International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2020): 7.803

Envisioning Walkability in High Density Nagpur City

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Abstract: ***The image of the cities, in the 21st century is focussed on vehicle-oriented traffic and this has resulted in environmental, social, economic, visual, psychological, and health related problems. In the recent era rapid urban growth has been experienced by means of speed and economy. Unfortunately, this leads us to change our dependency from traditional sustainable transportation pattern to an automobile pattern. The life within cities is running in packed AC capsules. People are unfamiliar with the natural clean air and environment around. This leads to ecological imbalance, lacking in city beautification initiatives . Walking also promotes mental and physical health. Designing more social spaces and quality of pedestrian movement will play the key role in choosing walking over driving. To achieve walkable cities in India, it will be necessary to assess current walkability conditions, i.e., Redevelop building design standards and regulations, pedestrian - based design and networks, walking behavior research, increse public education and public participation in pedestrian movement planning, encourage collaboration and interdisciplinary understanding between transport engineers and designers. Not only does pedestrian transportation reduce congestion and have a low environmental impact, but it also has social and recreational value by designing intermediate spaces around the walkway. This paper is an attempt to highlight the importance of walkability in the commercial area of Itwari Nagpur, and establishing that walking is the most sustainable mode of transport and one which has the least impact on the environment and improving our social connections.***

Keywords: Walkable city, city network, sustainable transport, open spaces, tourism, Nagpur Walkable

1. Introduction

Walking is the most sustainable mode of transportation and one which has the least impact on the environment and our social connections. We offer the following definition: “Walkability where prohibited by state law.” It goes on to state that pedestrian facilities should be planned and designed to the maximum extent possible, rather than the minimum (State of Vermount Agency of Transportation, 2002)

In the 21st century the image of the cities is concentered on major vehicle-oriented traffic and its resultant in environmental, social, economic, visual, psychological, and health regarding problems. In recent eras rapid urban growth is experienced by means of speed and economy. Walkability is the good solution to which city environment of building and open spaces supports and encourages walking by providing a network of connecting people with varied destinations within common places needed amount of same time and effort, and offering visual interest in journeys throughout the network. A walkable planning in nebhbourhood has several of the following important attributes:

1) Path network connectivity of both locally and in the larger urban setting;
2) Other modes linkage with : city bus, auto rikshaw , metro, train;
3) Varied land use patterns, especially for local serving uses;
4) Safety, both from traffic and social crime;
5) Quality of walking way, its width, paving, landscaping, signing, and lighting; and
6) Path context, including street design, visual interest of the built environment, transparency, spatial definition, landscape, and overall employability.
7) Updating mobility of the site in context of moterised paths.

The life within cities is running in packed AC capsule. People are unfamiliar with the natural clean air and environment. Thus leads to ecological imbalance.Walking is our oldest and most basic form of transportation which is now being forgotten. Nowadays, most of people seem to prefer to drive vehicle rather than walking even for short distances.

Instead of more people utilising public transport in city centres, the opposite is true when compared to the use of personal cars . People started to become dependent on the car or automobile as an alternative to move to the city centre commercial area. Travel patterns have changed from the traditional mode of transportation to automobile transportation in the 20th century. The travel patterns in most developed countries are increasingly dependent on the car (Banister, 2005; Shuhana, 2011; Shafii and Shareh Musa, 2011). As a result, in the mid-21st century, the automobile has started to become an ironic icon travel pattern in Itwari as it connects Metro and Railway station.

Figure 1: Location of Nagpur in India, (Source: https://www.dairyreporter.com/Article/2017/06/05/Mother-Dairy-milk-processing-plant-inaugurated-in-Nagpur)

2. Context

2.1 City Background

Nagpur is well known as an Orange City, located in central part of India. Infact , it is also a geographical center of the country. After Mumbai and Pune ,Nagpur stands third largest city of Maharastra.

In 2011, the population of the city is found to be 23,98,165 as per cencus 2011.

The city is also ranked as a cleanest and second greenest city after Banglore in India. It also helds seat of annual winter session of Maharastra state assembly "Vidhan sabha", though the city is major political and commercial center of the Vidarbha region and also famous countrywide as the Orange City for trading oranges that are majorly cultivated in the region.

Nagpur is also declared, "Tiger Capital of India" as it connects many Tiger Reserves in India to the world.

Density:

- Among the attributes used to classify a human settlement as **urban** is the population **density** (a minimum of 400 per sq km) as per Census of **India**
- The initial provisional data released by census India 2011, shows that **density of Nagpur** district for 2011 is 470 people per sq. km

Itwari

Itwari is the one of the wholesale business center of Nagpur, in which hardware, household,cloths, wedding saree market of central India. With several mosque, jain temples and hindu temples are located.

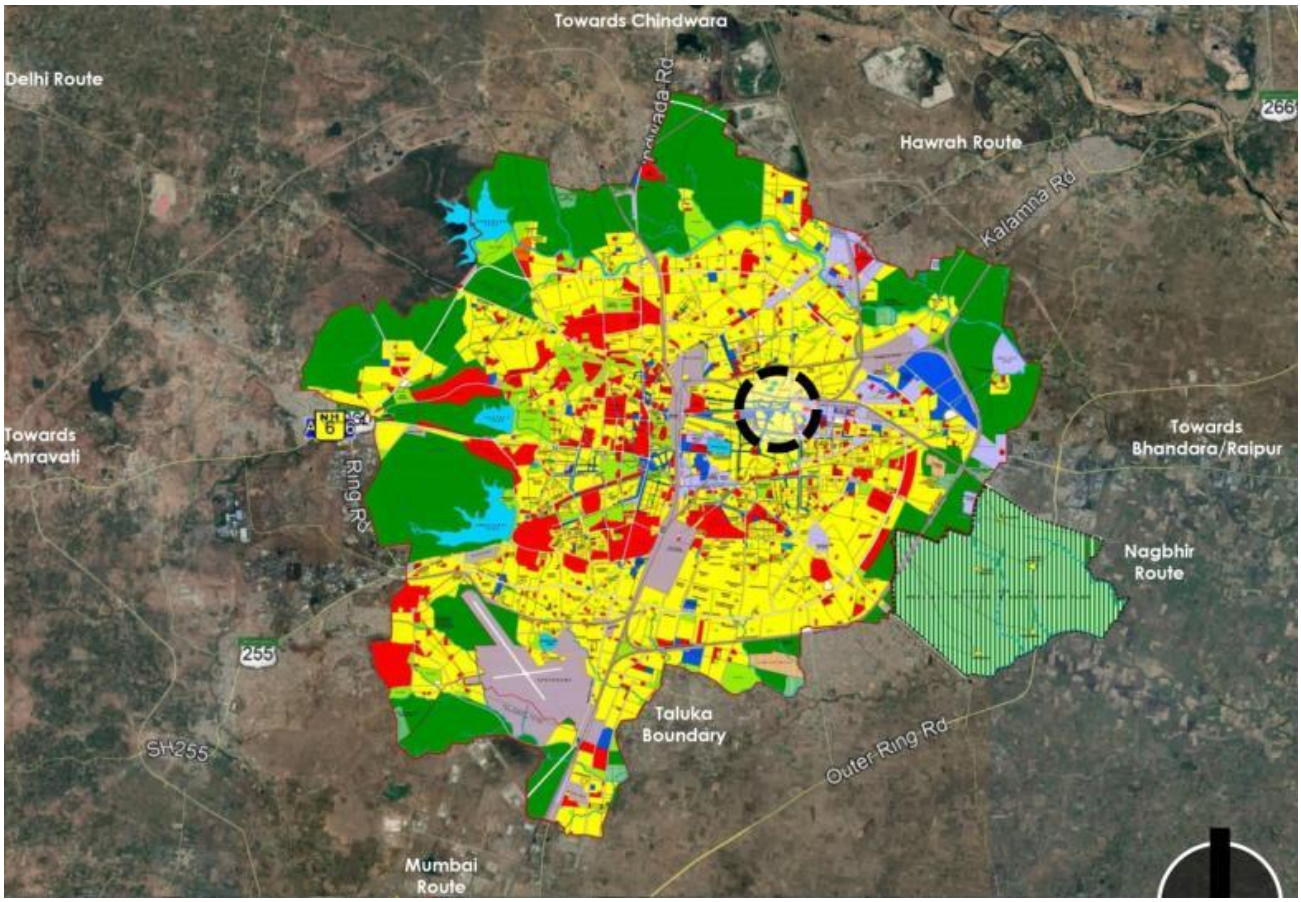

Figure 2: Location of Itwari in Nagpur DP(Source:Google Maps, fig 2.5 Existing Landuse Plan Nagpur/comprehensive mobility plan for Nagpur)

3. Literature Review

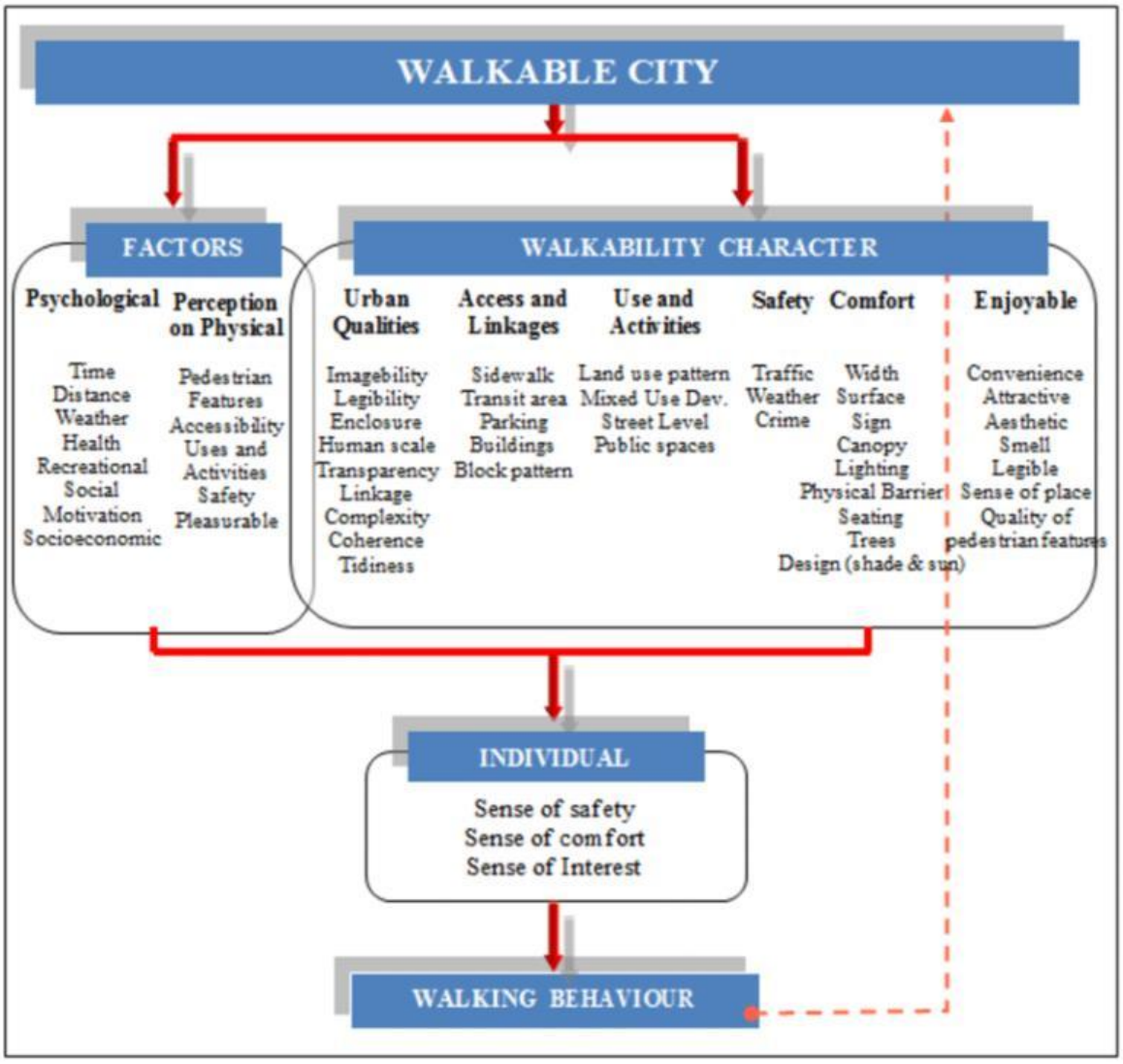

Figure 3: Factors and Characters of Walkable cities (Source: Alley (2005), World Bank (2009), Weller (2008), Krambeck (2006), NZ Transport Agency (2009))

From the wider context Walkability have 10 Principles to Promote Walkability.
Step 1: Put cars in their place.
Step 2: Mix the uses.
Step 3: Get the parking right.
Step 4: Let transit work.
Step 5: Protect the pedestrian.
Step 6: Welcome bikes.
Step 7: Shape the spaces.
Step 8: Plant trees.
Step 9: Make friendly and unique faces.
Step 10: Pick your winners.

The more social spaces and quality of pedestrian movement will play the key role to choose walking over driving.

Presented six criteria for the design of a successful walkable network:
1) Connectivity;
2) Shaded and secured linkage with other modes;
3) Fine-grained land-use patterns;
4) Safety;
5) Quality of path and comfortable environment; and
6) Context within path.

The concept of serial vision
The concept of serial vision and, generally speaking, Cullen's approach, can be applied to design as much as it can serve survey and analysis: "if we design our towns from the point of view of the moving person (pedestrian or car-borne) it is easy to see how the whole city becomes a plastic experience, a journey through pressures and vacuums, a sequence of exposures and enclosures, of constraint and relief."

The research study survey of Itwari, Nagpur described below. The questioner survey leads to the following findings and arguments.

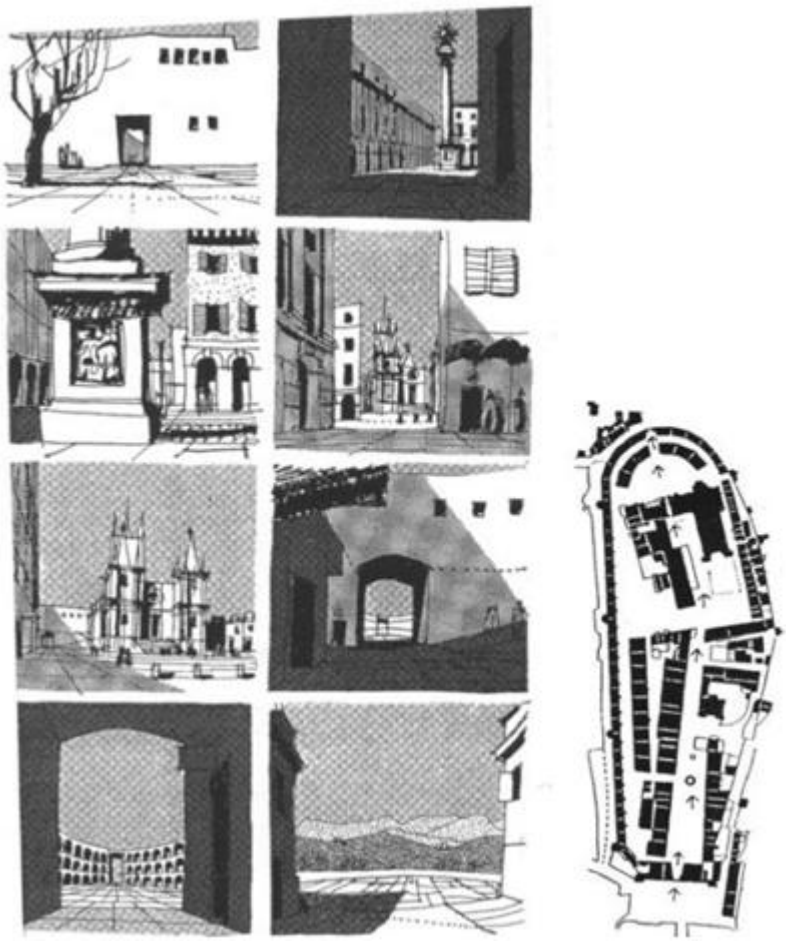

Figure 4: City walks can be designed to provide exciting sequence of evelations reprinted from The Concise Townscape, Gordon Cullen 1971.

4. Methodology

This study approaches mixed method through approaching questionnaire survey and studying qualitative observation of study area (Itwari), to understand the current phenomenon of walkability in Itwari. This study applies 3 options as to strongly agree or strongly disagree and maybe agree. It is very important to describe the problems and issues faced by respondent in choosing walking in the market area. In results and findings an analysis of scale and measures for listed parameters is clearly be seen.

In this study, the target group of respondent is under age 20-45 public who are the main user of the Itwarimarket in city canter area.

Figure 5: User Background of Itwari market (Source: Author)

5. Results and Findings

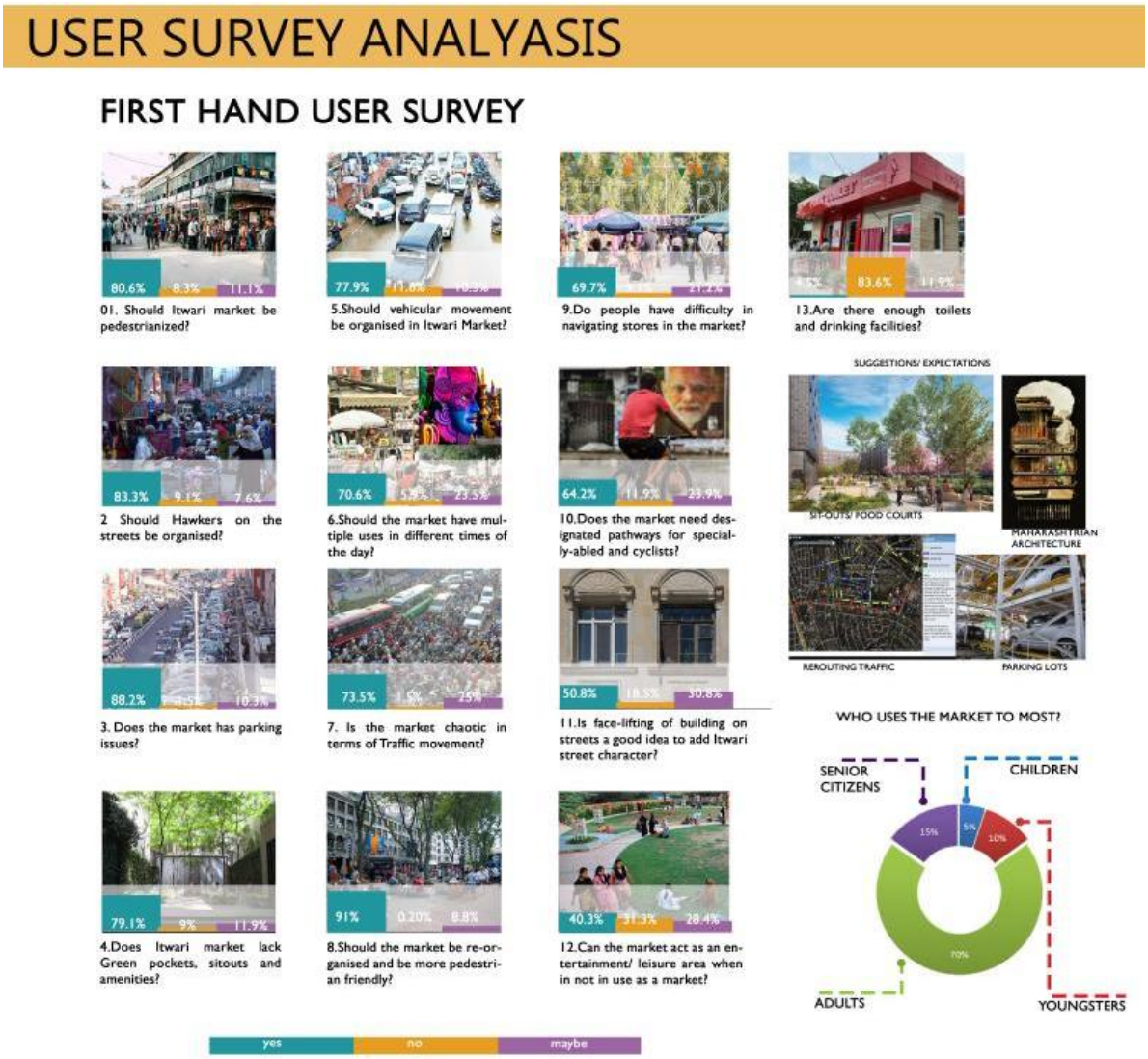

Figure 6: First hand user survey of 200 respondent analysis
(Source: Author)

The public opinion Survey was conducted from 200 respondents in and across the city, in majority adults use the Itwari market frequently. The majority of respondents in this research are employed and in business but not residing in the Itwari , Nagpur area. It shows that there is a need to travel almost every day in the city centre. Nevertheless, the respondents prefer to travel using private transport to get to the market because they prefer to travel fast for shopping and to travel back to their destination .The situation happens when they are influenced by the psychological factor to choose to walk in the centre area. This study suggests that the majority of respondents have disturbing impression to walk in the Itwari , Nagpur and practice less active lifestyle. They prefer to depend on private transport to travel in the city centre. The majority of respondents face lack of amenities and services in the site.The respondents are able to walk for less than 5 minutes which limits their ability to walk long distance and able to keep practices less active life style. Rapid urbanisation creates a city centre design that gives little priority for pedestrian will be extended as an issue in the future. Based on the findings, streets in Nagpur today give priority to vehicular circulation and no longer function as an urban space for human interaction. Indeed, the respondents also depend more on private vehicle compared to the public transportation. Yet, the psychological factor is also interpretedby the physical factor. As mentioned earlier, there are strong relationships between the psychological and physical factors. The people are motivated by a hierarchy of needs at different group levels. These are also related to the psychology and physical environment factors that people consider when making decision on whether to walk. The key factor that influences the public to choose to walk in the city centre is the psychological factor. The physical factor is influenced by the psychological factor and the physical factor shapes the walkable environment that encourages walkability to the level of walkable city. As stated before, there are two main factors that influence the public to choose to walk in the city centre. However, in order to identify and examine the psychological and physical factors in choosing to walk in the city, there must also be 'upgrading' in the publics' awareness (psychological or motivation) and perception (physical factors) towards a walkable city. Therefore, there are six (6) factors that consist of psychological factors and

six (6) physical factors identified from the theoretical framework. These constraints are attributed to various factors that are summarized under the 6 key factors outlined. The main problem is that the public have no walking motivation in the city and awareness at the individual level.

Lack of motivation to walk

Even though the majority of respondents agree that walking is a meaningful routine,the majority of respondents prefer to drive to get to the market. It is also discovered thatthe respondents are able to deal with traffic congestion during peak hours along withthe long journey time. It is also discovered that Itwari is much dense which faces lack in parking spaces too. Other than time, the respondentsalso prefer to drive private transport to get to the market in the Itwari. Thisrelates to the public motivation or self-awareness, where the respondents state thatwalking makes they tired, sweaty and they do not consider it as light or recreationalactivity. The respondents also prefer to walk within 5 minute walking duration. Theresult shows that the respondents are lazy to walk as life is made easier to depend onmachines and people do not need to move. It is an issue when passivelifestyle dominates and obesity level increases. As mentioned in the problem statement,it is not only the Health Ministry or doctor's responsibility to address this issue but thisrole is also shared by the urban designer to design proper urban space.

6. Conclusion

There are various methods and techniques that make the city walkable. Moreover some urban design and planning concepts helps people to understand the importance of walkability. This paper also provides integrative theoretical and experiential approaches that are crucialto the practice of walkable city that consist of the problem, factor and characteristics ofthe public in the Itwari Nagpur. There are two factors that influence thepublic to choose to walk in the Itwari Nagpur. The main factors thatinfluence the public to choose to walk are the psychological factors that are perceivedas the components of the physical factor. However, there are significant factors to eachother. Nagpur has many attributes whichcontribute to making a city walkable. One of the most important attributes is thequality of public and physical environment, metro connectivity, city bus connectivity, the way it contributes to character,promotes pedestrian activity and connectivity and encourages people to spend timewithin the city centre.

When the public andwalkable urban environment is readily to walk, consequently, a walkable city comes.

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