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An Urban Oasis: Revitalization of Bagmati Riverfront at Teku – Thapathali section

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1.1 Contextual background and project objectives

Kathmandu valley, the capital region of Nepal ranks as among the most congested cities in the world, bringing with it a slew of other environmental problems like air pollution, visual pollution, water pollution, solid waste, etc. The rapid urbanization of the city has adversely affected the river with various forms of encroachment in the flood plain, becoming a major issue for the city authority. This phenomenon has led to the detachment of the city from the river and gave rise to the urban flooding. The use of river has been totally altered, narrowed and polluted. The change in nature of the river and river edges has created the gap of interaction between the river and people. The accessibility to the river is very rare due to the vehicular corridor road and fencing. This paper provides a review of the prevailing concerns and difficulties along the Bagmati river corridors and discusses the challenges associated with implementing alternative urban design concepts. It is to provide a framework that enhances the relationship between water bodies, settlements and green open spaces that is properly able to cater the threshold

population of that particular area. This report involves of identifying growth areas, building transport network both pedestrian and vehicular, embracing the nature and balancing flexibility in employment sector while protecting the traditional one.

The specific objectives of this study are as follows:

(a) to explore and analyze the existing condition of the riverfront of the study area;

(b) to analyze numerous issues, problems and potentials associated with revitalization of the areas; and

(c) to draw a conclusion and propose some key recommendations.

1.2 Study area

This study is covers the Teku-Thapathali segment of Bagmati riverfront covering about 1.7km of area (Fig. 1.1). The northern part of the river lies under Kathmandu metropolitan city and the southern part belongs to Lalitpur metropolitan city. The river edge on both sides have diverse characters. Some parts have 9 me wide corridor roads whereas other parts are greenery and open spaces. Again, some part of the water edges is occupied by squatter settlements. Temple complex along with crimination area are also located within the study area. Though Bagmati river is considered as a sacred river associated with the civilization of the Kathmandu valley, it has been highly polluted at present due to haphazard urban growth, connection of city's sewer lines directly into river and encroachment of the water's edges in different forms. This part of the study area also comes under inundation during rainy season.

The study area, Teku region is the confluence of Bagmati and Bishnumati rivers. It is believed that then King Gunakam Dev (724 AD) established the Kathmandu city in the shape of a sword (khadga) with Teku Dhovan as its southern border. This location was popular among the traders that utilized the spaces for resting, bathing, playing, performing rituals in the memory of the deceased and also as a purification before entering into the city. The significance of this stretch is also dates back to the Lichchavi era during which the Pachali Bhaira was established.

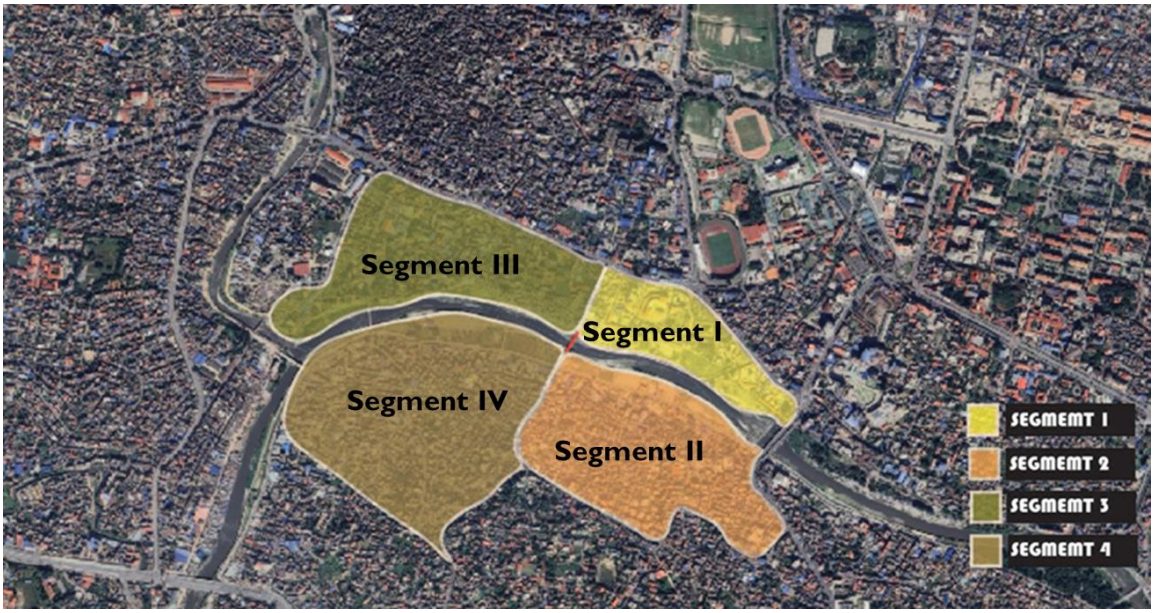


Fig. 1.1 Study area for riverfront revitalization study

1.3 Study methodology

The study combines both qualitative and quantitative methods of information collection. Numerous literature associated with the riverfronts, site specific projects and international best practices of riverfront revitalization were critically reviewed. In addition to that, the study area along with its surrounding areas were visited many times not only to understand the existing conditions and to map them

but also to talk with local people through a semi-structured questionnaire survey. The land use patterns, street patterns and land use zoning were done manually by the team members along with the assistance of digital maps and satellite imageries including topographic maps, aerial photographs, geological maps, land use maps and other relevant thematic maps of the study area. In order to get a better insight into the experience of the people within the particular environment, semi-structured interviews were conducted to the locals living along the riverfronts.

1.4 Existing conditions of riverfront along Teku - Thapathali segment

The segment I located at Kathmandu Metropolitan City (KMC) side consists of crimination area (ghat), traditional sunken stone spout (dhungedhara) and riverfront public spaces in the form of a park (Fig. 1.2a and Fig. 1.3a). Some riverfront spaces are being used by Vishwa Niketan School (public school) as a playground. Small portion of this segment especially near the 'Sankata bridge' is being squatted with 3-4 families. The crimination area is not frequently used whereas the sunken stone spout is still used by local community for bathing as well as washing cloths and utensils. The park is also mainly used by local community for evening walking. Direct access to the river is possible through crimination ground only. The rest of the river edges have stone embankment walls. There was presence of riverfront trails of width 2-3m with concrete block pavement with access points from different locations.

This segment is dominated by religious structures such as temples and community buildings along with many government institutions. There is mixed use of residential and commercial activities along the

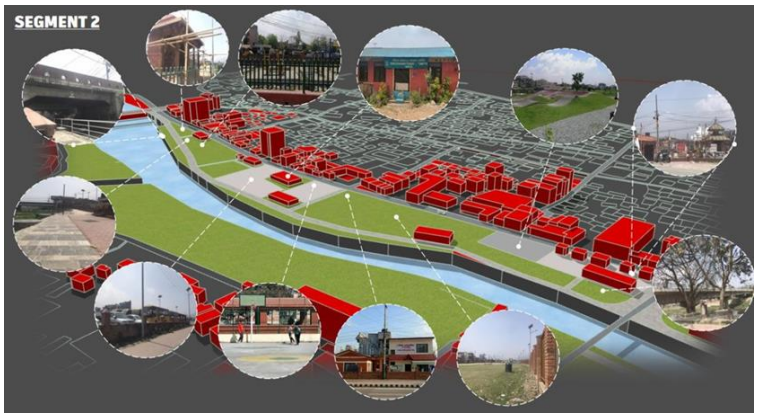
main roads whereas significant residential houses are there between the main road and the riverfront. Kalmochan mahadev temple, Tripureswor mahadev temple, Department of Passport, Vishwa Niketan Chool (public school) and Guthi Sansthan office including Nepal Eye Hospital also operating in this area.

Water bodies (river) is not easily visible from this segment due to construction of high rise structures along the main road network.

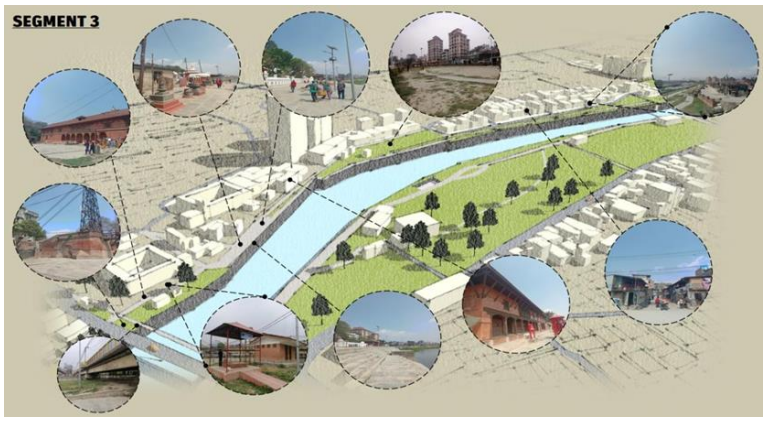
The segment II located on Lalitpur Metropolitan City (LMC) side also has crimination area, sport facilities and government offices (Fig. 1.2b and Fig. 1.3b). The crimination ground is occasionally used. Part of the riverfront is occupied by ward no 1 office of LMC and Women Environment Preservative Committee. The Gusingal basketball court, pump track Nepal and Kupondol ground are often used for sports. Recently, part of the riverfront was used for construction of Chardham temple, Jal Binayak genesh temple, Gusingal Vishnu temple and Shree 64 Lingeshwor mahadev (statues).

Land use in this section is mixed: with domination of industrial and institutional along the riverfront and residential and commercial buildings further away from the river. Gurudwara gurunanak temple, Nepal insurance authority, Nightingale school and college including Nwajeevan AG church also exist in this area. Riverfront is clearly visible from different locations of this segment. This is due to topography, existence of low rise structure on the blocks adjacent to the riverfront.

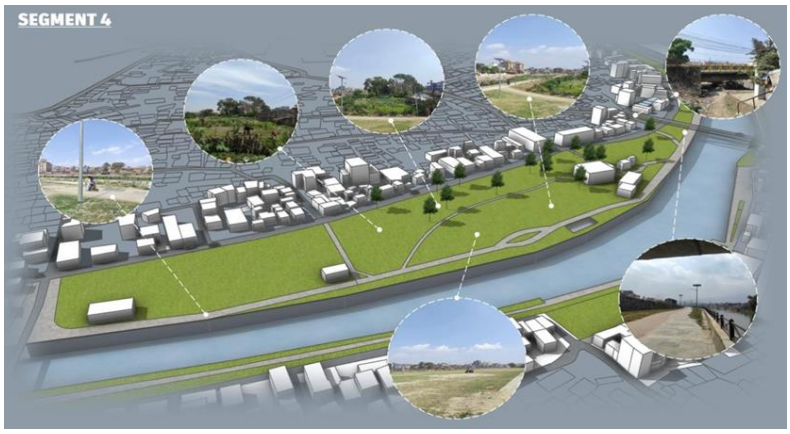
(a) Segment I of the study area



(b) Segment II of the study area



(c) Segment III of the study area



(d) Segment IV of the study area

Fig. 1.2 Four different segments of the study area

Fig. 1.3a Various activities in the segment I of the study area

Fig. 1.3b Various activities in the segment II of the study area

Segment III is mostly active as a crimination ground and funeral site (Fig. 1.2c and Fig. 1.3c). It comprises of many crimination grounds for various 'caste' groups: Ranjitkar ghat, Tandukar ghat, Karranjit ghat, Maharjan ghat, Chame ghat, Pode ghate and common ghats. There is also one electric crimination place but it is not under use at present. Besides, crimination ground, this segment also houses one 'Kriyaputri' house, used for funeral rituals. There are also many religious complexes. There is open space along the riverbanks and part of it has been developed as a park known as 'Chintamani park' which is used by local people and riverbank communities. The land use of this segment is dominated by religious complexes. Some commercial and institutional uses are also found along the road sides. Blue lotus hospital, Signature apartment, Sukraraj tropical and infectious disease hospital, Shree Pachali bhairav temple, Laxminshwor mahdeve temple, Tin deval mahadev temp and so on are also located in this area. Visual access to water bodies is also poor from this segment mainly due to informal settlement along the

waterfront. The streets and pedestrian paths are not connected to the river edges.

The segment IV in the study area is comparatively inactive (Fig. 1.2d and Fig. 1.3d) There are some temples in this segment. The crimination ground is hardly functional and the park is often seen empty. Instead, they are used for practicing bike riding and local people sunbathing in winter. This segment has more greenery spaces. Grass and weed growth can also be seen in the river area due to the residual sediments after monsoon. Large portion of river banks are being used for agriculture production. This section of the study area is dominated by residential use with some industrial activities long the collector road. Some office buildings also exist here. There are numerous academic institutions: Nightingale college, Sagarmatha engineering college, Phoneix academy and Radian readers' academy.

Fig. 1.3c Various activities in the segment III of the study area

Fig. 1.3d Various activities in the segment IV of the study area

1.5 Issues, problems and potentials

Different urban block with different land use and building structure

The study area comprises of different types of urban blocks. Most of them are of irregular shape, as they were developed and extended over time on piecemeal basis. In many cases, internal roads within the urban blocks have incomplete network connectivity and many of them are of pedestrian lanes only with irregular shape and width. Some of those urban blocks are small in size, others are too big. They are oriented at various directions. Such characters of urban blocks have numerous negative consequences on mobility, urban density and skyline character including visual access to the river edges. In the same urban block, one can find mix of bulky and high rise structures (along the main vehicular road network) as well as low rise and small

buildings, especially along the pedestrian paths. In addition to these, the study area has numerous types of structures ranging from crimination ground and temple complexes to office, commercial and residential houses (and squatter settlement) including some greenery parks along the river edges.

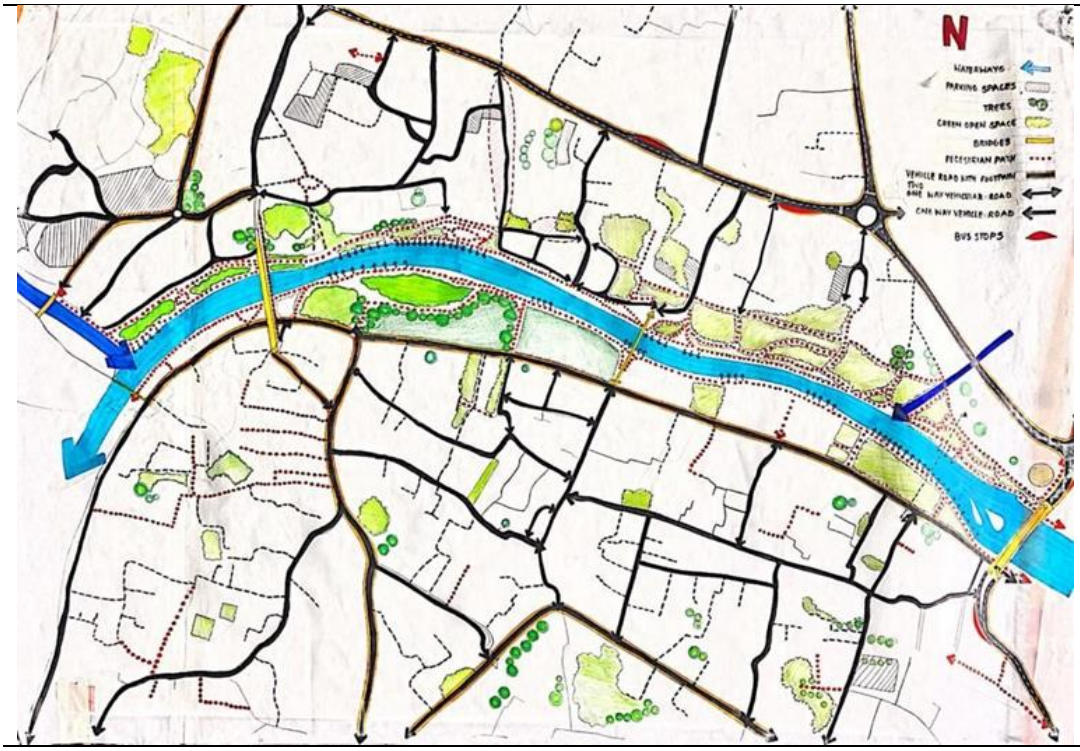


Fig. 1.4 Urban blocks of different characters

Separation of water body, greenery edges and settlements through river corridor road network

The Kathmandu valley development authority (KVDA) developed road construction on both sides of the river as 'road corridor' to ease the traffic jam and to smoothen vehicular movement. As the vehicular road network is inadequate, all the mobility pressure come to the limited road network. Also, the High powered committee for integrated development of Bagmati civilization (HPCIDBC) under Ministry of Urban Development build stone gable walls, park

development with furniture and jogging lanes along both sides of the river. A brick wall constructed between the river corridor road and greenery with limited access has constrained the use of such riverfront spaces. These public activities have though reduced traffic jam to some extent but they have also created new set of urban problems. It has physically separated the settlement from water and greenery through vehicular road network. As those road network are at lower elevation, most of them are under flood during rainy seasons (Fig. 1.5). Numerous existing road segments linking to these river corridors have road junctions, which are unscientific in terms of turning and width. As a result, those junctions often act as 'bottlenecks.'

Except few main road segments, the rest of the road network is developed on ad-hoc basis. As a result, their widths are not uniform and the pedestrian footpath is not continued. In some cases, the existing road network was widened by dismantling the building on both sides of the road. The road junctions are acute angle in many cases thereby making vehicular movement difficult. On the top of them, vehicles are park on the road sides making the movement difficult and at the same time increasing the risk of road accident.

Fig. 1.5 Riverfront flooding in the study area

Potential of redevelopment of the area

Despite poor condition of the area, it has a great potential for redevelopment for better linkages of water, greenery and settlement, effective land use and building density and above all utilization of diverse public open spaces for multiple activities. Public access to the water's edge can be improved in many locations. Moreover, the huge stretch of riverfront area can be planned for various activities both hard landscaping as well as soft landscaping and targeting various age groups. Finally, the adjacent buildings especially the ground floor can be used for services targeting visitors. Resettlement of the existing squatter settlement, motor garages and other riverfront spaces provide a huge opportunity for the planned development in a holistic way. Better linkages and integration of functional activities on both sides of the Bagmati river (i.e., KMC and LMC linkage) can be achieved through planning land use, transportation network and pedestrian paths and building uses.

1.6 Proposed redevelopment plan with detailing

The redevelopment master plan of the areas intends to restore linkages between water and greenery with the adjacent settlements through regulating land use, density and improvement of road network and pedestrian network in the area. A mixed land use of different activities commercial, institution and residential uses with religious function is proposed with well-defined greenery on both sides of the river (Fig. 1.6).

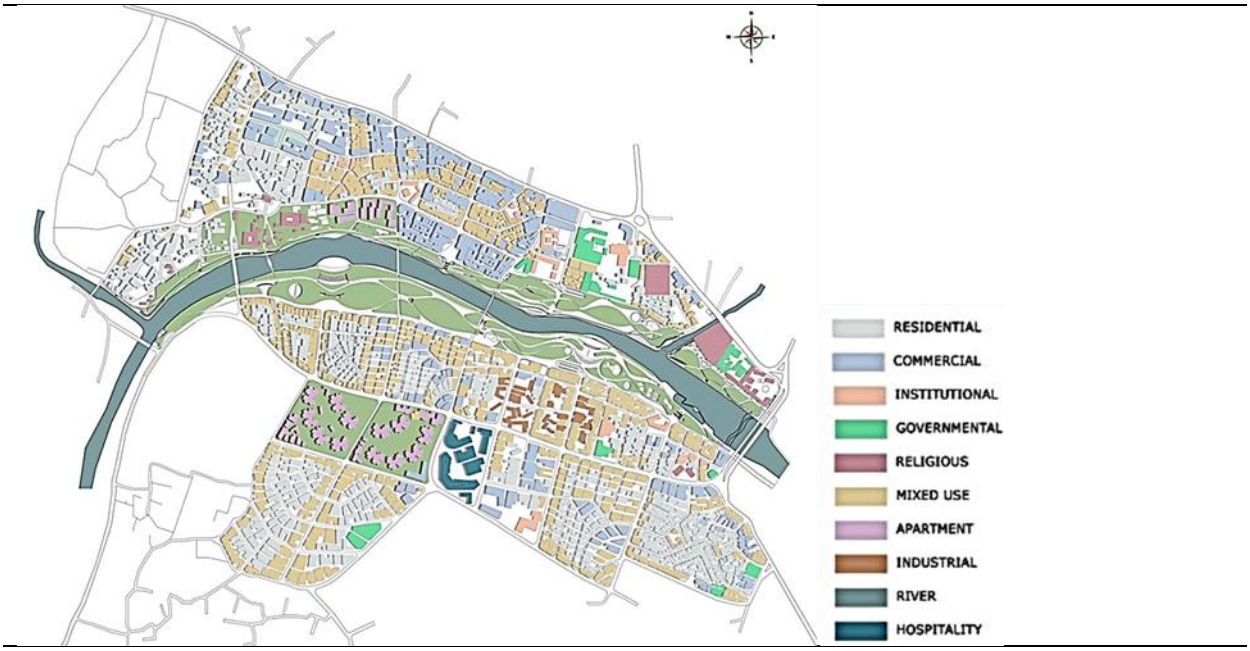
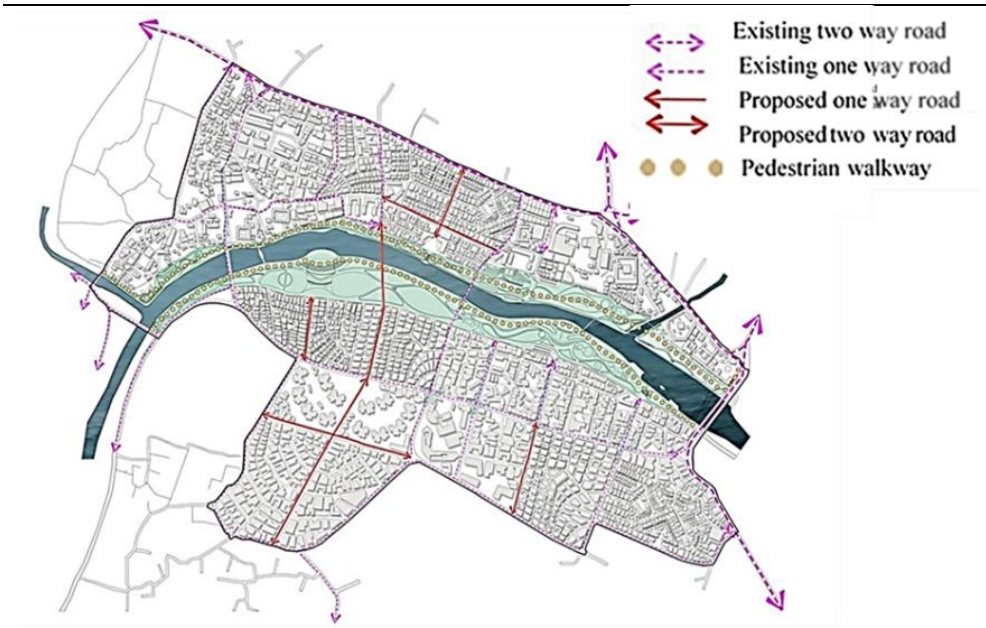


Fig. 1.6 Proposed master plan along with land use proposal

To reinforce the proposed land use, the existing road network should be improved. New roads are proposed not only to link various urban blocks but also for a better network of transportation with the existing road system (Fig. 1.7). The existing two-way and one-way road network is also considered for smooth mobility. The newly proposed road network improved the accessibility to the riverfront from the surrounding settlements. New pedestrian as well as vehicular bridges are also proposed for better connectivity of both sides of the rivers (KMC and LMC). The network of the road connections is designed in the form of interconnected winding roads that allow easy pedestrian access throughout the entire promenade creating variety of opportunities for the users to reconnect with the natural ecology. The idea was to create direct visual accessibility to the riverfront through creation of visual corridors and extended green ways that help direct people towards the river.



(a) Proposed road network

(b) Well-defined urban blocks with direct access to water's edges

Fig. 1.7 Proposed road network in the study area

The greenery areas on both sides of the Bagmati river is developed for multiple but public related activities (Fig. 1.8). Urban spaces are a wide area with opportunities to cater a large group of users belonging from a diverse group. The idea here is the creation of diverse spaces that are very different from one another while complementing each other. Here, diverse also in a sense of height variations. The height variations help in segregation of spaces while maintaining the visual privacy between different spaces. To maintain the connection between the river and the people, without creating a blockage

between them, a dedicated pedestrian river trail runs throughout the curves of the river which is below the normal ground which can be later closed in case of flood prone seasons. Also separate bicycle and running trails are provided with rubber treated pavements.

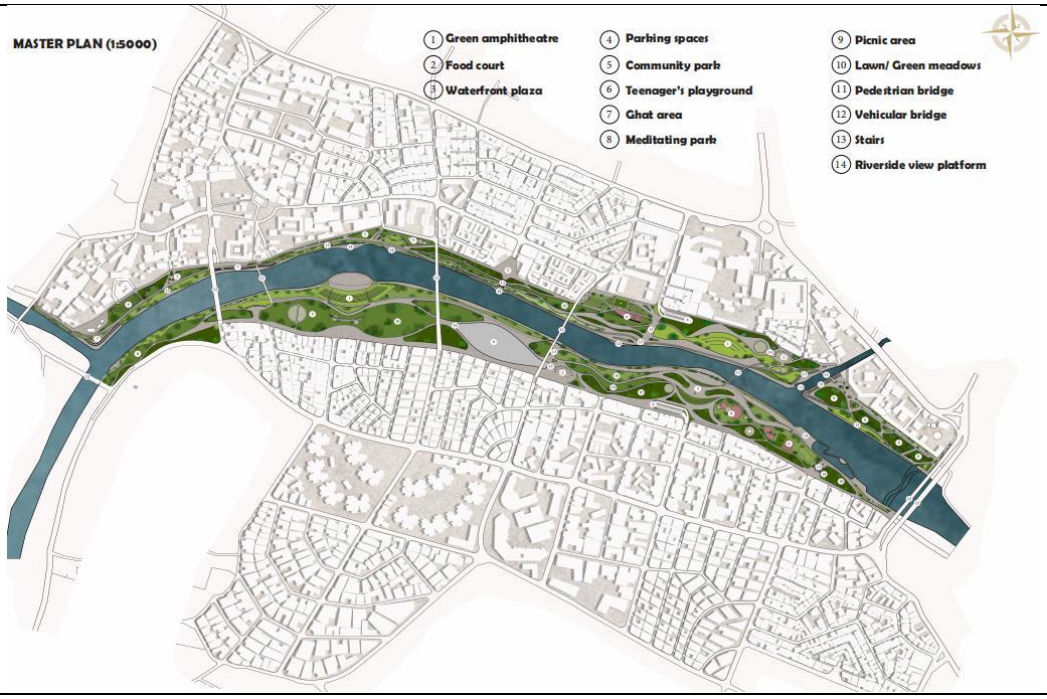


Fig. 1.8 Diverse use of riverfront public spaces on both sides of Bagmati river

For better utilization of riverfront spaces, privacy and visibility, the public open spaces on both sides of the river are designed at different levels (Fig. 1.9).

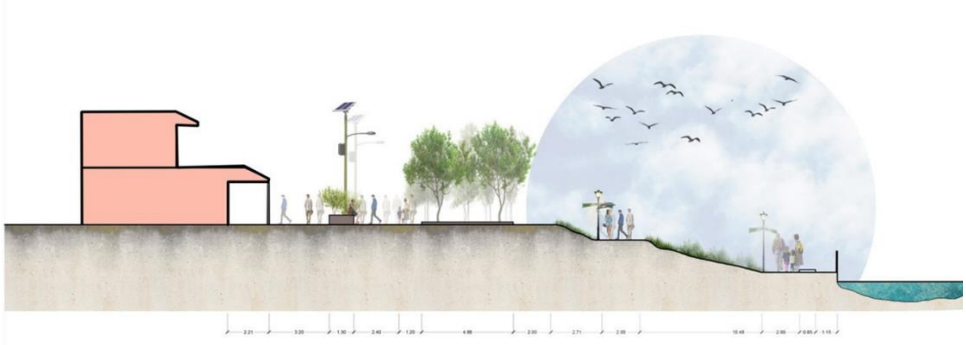
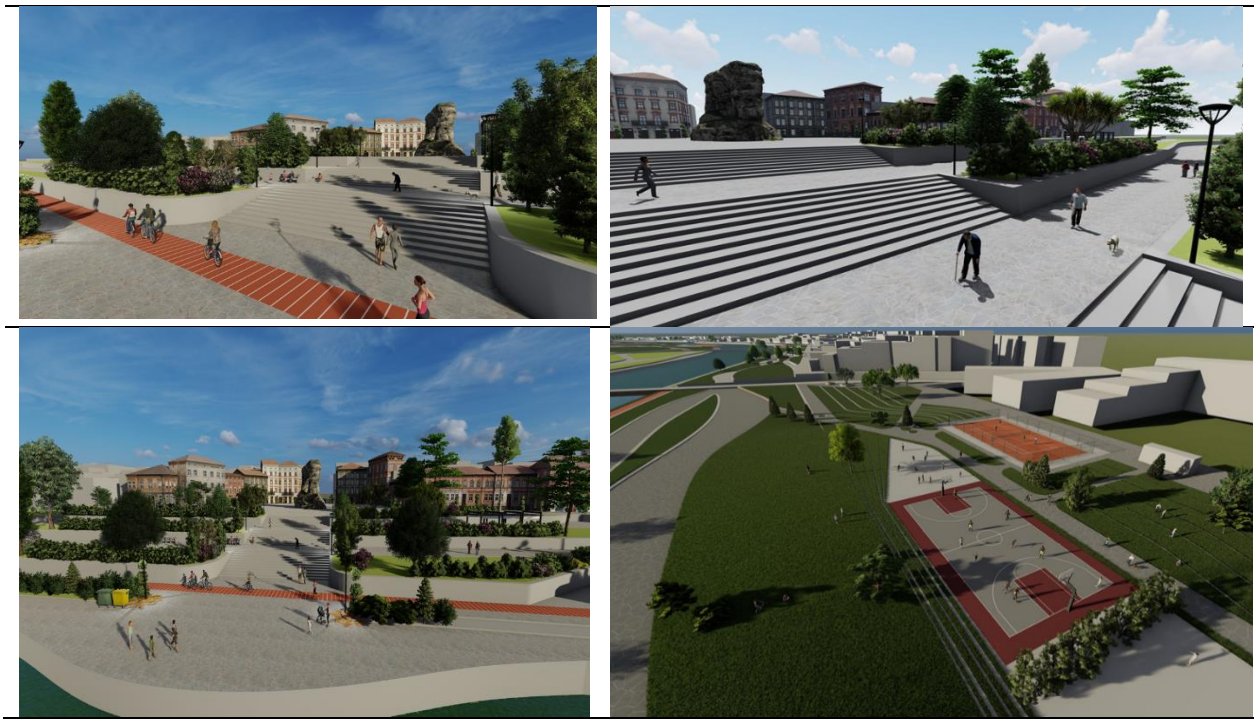


Fig.1.9 Creating differnet level of public spaces along the riverfront

For the purpose of recreation, different spaces are allocated according to the adjacent land use (Fig. 1.10). Different spaces like football grounds, basketball court, tennis courts, skate parks, children play area, teenagers playground and also picnic areas are separated as riverfront can be a space of utilization for sports and recreational activities.



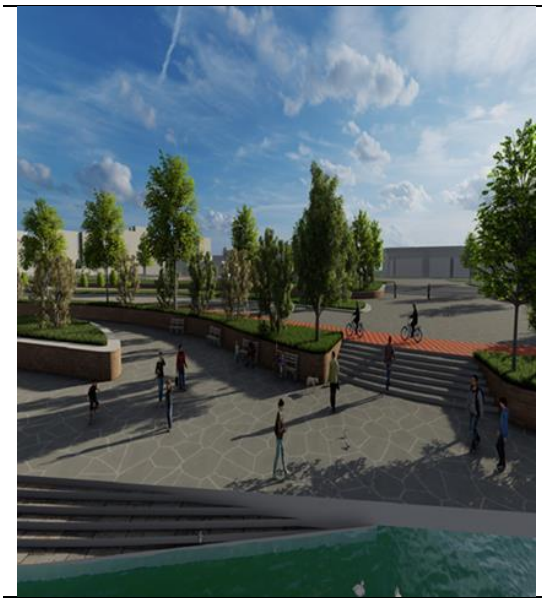


Fig. 1.10 Various recreational and sport activities along riverfronts

A space created with multiple opportunities that behold the essence of every age group, every race and culture. Heritage promotion strategy will also help the riverside areas to enhance the historical character and promote the heritage value of Kathmandu valley throughout the riverfront. Both the physical and visual connection between the riverfront helps to engage in their character and create a new generational development to uplift the lifestyle of the people. Also, integration of the bio swales and catchment areas will aid in rainwater harvesting which in larger scale can benefit to the society as well (Fig. 1.11).

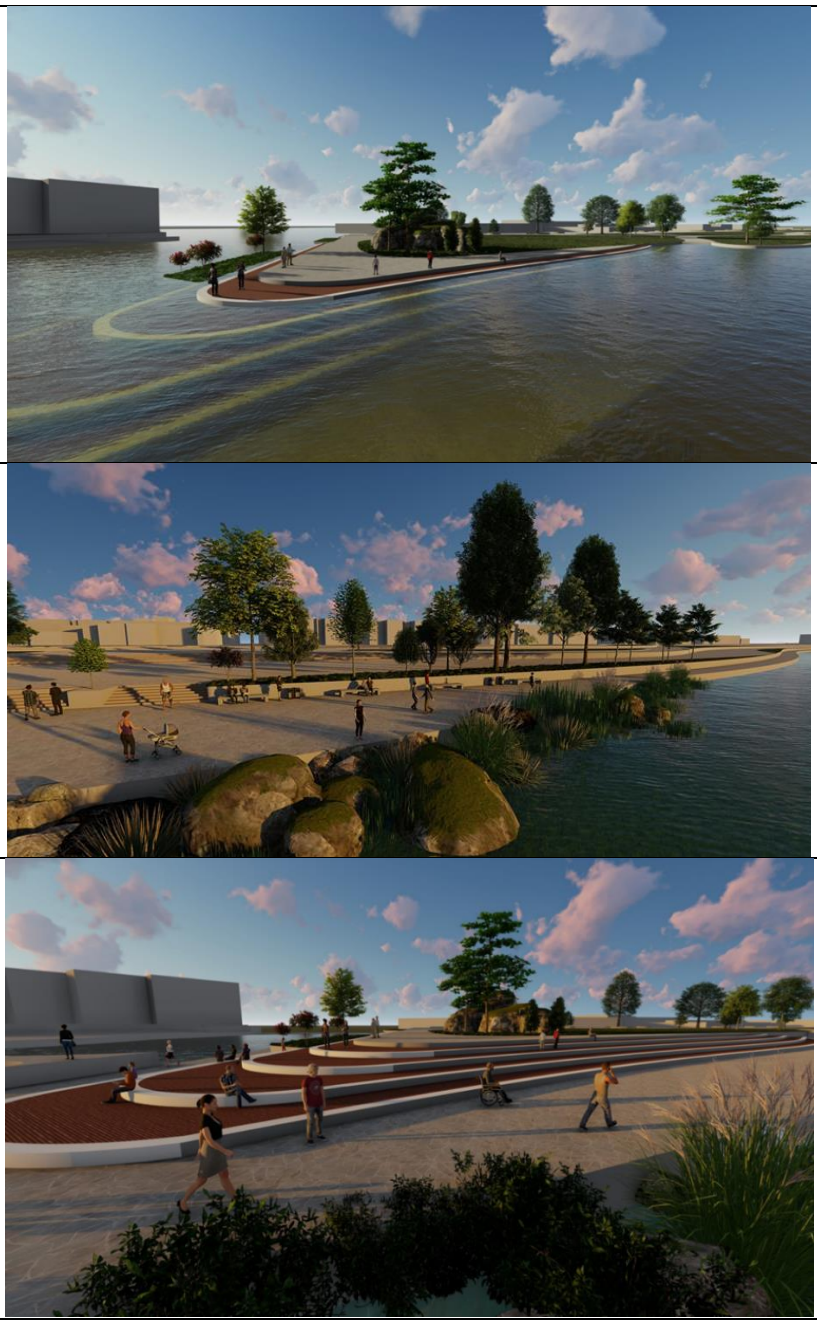


Fig. 1.11 Water edges designed with diverse public spaces for attraction of people

1.7 Conclusion

The proposal aims to bring positive changes to this urban scenario that not only has civic values but also cultural values which indeed is necessary to preserve. The Teku-Thapathali river stretch

redevelopment is a project that made us aware that an urban space should be able to cater all the functions and requirements of a convivial space. The planning here includes both the riverfront revitalization along with the redefining of the urban blocks adjacent to the riverfront. The riverfront spaces are designed so as to create a controlled urban space that increases both the legibility and imageability of the city form. Also aiding in creating a safe and sound place by applying crime prevention through environmental design (CPTED) measures as the spaces are clearly visible and no areas are kept unreachable. The new green planters are also introduced, either as decorative elements or as functional separators. Overall, the design not only changes the current urban structure nut rather transforms the space by adding diverse functions, improving circulation system and adding various urban land use patterns. The expansive undulating parks serves as a relaxing space as well as recreational zone for people of different.