and buses. The trees that are indigenous will help bring fauna to the site.*



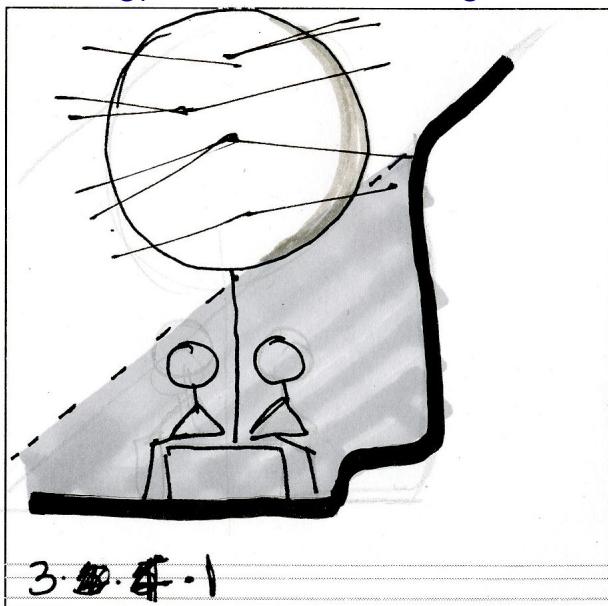
**3.3.9 West Side parallel road:** Provide a min. 3m wide pedestrian road, below road grade, parallel to the west side road. Provide seating along road. Optionally provide space for informal vendors.

*Justification: The road on the west side is narrow. There is no pedestrian pathway on the road. Hence manoeuvring becomes difficult and dangerous.*

## 3.4 SUSTAINABILITY

**3.4.1 Passive Cooling :** Care to be taken to ensure that the building can take advantage of the ventilation on site. Buildings should be arranged in a way so as to provide shade to the streets or the buildings around it. Green roofs to be provided where possible.

*Justification: Energy is a depleting asset and measures should be taken to ensure that the building is as less reliant on energy for basic functioning.*



**3.4.2 Passive Lighting:** The building should have adequate windows and openings to ensure light penetration at all levels.

*Justification: To reduce the cost of building maintenance and make it more sustainable in the long term.*

**3.4.3 Rainwater Harvesting:** Provision for rainwater harvesting on site. Water tanks may be provided in the south zone ideally.

*Justification: reduce the load on the water supply of the city and also utilize available collected water for landscaping and toilet needs.*

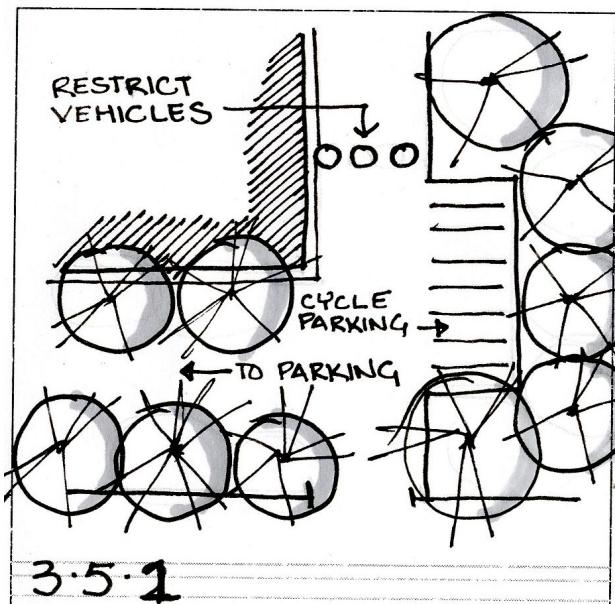
**3.4.4 Building Materials:** Building Materials with low embodied energy to be used. Locally available materials preferred.

*Justification: To reduce ecological footprint. And to encourage better use of available resources.*

### 3.5 SITE PARKING

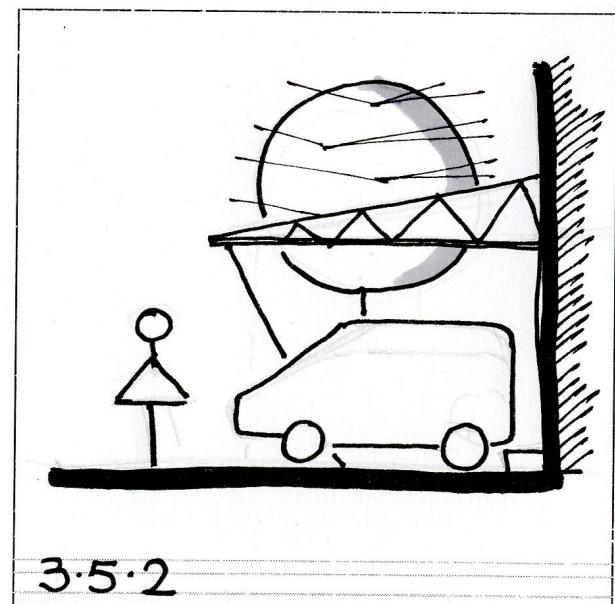
**3.5.1 General Layout:** Parking for cycles to be placed closest to the entry. 2 wheeler parking to be provided at the entry of the formal parking area. 4 wheeler parking to be provided furthest away within the parking lot

*Justification: To encourage the use of cycles and two wheelers.*



**3.5.2 Shading:** Shading devices to be provided. Shading devices to be low heat gain, low reflectance materials.

*Justification: To avoid heating of the vehicles.*



**3.5.3 Walkways:** Dedicated walkways to be provided for pedestrians to the main entry.

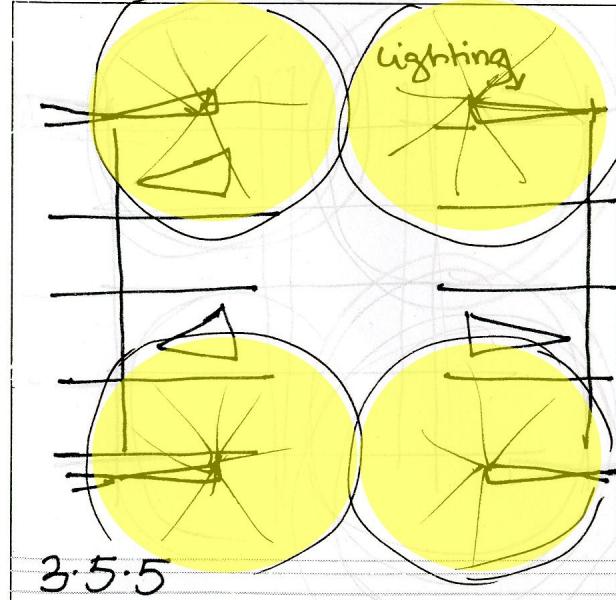
*Justification: to avoid mishaps between pedestrians and vehicles.*

**3.5.4 Amenities:** Basic amenities such as toilets, and washing areas to be provided.

*Justification: to avoid getting dirt into the vehicles. Basic freshening for drivers.*

**3.5.5 Lighting:** Adequate lighting to be provided. No Flood Lighting.

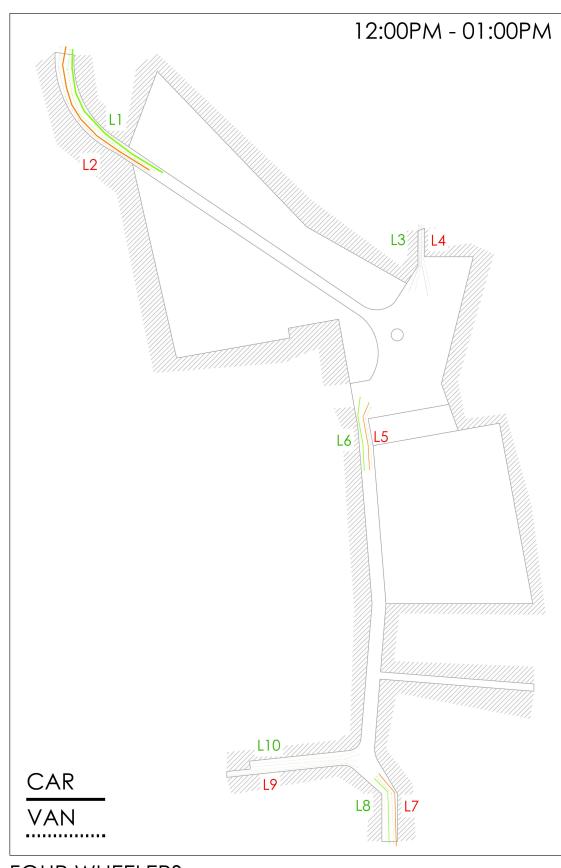
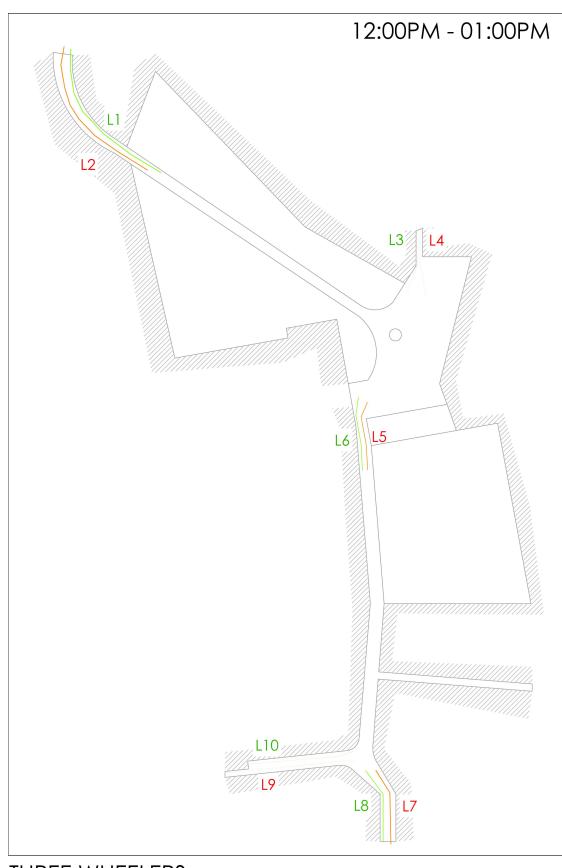
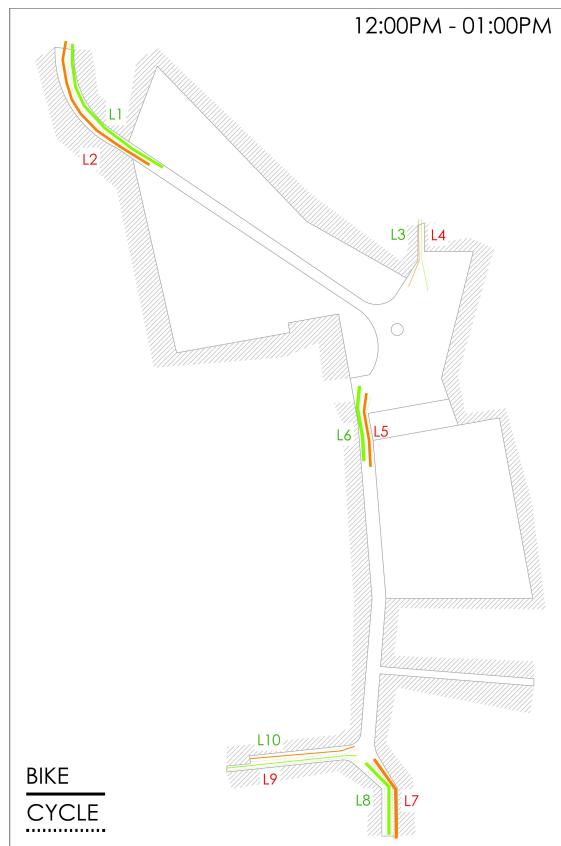
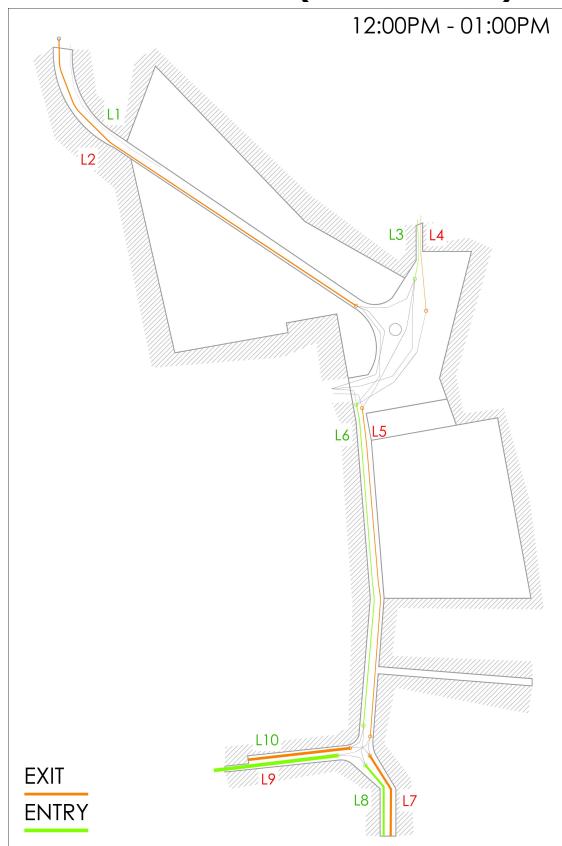
*Justification: To reduce disturbance to neighbouring property.*



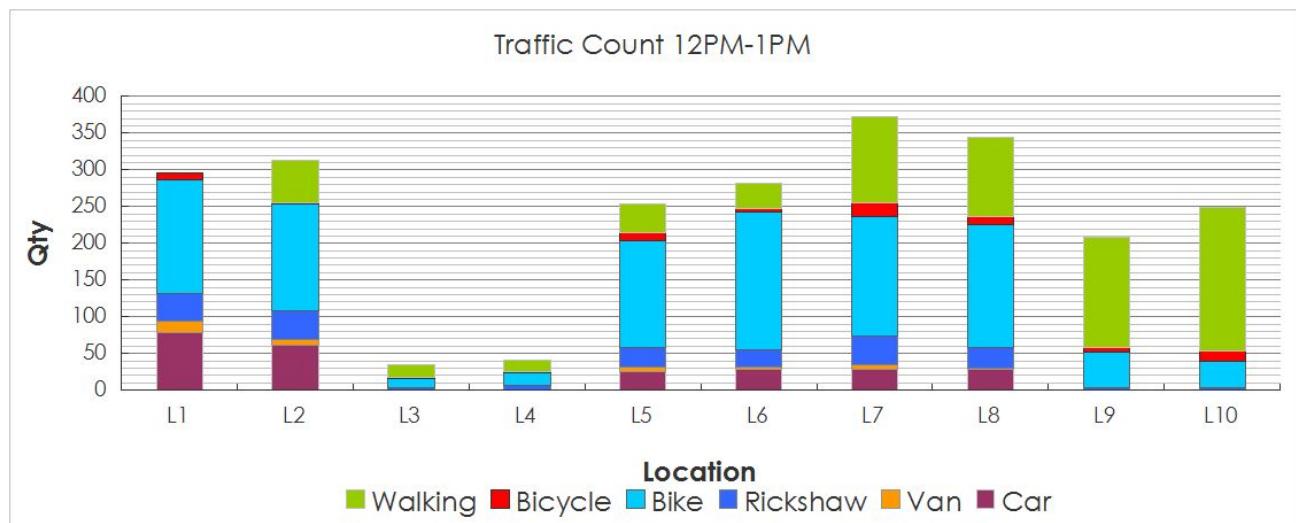
**3.5.6 Paving Materials:** Avoid Asphalt. Use of vehicular green pavers.

*Justification: to reduce heat gain on the pathway. Also softens the overall feel of the area.*

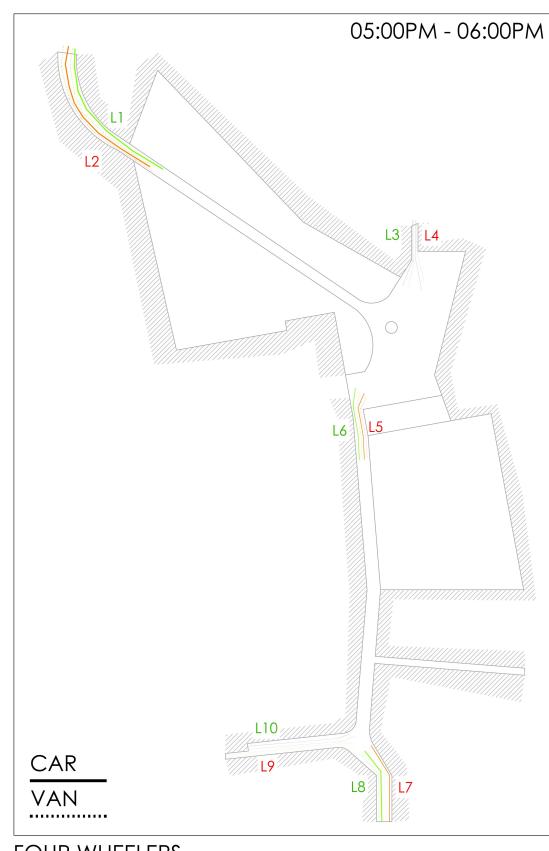
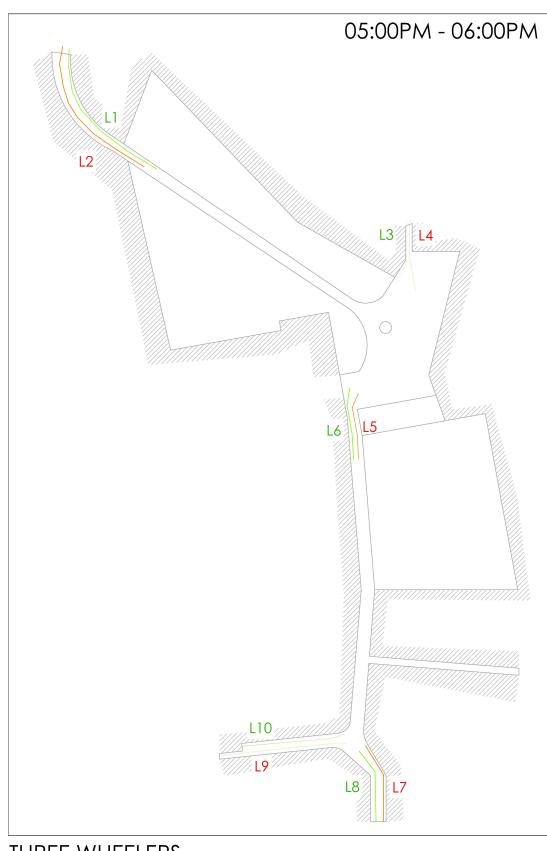
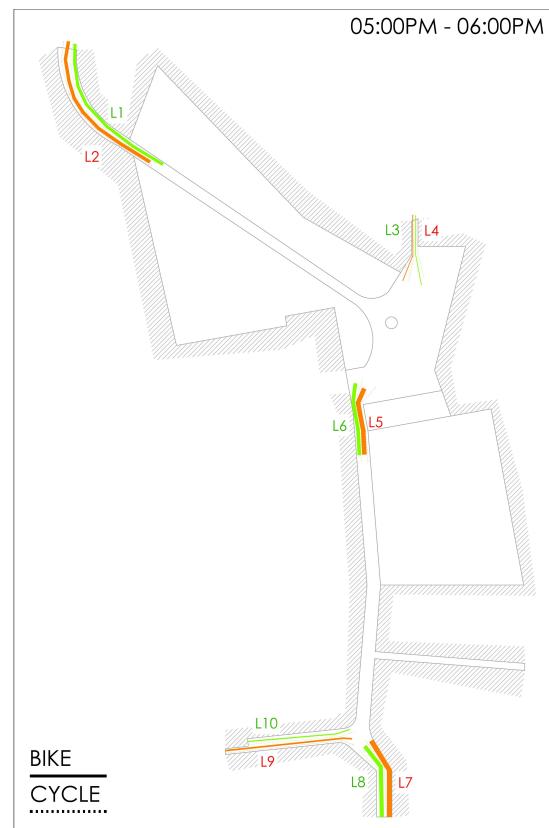
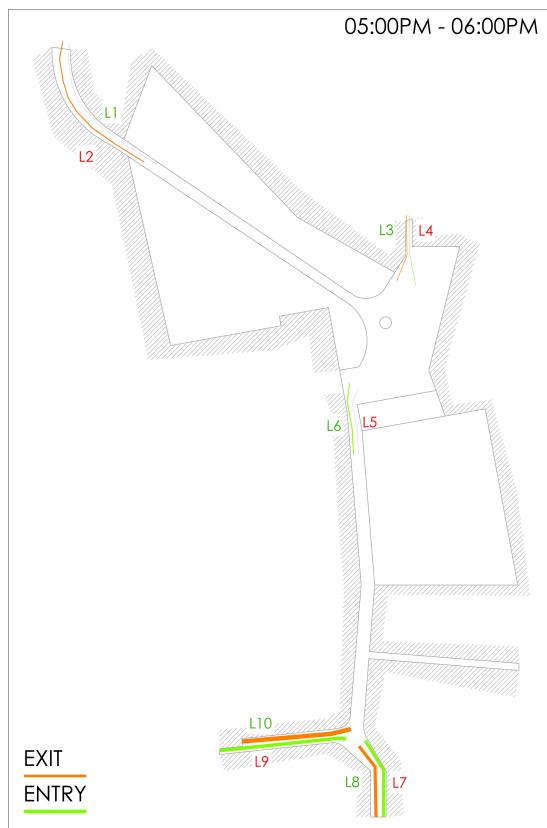
### 3.6.1 TRAFFIC SURVEY (12:00 - 13:00)



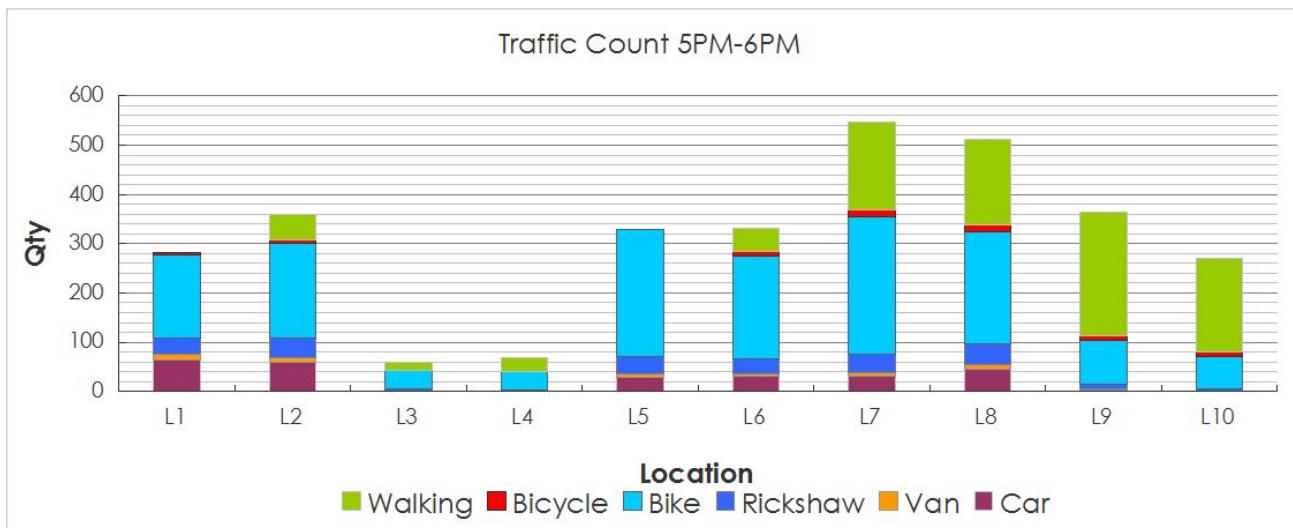
Location	Car	Van	Rickshaw	Bike	Bicycle	Walking	Total Vehicles	Vehicles per Min
L1	78	16	38	155	9		287	4.78
L2	61	8	40	144	2	58	253	4.22
L3	0	0	3	13	1	18	16	0.27
L4	0	0	6	18	2	15	24	0.40
L5	26	6	26	146	10	39	204	3.40
L6	29	2	24	187	5	34	242	4.03
L7	28	7	39	163	18	118	237	3.95
L8	29	1	28	167	12	108	225	3.75
L9	1	0	2	49	7	149	52	0.87
L10	1	0	2	37	13	196	40	0.67
TOTAL UNACCOUNTED (PARKING)	21	-2	-18	39	1	-23		



### 3.6.2 TRAFFIC SURVEY (17:00 - 18:00)



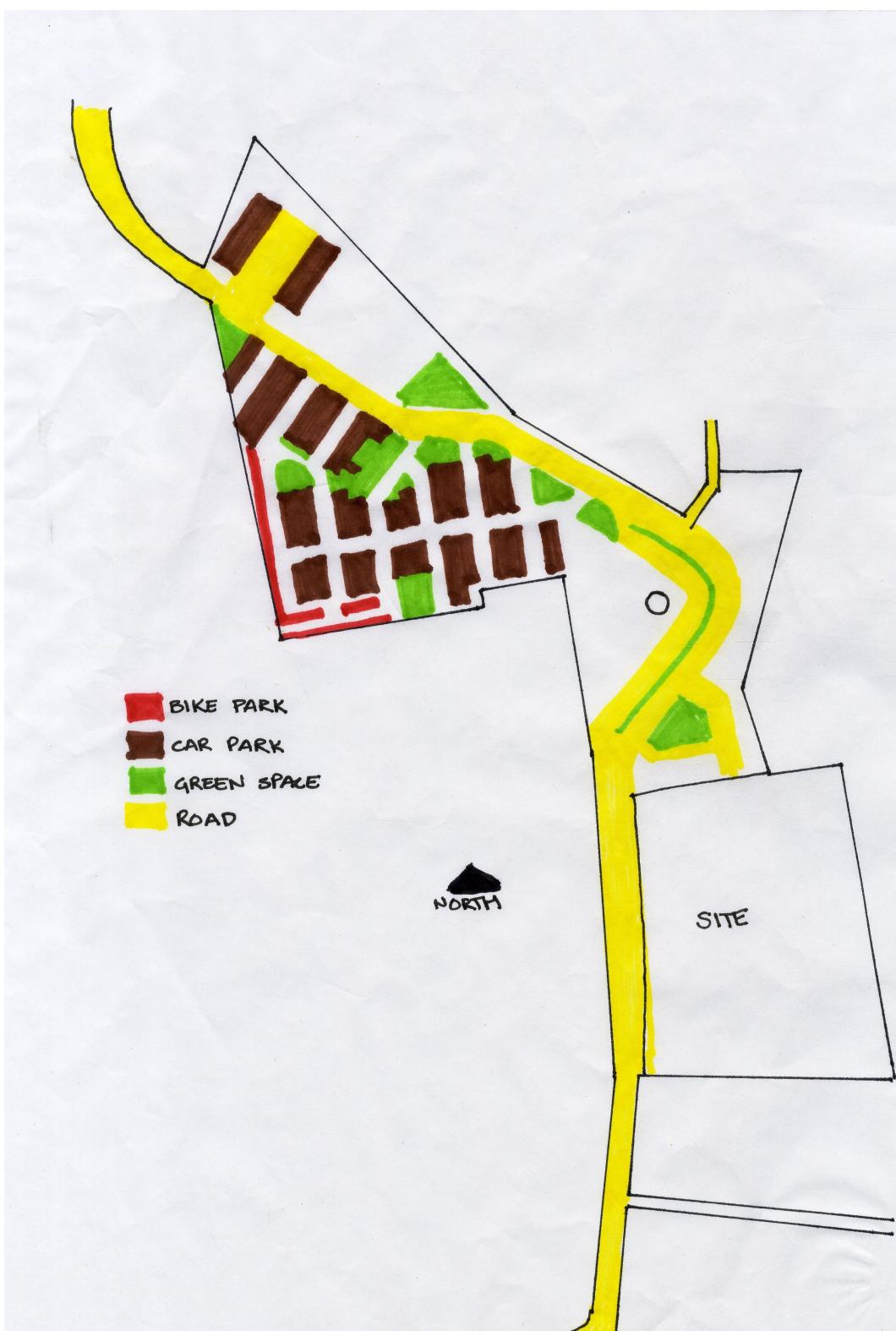
Location	Car	Van	Rickshaw	Bike	Bicycle	Walking	Total Vehicles	Vehicles per Min
L1	64	12	32	169	5		277	4.62
L2	59	10	39	192	8	52	300	5.00
L3	0	0	6	36	1	17	42	0.70
L4	0	0	2	38	1	27	40	0.67
L5	28	7	35	258			328	5.47
L6	30	6	30	208	11	46	274	4.57
L7	32	5	39	278	14	178	354	5.90
L8	45	9	42	227	16	172	323	5.38
L9	4	1	9	90	10	250	104	1.73
L10	0	0	6	65	9	190	71	1.18
TOTAL UNACCOUNTED (PARKING)	16	4	-8	-151	9	-82		



### OBSERVATION:

1. Majority of the visitors to the site travel by bike or walking.
2. There is no seating space, and no defined pedestrian pathway
3. No defined parking space
4. No space for drivers to rest.
5. The maximum no of vehicles per min is 6 vehicles per min. Hence there is no necessity to provide overbridge/skywalk.

## 6. 4. PARKING



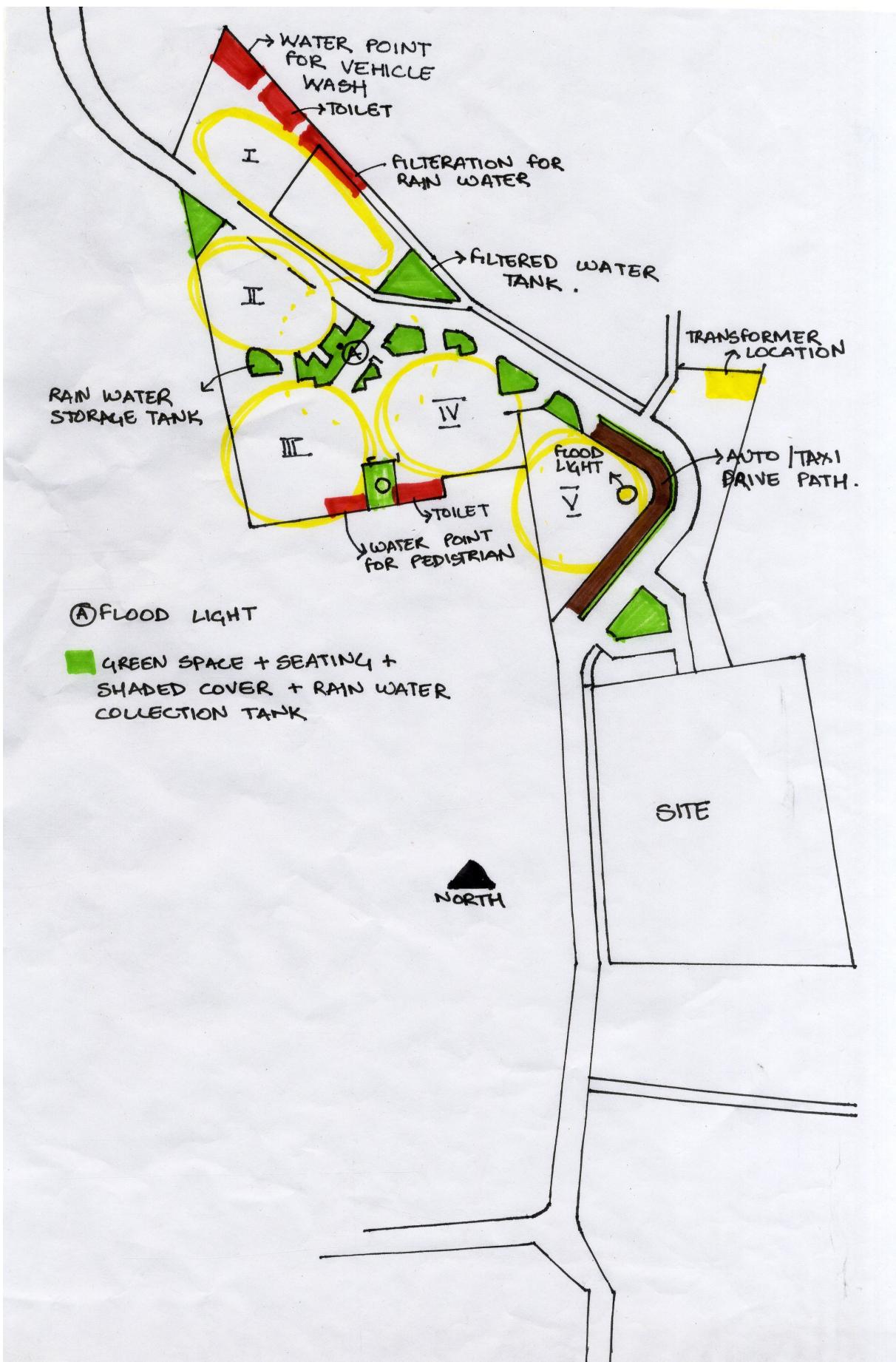
### LAYOUT

#### PARKING QUANTITY:

CARS: 143 NOS

BIKES: 151 NOS

BUS: 10 NOS



## **FEATURES:**

1. There is minimum construction on site. Construction only at Green spaces for sitting and rainwater harvesting.
2. Separate driveway for auto / taxis.
3. Distance from L1/L2 to L5/L6 has been increased by 20m. However, the area of continuous open space has been increased.
4. Rain water storage tanks provided below green spaces.
5. The design provides flexible spaces that can be combined or used separately.
6. Wash Points provided for Vehicles in North West corner of area.
7. Wash point for pedestrian provided.
8. Transformer to be located at north east corner of area.
9. Parking layout is made in paint, to allow flexibility for use during times of events.
10. Green spaces with Shading trees provided as breathing spaces.
11. Water Filtration area provided along with filtered rain water tank.

## 5. SERVICES.

### 5.1. SECURITY:

5.1.1 CCTV surveillance should be provided in all common areas, entry and exist points and corridor spaces. Security check points to be provided at the entry.

### 5.2. FIRE FIGHTING:

5.2.1 Fire driveway to be provided in accordance with the bye laws.

5.2.2 Sprinklers to be provided at all points at a 3m center to center intervals.

5.2.3 Smoke detectors to be provided at all points at a 3m center to center distance.

5.2.4 Hose pipes to be provided at strategic points.

5.2.5 Sand buckets and extinguishers need to be provided at strategic points.

Fire safety alarms to be provided with good audibility.

5.2.6 Fire tank to be 1/3rd of the sump head tank capacity.

5.2.7 Fire alarm should over ride any other announcements at any given time.

5.2.8 Fire escapes to be designed at max distance of 30m from each other.

5.2.9 Fire exist signage and exist route maps to be provided at strategic locations which is easily visible to the users.

### 5.3. Water supply and storage:

5.3.1 Water tank to be calculated @70 litres per person. With 2 day capacity.

5.3.2 Fire tank to be integrated with portable water tank. But in such a way that fire tank should always be full.

5.3.3. Sump tank may be connected to rain water tank, where

the rain water is pre filtered.

### 5.4. Sanitation:

5.4.1 Indian water closets to be provided compulsorily.

5.4.2 One or two number of western closets may be provided. Wash basin and flush fixtures to be with auto off function.

5.4.3 Grey water can be used for flushing.

### 5.5. Ventilation:

5.5.1 Openings and windows to be provided in such a way so as to capture maximum of south west winds.

5.5.2 Jalli may be provided to get maximum light and fresh air.

5.5.3 Traditional concept of central courtyards may be used. Which can also act as common areas.

### 5.6. Gas bank :

5.6.1 Gas bank capacity to be 3kg per person per month.

### 5.7. PA and music system:

5.7.1 Music and announcement system should be provided in such a way that Fire alarm should over ride any other announcements at any given time.

5.7.2 Speakers to be provided at strategic points.

### 5.8. Garage disposal:

5.8.1 Garbage to be collected and segregated. (recyclable and non-recyclable)