

# Design Solutions for Revitalization of Buffer Zones in Cultural Heritage Sites (Case study: Kampung Jawa, Melaka, Malaysia)

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## Abstract

*This paper examines various design solutions for the urban regeneration of buffer zone areas in the context of cultural heritage sites. Although buffer zones play an essential role in protecting the values of core zones, due to the implementation of legislative limitations and local construction regulations, they suffer from a decline in urban growth. This study aims to suggest a variety of design solutions to regenerate the context of buffer zone areas after a critical study and analysis of their urban setting. The study area is in Kampung Jawa (KJ), situated in the historical city of Melaka, Malaysia. This study adopted a qualitative method to explore and survey the study area. The required data was collected through observation, questionnaire, interviews with stakeholders as well as available documents and statistics about the area. After analysing the data and based on the principles and design rationales derived from precedent studies, suggestions and recommendations for the revitalization of the site were developed in the form of design proposals. The study concludes that five important factors, including the sense of place, optimum land utilization, compatibility with the neighbouring districts, appropriate circulation network, and safeguarding imageability and identity of the site, are among the most vital factors for revival and regeneration of deprived buffer zone areas.*

**Keywords:** urban revitalization, buffer zone, cultural heritage, Melaka; Malaysia

## 1. Introduction

Buffer zone as a protective environment helps segregate the core zone from external opposed forces [1, 2]. The conservation projects need to be in accordance with the development of the area, and benefits for local people [3]. In addition to technical and structural matters related to historical sites, the buffer zone can also protect their visual and functional issues [4, 5]. Several limitations in setting, vistas, land functions, etc., may be set for a buffer zone to protect the valuable world heritage zones from the disturbance of the territories nearby. However, it has the potentials to attract developments that are profitable for the zone and the community [6, 7]. Neumann [8] declared that strict restrictions on land use of buffer zones, set by governments, might decrease property demand in these zones and make them undesirable for investors since they would prefer to invest in adjacent modern environments with lower building limitations and higher benefits. Hence, these underdeveloped zones may quickly turn into grey fields that can reduce their land values.

The particular potentials of grey fields within buffer zones of world heritage sites, such as physical values, are more than the other grey fields because a buffer zone of a world heritage site operates as a defensive layer with typical constraints for heritage sites to support them from external disturbance [9-11]. For world heritage sites, buffer zones are dilapidated environments at the perimeter of the core area, which assist in conservation, management, integrity, and the sustainability of the world heritage sites [12]. Protection of core zones is the primary function of buffer areas while providing benefits for the local community is of secondary role [13]. Several researchers declare the destruction of buffer zones in several projects as they were not considered to buffer the core zone for developing local livelihoods [14]. Limitations in land use distribution and human activities are the specific features of buffer zones [8,15]. Thus, a buffer zone should provide mutual support between the core area and the advantages for local people [16, 17]. It also can decrease unpleasant impacts on heritage zones by responding to the socio-economic needs of the local community and addressing the benefits

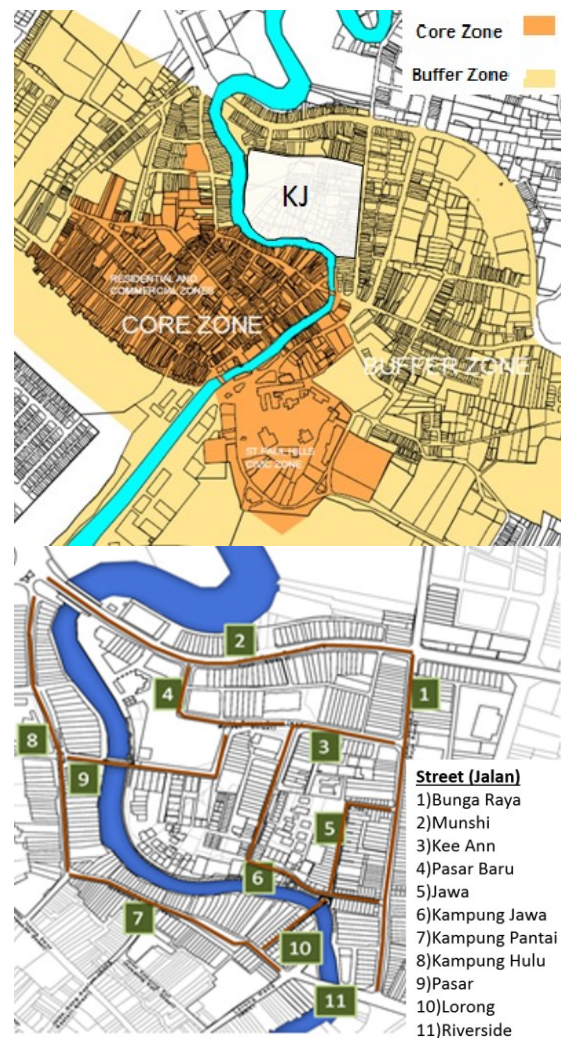
of world heritage environments with stakeholders to enhance a sustainable system [18, 19]. Previous studies on buffer zones mainly focused on ecological functions compared with their socio-economic issues [20]. Although the essential characteristics of buffer zones are common in natural and cultural issues, buffer zone implementation might be distinct for any particular environment [21].

This study focuses on KJ in Melaka, Malaysia. KJ covers a district of 6.5 acres, with a current population of 115 residents, located in the buffer zone of the heritage city of Melaka. Its proximity to the Melaka River, the unique starting point of the development of Melaka town, highlights its historical importance. The main streets which encircled this area are Kee Ann, Pasar Baru, Bunga Raya, Jawa, and Munshi Abdullah. It connects the historical zone of Melaka, named the core zone, to the adjacent areas (Fig. 1). KJ was a Javanese settlement that existed since the Dutch period. In the late 18<sup>th</sup> century, it had been named a fisherman village that was a popular spot for traditional shopping activities such as hawkers, vendors, and night markets. Nowadays, this district is named a conventional commercial centre with reasonable prices to buy various household merchandise, handicrafts, hawker foods, and street vendor activities [22]. In addition to different commercial activities, the landscape of this district represents vernacular architecture with shophouses, residential dwellings, and a traditional Malay Mosque adjacent to the river (Fig. 2). Currently, KJ is facing an economic crisis due to commercial competitions in this area; besides, the traditional shopping activities were affected because of closing the municipal market. Moreover, after the fire tragedy, this traditional district was turned into a slum residential area for the locals. Hence, due to these unpleasant issues, this area could not connect the core zone to the new development of the buffer zone. This study aims to propose different design solutions to revitalize the context of buffer zone environments to not only protect the historical sites but also benefit the local community.

## 2. Materials and Method

To create a successful approach towards the revitalization of buffer zones, it is crucial to determine the problems in the area, which eventually affect the spatial quality of the

environment. After reviewing the available literature and based on the situation and requirements of the context, a site study and a survey were conducted based on several factors, including visual connection and vistas, circulation network, sense of place, land use distribution, and quality of existing buildings and structures. The data was collected through available documents and statistics, GIS maps, field surveys, site observations, and interviews. The observation was carried out by going door to door, recording events on the site, and documenting the building properties that were significant in contributing to the spatial quality and vitality of the area. After mapping the collected data, the next step was to analyse and process the data to identify the significant problems of the site. This gave an insight into the spatial quality of the area and helped to propose future development of the site.

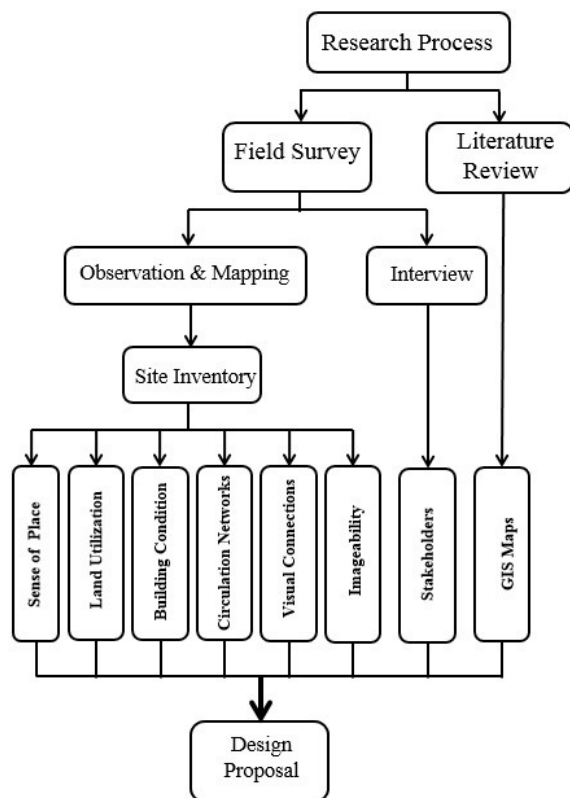


**Fig.1:**(Up) Location of KJ in the Buffer zone; (Down) The access network in KJ



**Fig.2:** Existing potentials in the KJ district

By observing and analysing the site, it was found that there are some issues that need to be dealt with. These issues are enumerated in the upcoming paragraphs. Figure 3 depicts the research process diagram.



**Fig.3:** Research process diagram

## 2.1 Fading of 'Sense of Place'

For many years, KJ was a favorite shopping center in Melaka city with a historical background. The commercial face of this vibrant district, such as the traditional bazaar with cheap and various merchandise, street vendors and hawkers, the active conventional commercial activities in Kee Ann and Bunga Raya Streets, contributed figuratively in forming the sense of place. Thus, the informal street activities are the central aspect of “genius loci” in KJ that have been the most significant source of income for the locals for many years. However, the commercial activities in this district were considered by the local authority as a public nuisance, causing traffic congestions and a lack of cleanliness in this area. Besides, the close adjacency of KJ to the Melaka River highlighted its sense of place. Still, the role of this river, as the main transportation route for loading and unloading activities in the past, has been faded after the advent of vehicles. Moreover, the municipal market was demolished and currently has been used as a parking lot. The traditional Bazar in this district was destroyed by fire twice and has not yet been recovered after its reconstruction. Hawker and informal activities were reduced due to the vast development of the site's surroundings. Several cinemas closed down in the area. Fisheries activities disappeared and changed into the water taxi services (Fig. 4). However, the area still managed to remain as one



of the city's active commercial zones despite the competition of other commercial districts. Thus, the revitalization scheme needs to be focused on developing those factors which can help to sustain and procure the elements of 'sense of place' in this area.

## 2.2 Inappropriate Land Use despite High Value

The land value in KJ was substantially low, while it locates between the core zone and the buffer zone, adjacent to the Melaka River with picturesque riverfront townscapes. The western part of this district is encircled by Bunga Raya Street, a prominent commercial road in Melaka with a land value of about 70% higher than the inner areas in KJ [23]. The lower land value of KJ compared to the other parts of the buffer zone was due to the existence of undeveloped vacant lands, residential slums, dilapidated buildings, wholesale shops and stores with incompatible land use, and inadequate provision of urban amenities in this district.

Vacant and abandoned lots in the site are considered a severe threat to the economic aspects as it declines the willingness of people to invest in this district resulting in a decrease in the market demands (Fig. 5).

## 2.3 Imbalanced Development Compared to the Surrounding Areas

As KJ is located in the buffer zone of the world heritage city of Melaka, it connects the core zone to the new metropolitan areas. Still, the site is underdeveloped and defined by weakly built forms with much lower density compared with its neighbor districts (Fig. 6).

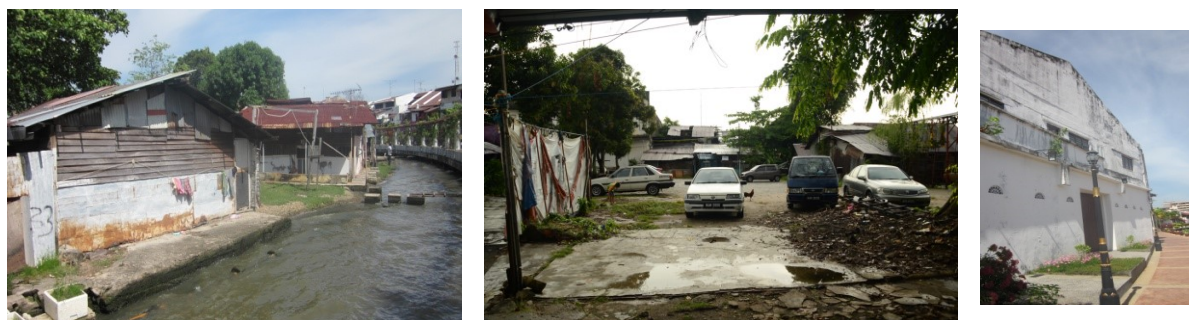
It was found that most structures in KJ have poor status without any significant architectural values. The site includes vacant lands, undefined and substantial open areas, low-density buildings with structurally deficient conditions, and incompatible land use making the site dilapidated with unpleasant townscapes.

## 2.4 Weak Physical Linkage and Connection (Pedestrian and Vehicles)

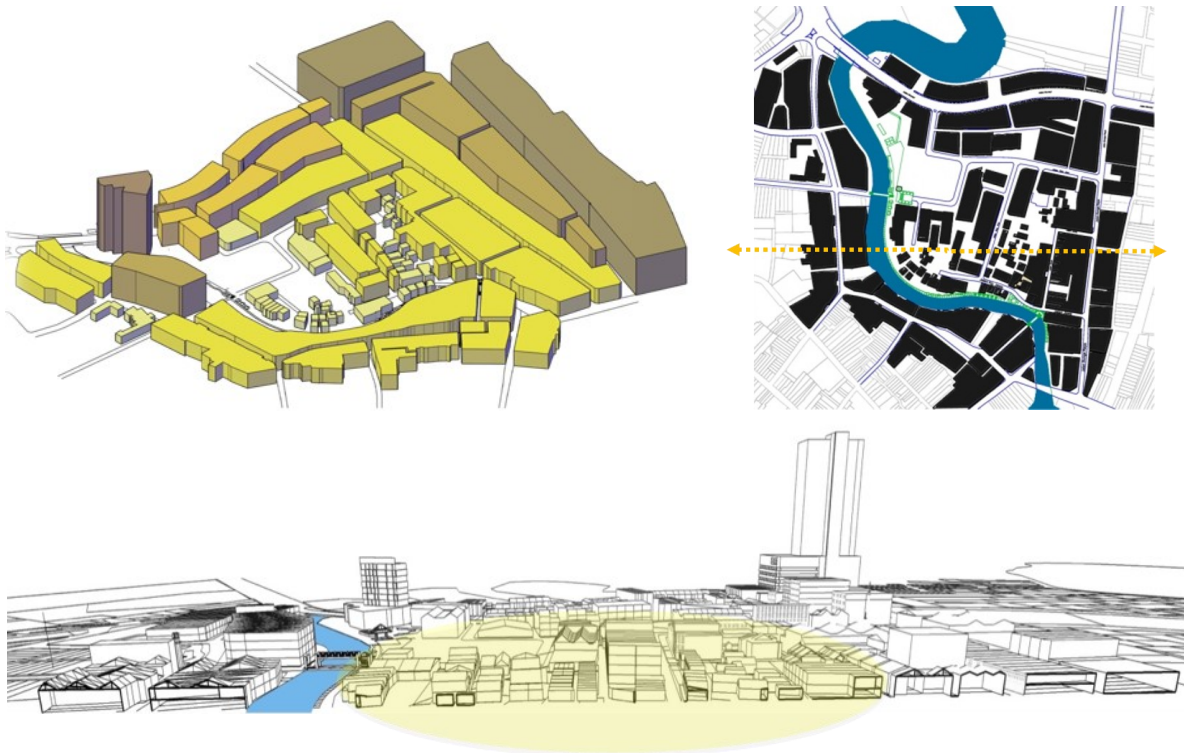
There is no connectivity between the buffer zone and the core zone in KJ due to low massing in the district. Moreover, it is not well-connected to the other side of the river because of unsuitable accessibility to the site except Bunga Raya and Munshi streets. The other side of the river is connected only by pedestrian



**Fig.4:** (A) Wet Market in the past but is an irregular parking lot now; (B) Traditional Bazaar was fired and never recovered after reconstruction; (C) Closed cinema that was active in the past (D) Fisheries activities have gone and changed to water taxi service.



**Fig.5:** (left) Run-down structures; (middle) Irregular open space; (right) Existing of a warehouse in the site



**Fig.6:** Perspective, Plan, and section of current structures in KJ to other parts

bridges. Bunga Raya Street, on the eastern part, and Kampung Pantai Street, on the southern part of the site, are the busiest routes with very high traffic volumes during a whole day (Fig. 7). They are usually congested with the occupied places, such as stores and warehouses, that disrupt the traffic flow due to loading and unloading activities of the wholesalers, wrong locations of the informal activities, improper amenities, and inadequate facilities for pedestrians to have a safe walking environment (Fig. 8). This situation is even more critical during night-time with insecure and unexciting spaces due to a lack of social interactions.

## 2.5 Poor Imageability

The imageability of KJ and its surrounding has declined because of the low-quality conditions

of the buildings with no attractions on the site, which have similar heights showing a sense of monotonousness, and in some cases blocked the visual connections (Fig. 9). Moreover, the unpleasant streetscape and lack of identified furniture and amenities made sense of insecurity to people caused much fewer activities along the roads in the site, especially during night times (Fig. 10). Thus, the site's potentials are not legible for visitors, and they tend to refuse to walk around this district while it is a popular shopping spot for the locals. There are several potentials to have pleasant visual connections from KJ to its surroundings, such as Jawa bridge (pedestrian bridge 1), Pasar Bridge (pedestrian bridge 2), the historical Kampung Hulu mosque, the shophouses with remarkable façades surrounded by informal street activities, but they are entirely neglected.



**Fig.7:** (left) High traffic congestion on Bunga Raya Street; (middle) Improper location of informal activities; (right) Traffic disruption due to loading and unloading activities of the wholesalers





**Fig.8:** Lack of proper amenities, facilities, and sidewalks for pedestrians in KJ



**Fig.9:** (left) Extreme difference between the opposing sides of the river; (middle) Unwelcoming entrance to the site from Jawa street; (right) Poor structures and vacant lands made unpleasant views



**Fig.10:** (left) Kampung Hulu mosque as a traditional landmark; (middle) Unpleasant views made by vast parking lots; (right) Undefined entrance to KJ from Pasar street

### 3. Results and Discussion

Figure 11 shows the functions, durability, and styles of the buildings on the site. It is clear that a considerable part of KJ includes vacant lands, wholesale stores, and residential buildings. Despite high values of land on the site, the functions of the buildings were not compatible with this valuable district and made it a dormant and unsafe area without vibrancy. The durability of buildings' structures in KJ was categorized into four groups of good, medium, poor, and derelict conditions. Based on this map, most buildings in this district have poor conditions. The unpleasant

status of their appearance changed some of them into obsolete buildings. The style of structures in KJ in terms of architecture was another criterion to evaluate the significance of buildings in this district. This feature represents the quality and durability of materials of the existing built forms. Four styles were considered for the buildings; vernacular, traditional, architectural values. As it can be seen, most of the buildings on the site were with no architectural significance. Finally, by overlaying the maps (buildings' function, structure, structures without any architectural importance that have incompatible functions while have located in a valuable land of the buffer zone.



Besides, several vacant lands, undefined open spaces, and substantial on-street parking lots existed on the site causing inactive, unpleasant, and unsafe environments. Rationally, it can be concluded that those buildings in KJ should be destroyed since this district has a high potential to redevelop as a vital part of the buffer zone in Melaka. Figure 12 shows the proposal to remove incompetent buildings in the site, while those retainable structures with admissible conditions were preserved in this district.

### 3.1 Land Use and Building Function

Based on the results of the field survey, mono-functional land use is one of the unsuitable features of KJ that results in decreasing liveliness and vibrancy in the site. This also does not attract people to come to visit this traditional district. As shown in Fig. 12, the vacant lands of KJ can be filled with different functions. Hence, various land uses were proposed for the new development in the area to connect people, space, and activities collectively for shaping a livable community. By introducing different functions, especially mixed-use buildings, the vivacity of the site can be considerably enhanced. Thus, four functions of residential, commercial, recreational, and mixed-use were identified to add vitality to the site (Fig. 12).

Mixed-use lots are positioned between the commercial and residential lots to connect various activities to each other smoothly. Moreover, mixed-use blocks can develop robustness and improve the sense of vivacity in the site. Leisure activities such as waterfront activities, including restaurants, cafés, and bars, are added to substantially inject color, life, entertainment, and vitality to the public realm in the site. Recreational activities are elongated all over the river to make the waterfront edge of the site active and livable during different times of the day, from morning to night. The cinema, which was active in the past times, has adaptively reused as an exhibition hall. Moreover, the traditional market is revived in the site, which represents handicrafts and local clothes. An art gallery is added to the waterfront lot to demonstrate the multi-cultural art and architecture of Melaka town (Fig. 12). To persuade the local inhabitants of KJ to return to their land, they have got priority to be accommodated in the new residential parts of the site. For the residential sector, two types of housing were proposed; terraced houses, placed on the western side, to relocate existing slum communities in KJ that reminisce about vernacular

architecture in Malaysia, and affordable residential apartment buildings, placed on the eastern side, to



**Fig.11:** (Up) Buildings' function; (Middle) Buildings' durability; (Down) Buildings' architectural styles in the site

improve local population and accommodate low-income people in this district. By developing a commercial function in this historic district, the business background of the site can be revitalized. The ground floor of new commercial buildings, within the central part of the site, has been devoted to fine-grain retails with a vast diversity in form and function to create vibrant street frontage. These fine-grain retails can encourage walkability in the site [24]. Moreover, they have the potential to enable higher densities to be achieved and can reduce costly and wasteful leftover spaces in this valuable district.

### 3.2 Circulation and Connectivity

The success of a town or a new development depends on how well the connections work in that area. Making connections is a fundamental feature of creating a sense of place. According to Figure 13, the circulation system managed to have reasonable vehicular accesses in KJ. By applying a T-junction instead of the cross junction, traffic flow and congestion can be softened; Besides, on-street parking lots and one-way streets are appropriate ways to be used on the site. Tight corners with restricted sightlines are considered in the site due to their traffic-calming effects. Privacy of the residential blocks is achieved by adding limited accesses in the residential areas, and shared parking lots are recommended to optimize the traffic circulation system. Moreover, underground parking lots have been proposed to save the high land value on the site. Designing a long pedestrian lane, that connects the Bunga Raya street to the Kampung Hulu mosque, can significantly enhance walkability, permeability, and encourage pedestrians to walk through the site. Adding appropriate pedestrian lanes all through the streets makes a permeable place with easy access to other nodes. Considering a bicycle route on the waterfront makes people bike instead of using vehicles on the site. Although vehicular access from the core zone to the buffer zone is not reasonable due to traffic congestion, adding another pedestrian bridge between these zones suggests more choices to pass as there is a far distance between the two existing bridges on the site (Fig. 13).

### 3.3 Visual Connections

Lack of permeability and visual accessibility caused weak connections between the current magnets and landmarks in this historic district. Through introducing new destinations on the site and creating a responsive circulation

network between them, a legible and understandable environment was designed that pedestrians even tourists can easily pass through it. By improving the choice of routes in the study area, visual connections have been reinforced, and the vistas can be terminated with meaningful spots and significant landmarks (Fig. 14). A visual connection is designed between the Kampung Hulu mosque, the oldest structure, and a heritage landmark in Melaka, and Bunga Raya street as a main commercial street. Besides a permeable physical connection, this route also provides a long visual connection to attract pedestrians and tourists to walk around this historical site. Visual access was introduced from Prima Hotel, on the northern part of the site, to the food stalls, on the waterfront, via Kee Ann street famous for gold shops. Another pleasant vista was designed from



**Fig.12:** (Up) KJ after removing run-down structures; (Mid) Proposed land use map; (Down) Proposed buildings' function map

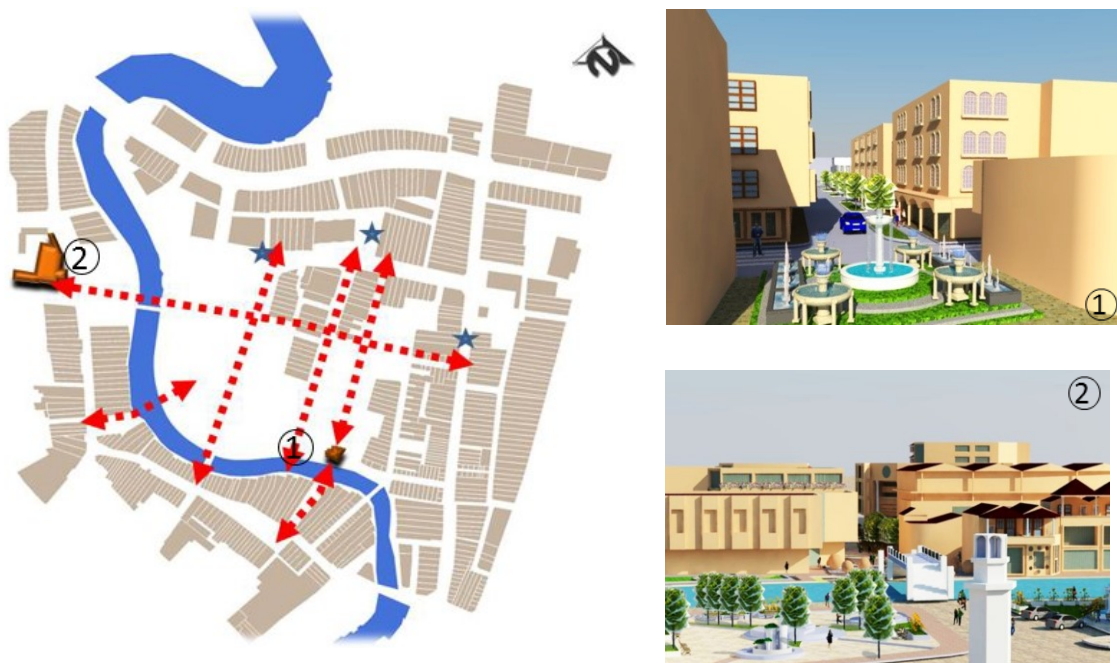


the Passar Baru street toward the Islamic Madrasah on the waterfront that redirects the same view to the fruit stalls within the core zone. In

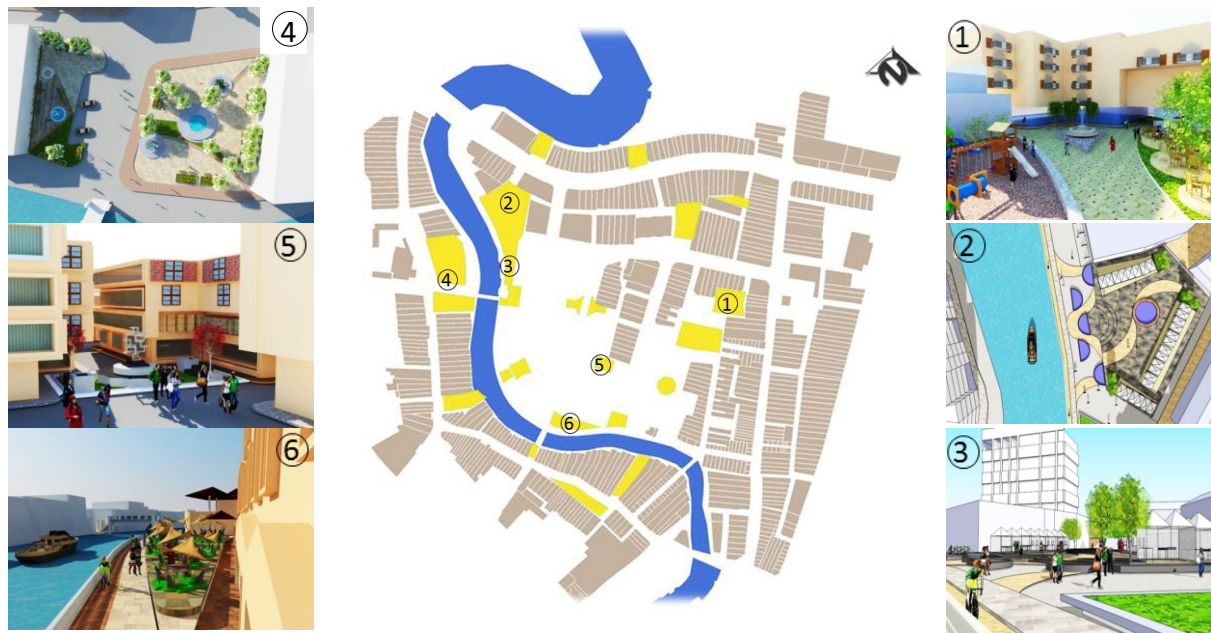
addition to a new physical linkage to the core zone, the new pedestrian bridge was also created a remarkable vista to the core zone (Fig. 14).



**Fig.13:** (left) Proposed circulation network in the site; (top right) Foot-over bridge to connect the main pedestrian route to Kampung Hulu Mosque; (down right) Vendor hubs to enhance mobility of the main pedestrian route



**Fig.14:** (left) Proposed visual connections and vistas in the site; (top right) Water monument Plaza as a leading destination in the buffer zone redirects visual access to the core zone; (down right) Visual connection from Kampung Hulu Mosque to the new pedestrian lane in the buffer zone



**Fig.15:** Proposed locations of the open spaces in the site: (1) a private park within the residential part with limited access provides a safe and pleasant environment; (2) a stall plaza near the riverfront to prepare commercial and recreational activities; (3) public open space on the riverfront to increase social interactions; (4) a livable public open space with sufficient urban amenities in front of Kampung Hulu mosque; (5) Central Plaza locates between commercial buildings as seating and resting green space; (6) Spill-out space in front of the restaurants adds vitality to the public realm

### 3.4 Open Spaces

Generally, people appreciate tight spaces to rest and do leisure activities in it since they feel a sense of belonging to them. The existing vast and undefined open spaces, vacant lands, and rundown structures caused destructive impacts on the site. Thus, the quality of public realms in KJ can be substantially improved by designing well-defined open spaces. Four different functions, squares, greenery or green belts, parks, and parking lots are accurately defined for the new open spaces on the site. As shown in Fig. 15, informal activities have been rehabilitated in these friendly spaces, the market stalls add a variety of colors to the public spaces, and the spill-out areas in front of the restaurants, café, and bars provide vitality to the public areas. The hawker and vendor stalls are reorganized in fixed and well-located situations. The public art plaza and water monument plaza have been designed to restore the socio-cultural aspects of this historic district. Several pocket parks and the central plaza are also intended to improve the landscape of the site. The design of a green open space with a playground in the residential area provides a safe, pleasant, and secure place for children. Adequate urban furniture such as seating places, lighting posts, rubbish bins, compatible trees, and green boxes have been designed to improve amenities in the outdoor spaces (Fig. 15).

### 3.5 Master Plan

Overall, Figure 16 illustrates a general view of the new developments in the site based on the design rationale as mentioned earlier. The open spaces have compatible relations with their surrounding areas and are connected by both visual and physical accesses. Hence, they have the potential for attracting pedestrians to walk in this heritage district. The main pedestrian lane, from Bunga Raya street on the east that terminates a pleasant view to Kampung Hulu mosque on the west, includes four open spaces with different functions that indirectly appreciate walkability.

The high lands value of KJ is the most significant feature of this historic district. Besides the economic issues, improvement of the socio-cultural aspects of this heritage site can help to revive the sense of place. The master plan of this district is designed based on the items below:

1. Adding choice of routes in the district to improve visual and physical connections.
2. Identifying mixed-use functions in the site to strengthen diversity and flexibility in the area.
3. Reinforcing the connections between the open spaces in the commercial sections.
4. Linking the main destinations on the site to give more choices of route to pedestrians.



5. Improving local activities by introducing adaptive reuse of traditional buildings.

Moreover, the suggested master plan includes diverse informal activities in the outdoor spaces, various pedestrian linkages, mixed-use developments, vernacular handicraft shops, etc., as shown in Fig. 17. The design of new developments in this valuable site is entirely compatible with the architectural aspects of the site, such as the skyline, visual features, vernacular traditions, etc., and it is in respect to the historic waterfront in Melaka.

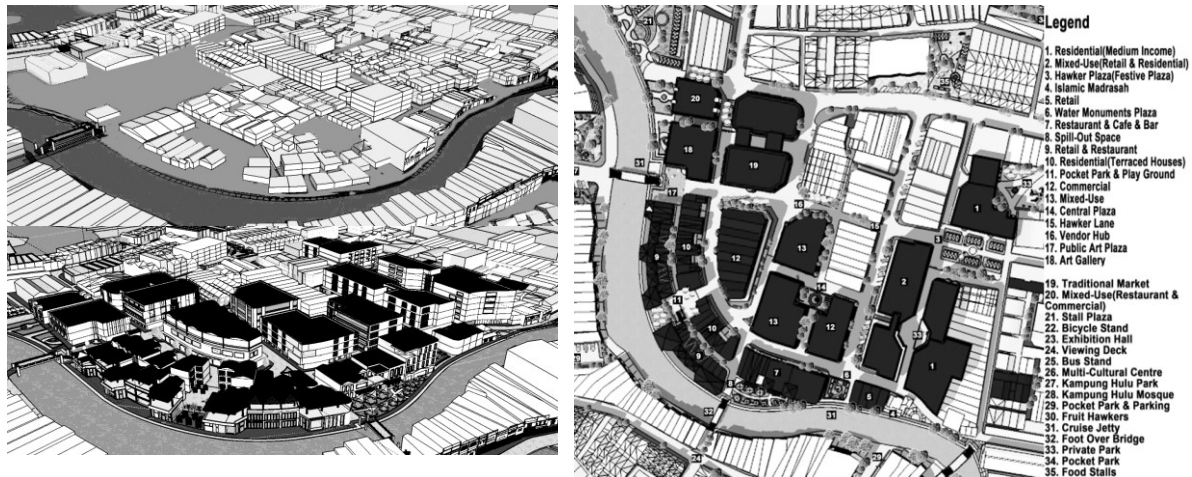
#### 4. Conclusion

Buffer zones have not just secondary significance to support core zones, but they are essential parts that encircle core zones. Recovering the conditions of these zones, in terms of planning and reinforcing, should be investigated as careful

design solutions can improve the image, as well as the spatial quality of the area. Implementation of buffer zone policy has converted KJ into an underdeveloped area, suffering from several issues, including lack of sense of place and imageability, inappropriate circulation network within and to the neighboring districts, unsuitable vistas, and visual connectivity, disorganized land use distribution, and mismanagement in land utilization. After a comprehensive study of the site, a design proposal at a large and detailed levels are suggested for the KJ district. Through the proposed design solution, demand and attraction for investors in such areas can be increased, which may result in an increment in the land value and economic growth of the area. It is recommended that similar design solutions can be implemented in other case studies based on contextual situations. In fact, researchers' job is



**Fig.16:** The proposed conceptual plan of the site: (1) Before: an undefined colossal parking lot with unpleasant view, After: Hawker plaza used as a festive plaza; (2) Before: unsuitable parking lot obstructed visual access to the riverfront and shophouses in the core zone, After: water monument plaza as a new destination creates visual permeability to the core zone; (3) Before: irregular and vast open space hindered suitable vistas, After: a public park directs a vista towards the landmark in the core zone



**Fig.17:** Master plan and perspectives of before and after revitalization approach in the site

usually limited to studying the problem, analyzing the connected variables and suggesting solutions with broader possibilities. However, any suggestion should be more egalitarian based on the involvement of local people along with local government agencies. If there are some design-based institutions in and around the area, their involvement in the shape of public design competition shall go a long way in improving the site under consideration.

## 5. Acknowledgments

We extend our gratitude to Universiti Teknologi Malaysia (UTM) for providing the supervision and guidance for this project.

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