

IDENTIFYING URBAN CORRIDOR:

Exploring underlying urban potential in Malappuram

¹Azra Zainab, ²Dr.Amrutha,

¹Assistant Professor, ²Director

¹ Nehru School of Architecture,

¹Coimbatore, Tamil Nadu, India.

Abstract : Urban corridor development is considered one of the most significant development model in the field of urban planning. A study on potential corridor emphasizes the need for such a development and the multitude of sustainable growth opportunities that comes with it. A corridor is beyond a space for circulation. It is a space for the community to bond and explore their relationship with the built environment. In India, there is a strong need for developing such urban corridors and hence it becomes necessary to identify potential corridors and channelize the development in a sustainable manner. The objective of this research is to explore the scope and limitations in a 3km Nilambur corridor stretch in Kerala and to propose recommendations to direct further development in the path of making it an urban corridor. The study mapped Physical Infrastructure and built forms in the area and its interaction with people. This led to the identification of various issues in the area and thus led to the opportunity of design exploration in terms of urban corridor development. The study revealed that the area lacks holistic approach that can transform the corridor towards a very urban future. Hence urban public spaces and quality of these spaces have been considered in the design to provide solutions to existing problems whilst creating an active public realm. The study can further contribute in identifying potential corridors and leading them towards urban development with the help of architecture and urban design.

IndexTerms - Urban Corridors, Urban development, Corridor development, Urban design, Urban planning.

I. INTRODUCTION

Corridors are major urban systems of the New World [1]. Urban Corridor development concentrates on the improvement of various urban mobility options including walking, bicycling, public transit, and driving and also focusing on altering Land development regulations and infrastructure standards to improve job opportunities, service availability, and entertainment and recreation facilities in the present and future. In spatial and urban planning, linear developments such as urban corridors have a long history [2]. An urban corridor is a link that bridges the network of urban space and is therefore, a space for movement and a location for different activities [3].

One of the major strategies for Urban Development in linear cities using transportation systems is Corridor Development. This strategy is explored in the context of developing Indian Cities. In Kerala, Kozhikode-Nilambur-Gudalur (SH 28) road is a major interstate highway with busy traffic throughout the year. As a result, the town of Nilambur accommodating this highway is undergoing progressive but unplanned changes in the urban context that has the potential to change the identity of the town. Nilambur that transports majority of inter and intra-regional passenger traffic is at a risk of infrastructure failure if not given timely urban solution. The significant increase in congestion problems along Nilambur Urban Corridor requires for an urban strategy that focusses on developing the corridor and also solving the current issues.

The research aims at understanding the infrastructural facilities of an Urban Corridor and improvise or add to the existing facilities through strategic urban planning and estimating the growth dynamics of the future. Issues such as spatial fragmentation and incomplete infrastructure can be addressed by developing network bonding between the public and private sectors [4]. The aspects of urban design focused in this paper are social, economic and environmental aspects.

Social Aspects: To enhance and improvise the quality of life irrespective of social and geographical segregation and extending the city life to the periphery.

Economic Aspects: To address public transportation needs and issues with respect to limited financial resources and increasing transportation costs.

Environmental Aspects: To make wise use of space and resources.

Profile of study area

British colonialization and industrialisation in the Malabar Coast led to flourishing of Teakwood Trade from Nilambur Town for the Navy and mercantile vessel construction of Britain. The huge deforestation of Teak trees for this purpose led to the concept of conservation of Teak forests in Nilambur later and thus paved way for town and city level developments. Nilambur is a major town, a municipality and a Taluk in the Malappuram district of the Indian state of Kerala. Currently the highway does not have proper public transport streets with continuous active frontage that provides a safe and vibrant pedestrian environment. So at this context it is necessary to foster the activities of that area. Kerala Sustainable Urban Development Project is planning to develop this area considering the above factors. The majority of land uses along the Corridor include comprises a variety of commercial,

retail, industrial uses. The geographic scope of the study is centered along the Corridor and comprises the lots fronting the Corridor between KSRTC Depot to Minarvapadi covering 3km in a linear pattern.

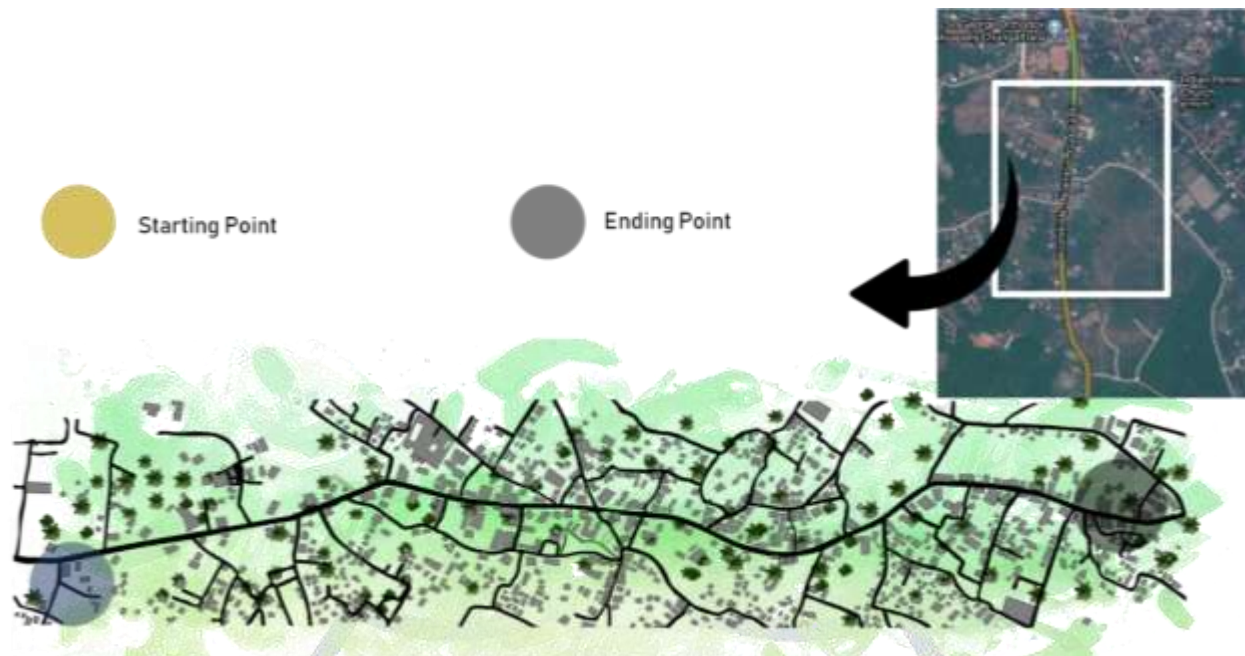


Figure 1 Location of Study Area

II. METHODOLOGY

The study investigates urban corridors in a literature review and their perception in finding solutions for the retrofitting of urban corridor [5]. A basic strategy that is explored is the intensification of corridors, the increase of their residential densities in combination with the provision of housing supporting services and pedestrian roadside amenities. The assumption that residents in areas of high density, local business and good transit will drive less because some trips will be diverted from private cars to buses or foot, and the remaining trips will be shorter. This results from closer, and concentrated shopping, entertainment and recreation destination. Short trips to stores, parks, banks etc. account for a large portion of all vehicle trips. Analysis of the urban form needs to focus on physical elements such as buildings, streets and parcels along the stretch [6].

The 3 km corridor expands from the KSRTC Sub Depot, Nilambur extending till Municipal Office. The corridor is an important connector in the movement network. Since this is the main highway connecting Calicut to Gudallur, the vehicular movement is high. The majority of land uses along the corridor comprises of a variety of commercial, retail and industrial uses. The corridor also accommodates different forms of residential development in the form of single, grouped and multiple dwellers. The research is directed in the study of the following:

2.1. Path:

They are the channels by which people move along. They organise the mobility. A network that offers easy and accessible connections within and through the Corridor towards built form, public realm, land use and movement. They range from Highway to small paths.



Figure 2 Paths in the Corridor

2.2. Nodes:

Nodes are the strategic foci into which the observer can enter junctions of paths or concentrations of some characteristics and these nodes survive as gathering space, intersection of paths and places for activities. These nodes provide deliberate opportunities to create a sense of place and identity for the neighborhoods surrounding the nodes.

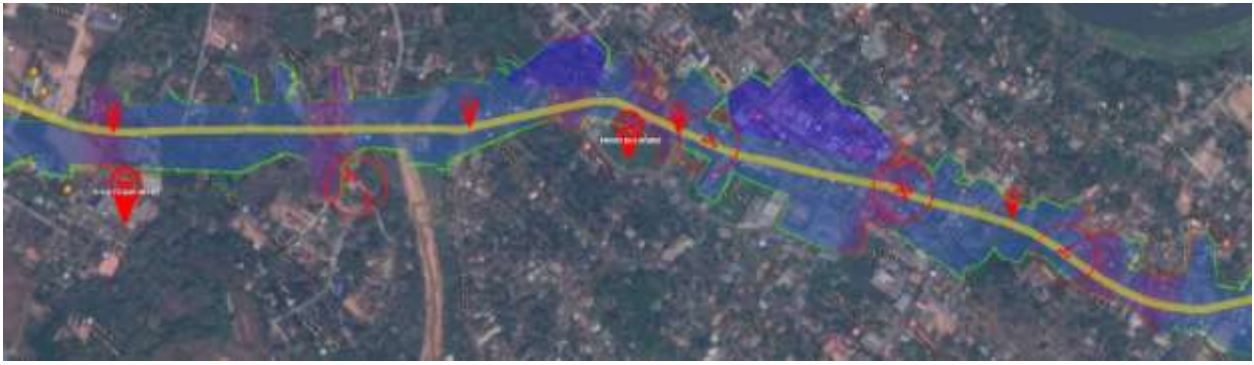


Figure 3 Nodes in the Corridor

2.3. Amenity:

The Urban Corridor Concept Plan delivers a development framework acknowledging the alignment of Corridor and the Chaliyar that provides for movement along the Corridor and connections through the Corridor into the adjacent neighborhoods. This river supplies water to town residents.



Figure 4 Amenities in the Corridor

2.4. Precincts:

The Corridor consists of six distinct precincts according to people understand the layout of the corridor space. Defining these precincts and using these geographically defined locations helps provide greater legibility and definition of character and define the opportunity for distinctive approaches.

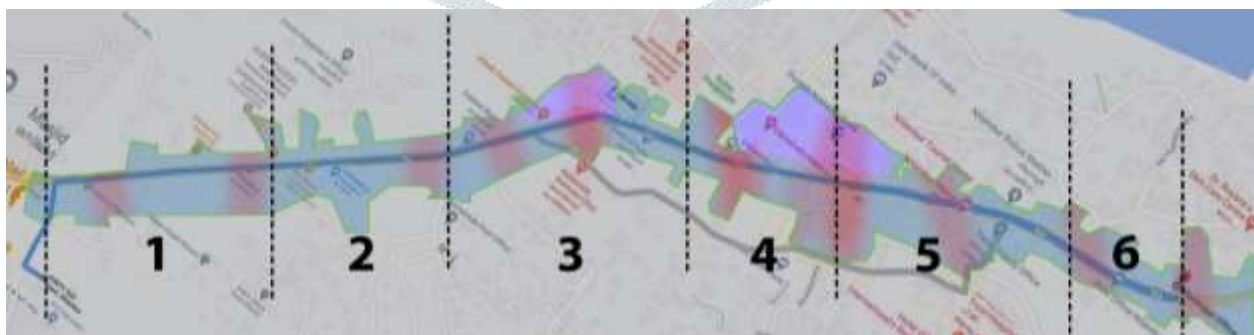


Figure 5 Precincts in the Corridor

III. ANALYSIS

Social Background

Cholanaikkans, Kattunaikkan, Muthuvan, Malayans & Mannans are the tribes living in Nilambur. Cholanaikkans, who live in the deciduous forests of Nilambur, are the only surviving hunter gatherer tribe in the country and the only tribal community in Asia that live in rock-cave shelters and survive on fruits, berries and meat and do not engage in farming. Although the study area consists of certain social facilities, Nilambur lacks social bonding and interaction. The tribal community is isolated from the town population and the town population does not have proper community facilities. They speak a dialect of Tamil and Malayalam.

Economic Background

Their primary occupation, at present, is agriculture. The main crops raised are paddy, coconut, tapioca, arecanut, cashew nut, banana, rubber, pulses, ginger, pepper & teak the productivity of the coconut in the district is much higher than the other district. Another important cash crop in the district is Arecanut, Rubber, pepper and cashew. Animal husbandry, midwifery, non-skilled wage and casual labor are their secondary occupations. Nilambur has about 10 percent (with 8,000 hectares of teak) of all the teak plantations in Kerala. Nilambur teak is famous for its quality and hence is a scope for business opportunity.

Built Form Analysis

3.1 Building Roof Typology: Building roofing type describes the development in the city and also shows the roofing pattern throughout corridor. Majority of the roof are flat roof which comprises of both residential and commercial. The roof with Mangalore tiles are old settlements and Mangalore tiles reduce the temperature inside the building and adapts to our tropical climate. There is only 8% of the sheet roof.



Figure 6

Building Roof Typology

3.2 Building height analysis: The total height from the bottom of the ground floor to the highest structure or decoration on the roof is called as building height. Here we have 24% of the G+2 are in commercial use. The mixed used buildings are very less. There are 8 apartment buildings which are G+2 structures.



Figure 7 Building heights

3.3 Activities and Issues: Recreational area is not provided in this area. Most of the land is occupied for commercial use and has a lot of vacant land available. Residential land use is comparatively less. Public and semi-public area is also less. This area is totally surrounded by forest which is also beneficial for Nilambur.

Figure 8 Issues - Mapping

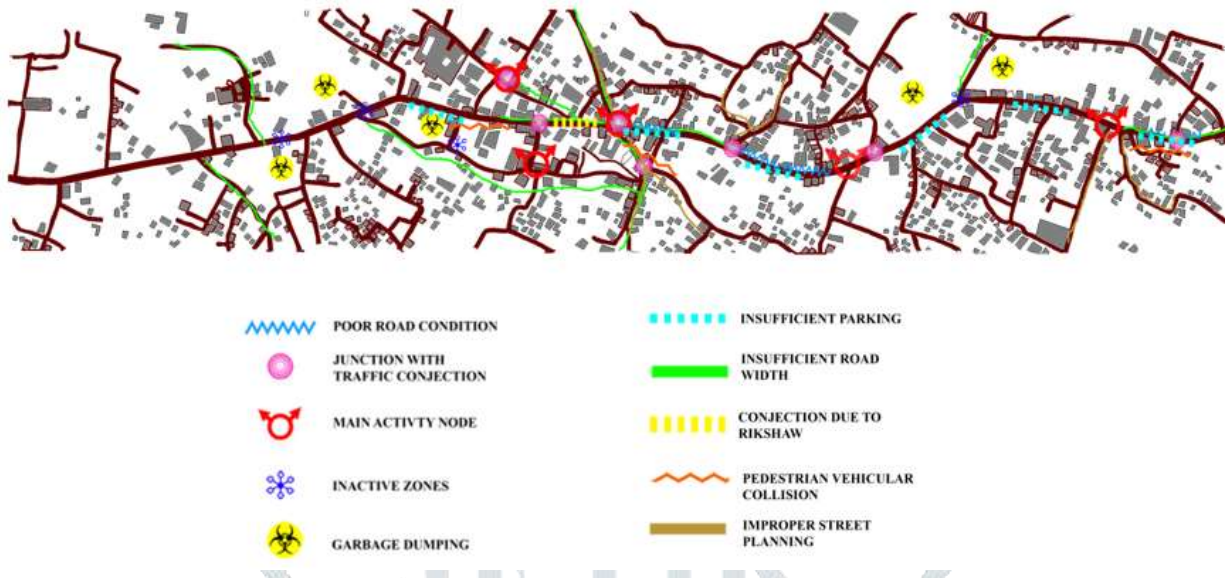


Figure 9 Activity Mapping

3.4 Land Use



Analysis: 18% of the area is for the residential. It is less as compared with the commercial land use. 25% of the area is for commercial land use. The commercial concentration is more on either side of the road. Total area occupied by public and semi-public is 12%. Concentration of the public and semi-public is average on either side of the road. It is observed that 60% of the area is a commercial, 25% of it is residential, 15% of it consists of roads and public and semi-public areas. The study area consists of vacant land which can be occupied and used for the benefit of Nilambur. There are no park areas found for recreational purpose.

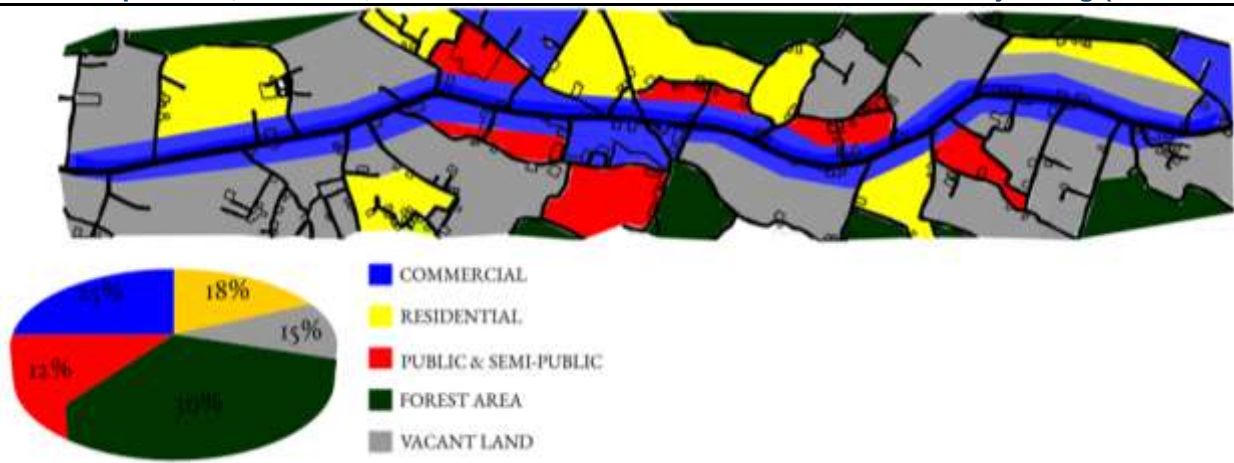


Figure 10 Land Use Mapping

3.5 Figure-Ground Analysis: A figure-ground diagram is a two-dimensional map of an urban space that shows the relationship between built and unbuilt space. The figure-ground theory of urban design is based upon the use of figure ground studies. It relates the amount of "figure" to the amount of "ground" in a figure-ground diagram.



Figure 11 Figure Ground Map

3.6 Amenities: Amenities emphasize a pedestrian environment and encourage the use of public transportation being within easy reach of transit shop. Appropriate uses for retail and services include bakeries, delicatessens, cafes, book stores, eat down restaurants, hospitals, departmental stores, ration shops, such uses are mostly preferred by the public for their daily needs are important variables for the daily human activities. In general, pedestrians are attracted to mixed use urban areas, where there are opportunities for socializing, people watching, eating, shopping, for transit, health care etc.



Legends

	HOSPITAL		CHURCH
	PHARMACY		EDUCATION
	SHOPPING MALL		POLICE STATION
	RATION SHOP		BANKS
	PETROL BUNK		CORPERATION OFFICE
	TEMPLE		ATM

Figure 12 Amenities Map

3.7 Road networks: Management of urban planning and transportation system is the best way to manage a corridor [7]. In the interest of efficient road transportation, which effectively serves the various land uses in an urban area and at the same time ensures logical community development, it is desirable to establish network of roads divided into different classifications, each system serving a particular function or purpose. The principle factors to be considered in designating roads into appropriate classifications are mobility, activities, and parking requirements. The typology defines the street with specific usage and purpose.



Figure 13 Road Network

IV. ISSUES RAISED

Traffic congestion

- Patterns of land use and transport infrastructure influence traffic flow.
- The road width is very less that it affects the traffic on road and creates congestion.
- Large numbers of single-occupancy vehicles add to traffic volume.
- The resulting congestion contributes to air pollution, inefficient use of fuel, and slower commutes, which makes urban life frustrating.
- Drivers contend with obstacles like buses, delivery trucks, and service vehicles, to searching for parking spots near their destination.
- At places with large number of Commercial shops, cruising may account for more than 10% of the local circulation, as drivers spend up to 20 minutes looking for a parking spot.

Long Commutes

- On par with congestion, people are spending an increasing amount of time commuting between their residence and workplace.
- The residential affordability as housing located further away from Corridor Area which is the reason for it.
- Most of the residential areas are located within the pockets. While most employment opportunities remain City Corridor, suburban housing is more affordable.
- Thus, cheaper housing comes at the expense of longer commuting time.
- Time spent during commuting is at the expense of other economic and social activities.

Parking Difficulties

- Drivers stuck in traffic while looking for a parking spot contribute to urban congestion.
- There is no enough parking spaces been provided in front of major commercial buildings.
- The city is struggling to provide sufficient parking space.

Negative Environmental Impacts

- Automobile dependency affects the quality of life of residents, including public health.
- Traffic generates noise and fumes that make walking through this area unpleasant.
- Prolonged exposure to these fumes, especially if the engine is inadequately maintained, is hazardous to health.
- Fumes emitted from cars contain carbon monoxide, aldehydes, unburnt hydrocarbons and other gases and deposits like tetra-ethyl lead, nitrogen oxides, and carbon particles.

Pedestrian Issues

- The current pathway width is 0.9m
- The main problem of the pedestrian zone is related to parking management.
- Streets are often crowded; footpaths are narrow and roads are difficult to cross.
- The footpaths are crowded with very less space that the pedestrians are forced into the road.

- It is difficult for disabled people and as well as old aged people to access the pathway.

Public Issues

- Less width of the walkway and no proper pathways provided at most of the areas.
- Difficulties in crossing the road and faded crosswalks.
- An unwelcoming environment for the elderly and physically disabled.
- Safety problems in relation to traffic and in areas those are poorly lit or badly maintained.
- Traffic causes air and noise pollution.
- Unattractive streets and pedestrian links which lack character, identity and comfort (shade, seating, plants etc.)
- Electrical post as a hindrance on the pathways.

V. RESULTS & DISCUSSIONS

Urban Development

- Improve built form outcomes along Corridor to create a pleasant experience at street level.
- Improve public amenity and streetscape along Corridor
- Enhance and create a sense of place/community.
- Providing a diversity of green spaces with a focus on pedestrians, providing comfort to walk and cycle and a variety of places to stay, meet, people watch and socialize.
- Promote local mixed use nodes supporting an intensity of land uses.

Industrial and Economic Development

5.1 Forest Based Industries: Nilambur has abundance of forest wealth, wherein production of hard woods suitable for buildings and furniture; fire woods, medicinal plants, etc. are reported. More industries can come up on forest based products, which help to improve the employment generation in rural areas. Besides there is good scope for seasoning and treatment of rubber wood too.

5.2 Wooden Furniture, Door/Window Frame: As the increasing urbanization and easy availability of loan facilities, and the abundance of persons working abroad, the construction of house is essential in the recent past. Even though the woods are available within the city, they have to depend on other cities because of the strict laws. If the restriction from the Forest department relaxed the carpentry work will provide more employment opportunities to a large number.

5.3 Tourism: Nilambur is famous for its natural beauty and historic part. Hence it attracts Tourist both domestic and foreign visitors. There are good opportunities for investing tourism promotion in the district.

5.4 Herbal Products and Ayurvedic Medicines: A number of herbal plants grow spontaneously in many parts of Nilambur. Some of them are used for some disease by the Adivasi sects in the district. They have not yet been put to industrial and commercial use. This will give an opportunity to use the wasteland and create employment. Henna, Turmeric, Hibiscus and some other medicinal plants are also used for the natural dyes. So, the district has immense scope for good natural dyes. The growth of Kottakkal Aryavydyasala and such other units in this field are examples.

5.5 Rubber Based Industry: The geographical structure of the Malapuram is most suitable for rubber cultivation. The district has an area of 40230 hectares and the production of 800050 tones and 15320 hectares are in Nilambur alone. So there is immense scope for the industry in this area

5.6 Farming: Agriculture is the mainstay of the population, involving 75% of the people, directly or indirectly. The main crops raised are paddy, coconut, tapioca, arecanut, cashewnut, banana, rubber, pulses, ginger and pepper. Paddy lost predominance among crops during the last decade d flood has affected most of the fields. The farmers are less familiar with the new technologies in agricultural fields

VI. PROPOSALS & CONCLUSIONS

Urban Plaza

A paved public space for citizens to gather for civic, religious, or commercial reasons. Urban Plazas should be a passive environment and include hard landscaping with an appropriate amount of soft landscaping providing shade opportunities. Street furniture and public art should be integrated and encourage community activity. Urban Plazas may also provide the potential to function outside general business hours and be utilized for other activities such as small-scale cultural/community events and markets.

Urban Gardens and Pocket Parks

Urban Garden include areas of various sizes and shapes although, primarily of a linear nature and located predominantly along the existing Corridor frontage. The treatment of Urban Gardens will include a mixture turf, in addition to tree planting in these areas. A pocket park is Small Park accessible to the general public. It can be created in parking spots too. Pocket Parks could include small active recreation components such as singular piece and/or small-scale children's play equipment.



Figure 14 Proposed Urban Plaza with transit facilities



Figure 15 Proposed Urban Plaza with hard landscape

Transportation and Parking

The transport infrastructure will access arrangements that ensure ease of movement to, through and within the Corridor for the various transit mode options. It is effective in mixed use developments, either when there is a mix of uses on a single site or when site with different uses are located suitably close together.



Figure 16 Proposed Shared Parking



Figure 17 Proposed Parking

Activity Nodes

An effective strategy for urban corridor redevelopment is the emerging concept of Activity Corridors capable of accommodating wide spread fast moving vehicle oriented cities [8]. The Activity Nodes will provide the opportunity for a variety of commercial businesses that are highly compatible with higher density residential development. Mixed Use Activity Nodes should ensure there is a relationship between the ground floor uses and the building design with the public domain, to ensure that considerations such as space activation and passive recreation.

Activity Nodes - Ground Floor: Land uses on the ground floors of buildings within the Activity Nodes will comprise of uses which will contribute to the activation of the public realm and enhance the experience of the street as an Urban Corridor. Land uses will encourage social interaction and pedestrian activity and assist in supporting the economic viability of the locality, such as retail, cafes, and restaurants.

Activity Nodes - Upper Floor: Land uses in the upper floors of Activity Nodes will comprise a variety of uses to support the active ground floor, including permanent residential, transient residential, commercial and offices.

Collective Corridor Strategy

A Collective corridor strategy encompasses urban and economic development that facilitates futuristic approach in an urban context. The study area of this research is being proposed with a Rubber Industry, Research and Development Hub, Cultural Centre and Student Residential development (Figure 26) in addition to the urban design development proposals discussed. Because spontaneous developments are most commonly observed in corridors over long periods of time [9].

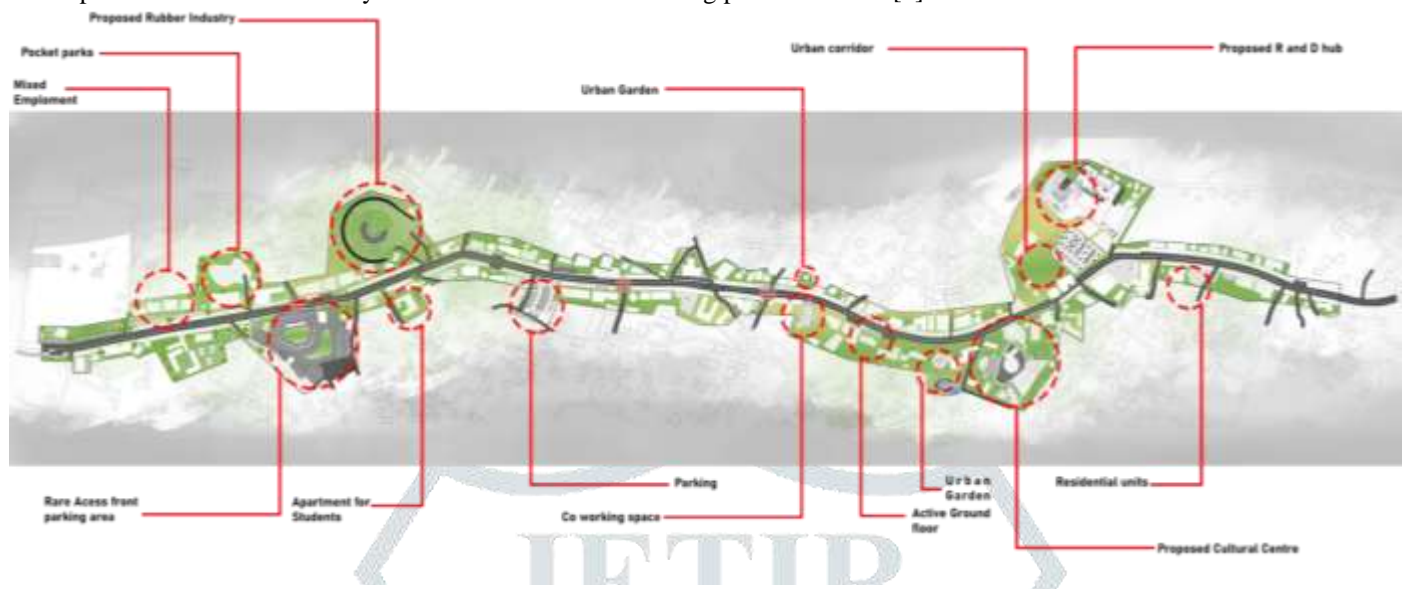


Figure 18 Collective Corridor Planning

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