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A MORPHOLOGICAL ANALYSIS OF THE WATERFRONT IN CITY CENTRE, KUALA LUMPUR

Nurul Syala Abdul Latip¹, Tim Heath², Mohd Shahir Liew³

^{1&2}University of Nottingham, United Kingdom

³Petronas University of Technology, Malaysia

laxnsa@nottingham.ac.uk

Tim.Heath@nottingham.ac.uk

shahir_liew@petronas.com.my

ABSTRACT

The increasing concern for a sustainable development and the significance it should have on future waterfront, places urban design - with its key concern for contextual integration – in a uniquely important position. One of the main factors in contextual integration is the morphological evolution of the place. This paper focuses upon the case study analysing the morphology of Kuala Lumpur waterfront by adopting the method developed by Conzen (1960). Three significant periods of the waterfront development were examined and through this, nineteen waterfront treatments were identified which are suggested vital to be acknowledged for future decision making on the Kuala Lumpur waterfront.

INTRODUCTION

In the approach to achieving sustainable development of cities that have a water body, urban design factors are taken into consideration in many cities as a tool to create a better public realm at the waterfront areas (Hoyle, 2001). In the development of the waterfront area as the public realm, contextual integration is found to be a very important factor to sustain the area (Hoyle, 2000). Contextual integration in this research means the physical and functional relationship that a development/ building has with its surrounding (Carmona, 2003). The research observes in one of the most important parts of contextual integration at the waterfront which is the contextual integration with the water body itself. It is important for the waterfront to have a positive contextual integration with its water body for the public to enjoy the existence of the water body in their city. The large differences in the treatments of the waterfront to water edge will affect the quality of space in the relationship of building and water (Owen, 1993). Therefore this research aims to identify the waterfront treatments available at the Kuala Lumpur waterfront through morphological analysis which is suggested to be vital in achieving positive contextual integration between the waterfront and the water.

METHODOLOGY

Trancik (1986:114) opined that in order to achieve the contextual relationship of a place, it is imperative to examine the historical development of the urban form because many successive layers of the most recent development are lacking in terms of the continuity of time and missing in terms of symbols and fragments of the past due to the insufficient inquiry and understanding on this matter. The systematic morphological method developed by Conzen (1960:5) which an adopted evolutionary viewpoint, in seeking explanation ‘the arrangement and diversity of an urban area in terms of plan type and resulting geographical division’ were employed. The term ‘waterfront’ in this research is the area within fifty metres from both banks (DID, 2005). Based on archival records (maps, photos and documents) the morphological development of Kuala Lumpur in relation to its waterfront is traced. The morphological periods identified can be divided into three significant eras, which are: i) Early waterfront establishment – river decline (1857 -1910) ii) River decline - the commencement of the ‘waterfront regeneration’ (1911 – 1978) iii) ‘Waterfront regeneration’ till current (1979 – 2009).

THE MORPHOLOGICAL PERIODS

Early waterfront establishment – river decline (1857 -1910)

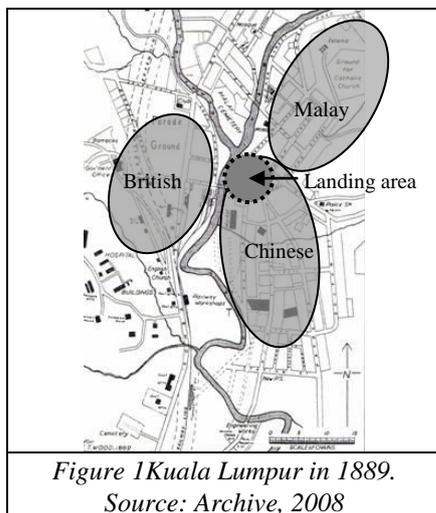
The river which was once the main transportation mode plays a very important role in the development of Kuala Lumpur city. The river becomes the edge that separates the city (Shamsudin et.al, 2008) and the waterfront is the nucleus of the city. This can be seen clearly in the earliest settlement. It was at the confluence of the Gombak and Klang Rivers, Kuala Lumpur was founded by Raja Abdullah in 1857 during the search of new tin mining areas. The Malay settlement concentrated at a place now called Silang Road and Rawa Village. The Chinese settlement concentrated to the south near Petaling Street. In 1880, the west bank of Klang River became the settlement for the new British residency and administration buildings (Figure 1).

In the 1890s, though Kuala Lumpur had started to establish as the trading post for tin, it was not yet a modern town. During this year, the first Sanitary Board was formed in the Malay Peninsula (Khuo, 2004) to advise the British Resident with 'day to day running of the town' (Shariff, 1989:12). The night soil service which used movable buckets was introduced, indicating the start of planning activities in the town. There was no proper planning policy available at this time and the town developed organically according to necessity (Abidin,1990).

By 1906, major improvement over twenty six years from a small village to a township could be seen. Though the economic progress, tin field around Kuala Lumpur was held back due to the lack of communication which then relied on the river. It took three days to reach the port in Klang. The first attempt to replace the river was done by constructing a road about fifteen miles south of Kuala Lumpur. The road was replaced by the railway in 1886 which shortened the journey to forty three minutes (Gullick, 1988). Though the function of the river started to decline since then, the river was recorded to still be in use till 1910 before the train station was built.

River

The two major rivers (Klang River on the east and Gombak River on the west)(Figure 1) running through the city and merged in the middle forming a 'Y' shape and thus divided the city into three significant land parcels, then continuing southwards to Port Klang.



In the north west area was the confluence of Batu and Gombak River that formed another smaller parcel (CHKL, 2008). In the beginning of Kuala Lumpur settlement (during the nineteenth century) the two main rivers were at their natural state meandering from north to south with multiple bends. The two biggest bends were located at the south part, better known as the 'S' bend. The structure of the Klang

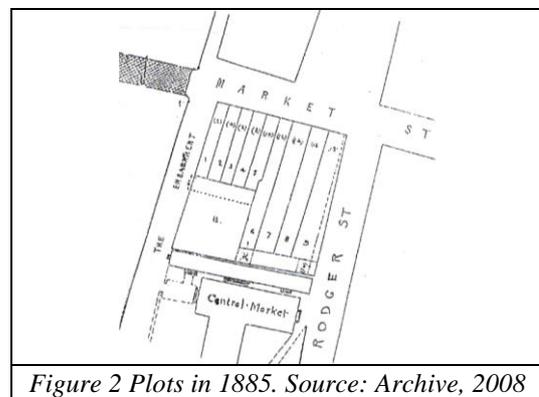
river started to change when one bend of the river was straightened in 1890s to make way for the railway good yard and to provide space for an engine shed (Gullick, 2000). The meandering bends of the Gombak River were still intact during this period. An embankment was constructed nearby the original landing place (Market Quay) to secure the area from flood. Based on Swettenham's report, river banks were also improved in 1887 (Gullick, 1988:82).

Street

From the original landing place at the waterfront area, there were two foot tracks along the east bank of the Klang River, one going upstream towards Ampang, another towards Petaling tin-mining area (Gullick, 1994). A new settlement grew nearby the landing place in the shape of a square which developed into a market place- better known as the Old Market Square (Figure 1). By 1875 there were already a few streets established around it which include the Cross Street on its north and Market Street on its south which both ran straight down to the river (Gullick, 1994). Both streets were perpendicularly connected to the High Street which ran parallel with the river. Market Street was also connected to Petaling Street. Cross Street was later connected to Pudu in the east, also towards a mining area. Ampang Street and High Street were crossed by Jawa Street in the northeast which also ran straight down to the river (Gullick, 1994). Some of the early roads were very narrow, only about 12 feet wide.

Plot

Plots, areas which were confined by the streets that existed during this period, were as irregular as the street itself. As the streets developed and crossed each other, plots were formed in between in various sizes. Many of the large plots which comprised smaller lots accommodated the linked shophouses (Gullick, 2000)(Figure 2).



Single building also varied but most were at the centre of the plot. The earlier plots formed were at the Market Street south of the Old Market Square and

next to the river where the nucleus of the city started. These plots had very narrow frontage and a great depth towards the back to make the most of its location (Figure 2).

Building

a) Residential and shops

Kuala Lumpur in the early days comprised of buildings which were made from wood and palm thatched roof. The Malay settlements were of single stilted buildings arranged organically according to the topography and some were abutting the rivers. The Chinese, linked their houses along like a street system on the ground with a narrow street in between (Shariff, 1989). The houses that were built with low quality material were engulfed by fire in 1881. For safety purposes the material of the houses was replaced with mud. In the same year, flood occurred and destroyed all the houses that were constructed from mud (Gullick, 2000).

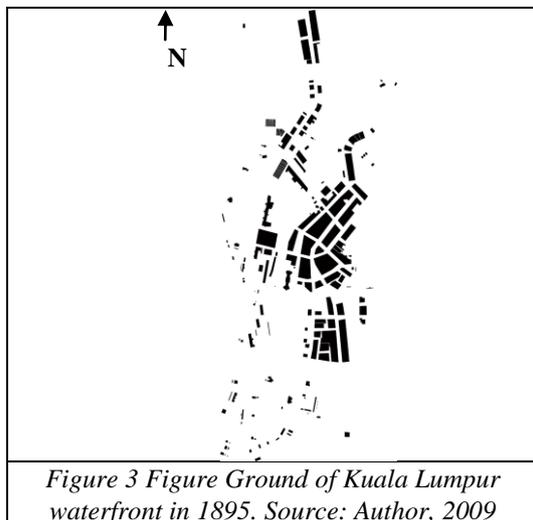


Figure 3 Figure Ground of Kuala Lumpur waterfront in 1895. Source: Author, 2009

A law was later introduced by Swettenham to develop Kuala Lumpur 'road by road' using bricks for the wall and tiles for the roofing. The first rows of shops and houses built with the new building materials were well arranged at Market Street nearby the river. This was later followed at Ampang Street, High Street and then Pudu Road (Gullick, 1988:39). With the pressure of the growing population in the limited space available, the earlier single storey buildings were later replaced by two storey and even three storey (after 1900) (Gullick, 1994:19). At the back of the building, a sanitary lane had to be provided to allow a bullock cart to go through at night to collect the night soil and at the same time provision for fire engine. By 1895, the area on the east bank of the river had become almost fully developed and started to expand to the north (Gullick, 2000) (Figure 3).

b) Public buildings

A few major public buildings were built during this period including the Sultan Abdul Samad Building (the Selangor Secretariat)(1897). The construction of this building took the double frontage approach towards the road and the river similar to the design of the Market which was constructed on the east bank next to the embankment area. Jame Mosque was designed to have the entrance steps direct from the river. Many of the public buildings are still standing today though their function had changed from time to time.

The waterfront treatment

Based on the morphological analysis for this period (1857-1910), there are six main types of waterfront relationship/treatment that can be identified (Figure 4). The first type (A1) are the residential buildings which abutted the river. These are in the early Malay settlement which depended on the river for their daily routine from transportation to washing. While the sanitary system was unavailable, the houses were built backing the river where its kitchen and bathrooms were located for easier access to the water (Hajeedar, 2008). The second type (A2) is the building that was built parallel to the river with frontage facing the street and side elevation facing the open space in between the building and the river. This is obvious for the shophouses in the earlier 'road by road' planning at end of the row of Market Street next to the embankment. The third type (A3) are buildings which had double frontage and having street/open space in between the building and the river.

Early waterfront establishment - river decline (1857-1910)		
Type	Diagram of type of waterfront treatment	Description
A1		Building abutting the river on stilts and backing it
A2		Building built parallel with the river facing the street with side elevation next to the open space in between the building and the river
A3		Building with double frontage facing the main road and at the same time having entrance from the riverside with street in between
A4		building built facing the road and backing the river
A5		Building built facing the river with street in between
A6		Building with entrance and steps directly from the river

Figure 4 Waterfront treatment between 1857-1910. Source: Author, 2009

This situation can be seen at the Sultan Abdul Samad building and the Old Market. As for the latter, the entrances were available from both Rodger Road and the riverside, providing direct entrance for people coming from the landing area.

The fourth type (A4) are buildings which were backing the river and faced the street. This situation is obvious for the Victoria Institution School or known by some as the 'school at the river bend' (Chung, 2000). The fifth type (A5) is a building that has only a single frontage which faced the river but having street in between. This example can be seen at the row of buildings which were built along Holland Road where the Chow Kit Building was situated. The final type (A6) is the building which has an entrance directly from the river such as the Jame Mosque which clearly shows the importance of the river to the people at that time.

River decline - the commencement of the 'waterfront regeneration' (1911 – 1978)

By this period the city developed further away from the river which was once its nucleus. The commercial area here expanded further south towards Brickfields. Though public open space in the city centre was urgently required but it was not yet implemented even in 1948 (Hancock, 1948). Based on the documents available, none of it mentioned the possibilities of the river and its waterfront as potential public place.

By the year 1950s, the town was becoming really congested and the land price was inflated, the situation worsened when many squatters built along the waterfront. Due to the congestion and the rapid growth in the town centre, the planners decided to relocate the squatters and also the industrial development outside Kuala Lumpur into a new satellite town called Petaling Jaya (Khoo, 2004). In 1960 and 1970s, new areas were opened up for housing projects within the vicinity of the town to accommodate the growing population.

River

Continuous changes were happening at the urban rivers as well. In the year 1925, KL was hit by a severe flood killing thousands of people. The earlier proposal to straightened the 'S' Bend was implemented in the 1930s with the purpose to minimise the impact of the flood and at the same time the banks were raised higher to control the situation better. Continuous effort in straightening the river for flood mitigation measures can be seen throughout the following years on both Gombak and Klang Rivers. The steps taken were found to be effective during that time (Shariff, 1989). In 1971, Kuala Lumpur experienced another big flood stalled all economics and daily activities. Since then, serious attention was given to control development, upgrade

and clean up the river and its waterfront (Zulkarnain, 2008). Concrete channeling of the river were proposed in 1978 for the purpose of 'upgrading' and for easier maintenance (Zulkarnain, 2008; Hajeedar, 2008). The solution was seen as a total engineering work to mitigate the flood. This was the start of the 'regeneration' of the waterfront though consideration to contextually integrate the waterfront and the urban river by creating places for the public had not yet taken place (Zulkarnain, 2008; Hajeedar, 2008; Chandran, 2008).

Street

The early 1900s saw the introduction of the motor transportation system. The road and rail systems had taken over the function of the river totally. The network system which was unplanned developed over time according to necessity and this had led to major traffic congestion in the present environment due to the concentration of vehicles in the Central Commercial Area where roads are about 30% of total land use. 'There was no available road system master plan simply because there was no reliable master plan for Kuala Lumpur then' (CHKL, 1977:10). The road that were designed to accommodate bullock carts, pedestrians and bicycles were now use by cars and trucks. The inefficient public transport made private transport the public's priority.

Plot

During this period many lots were amalgamated to construct bigger buildings.

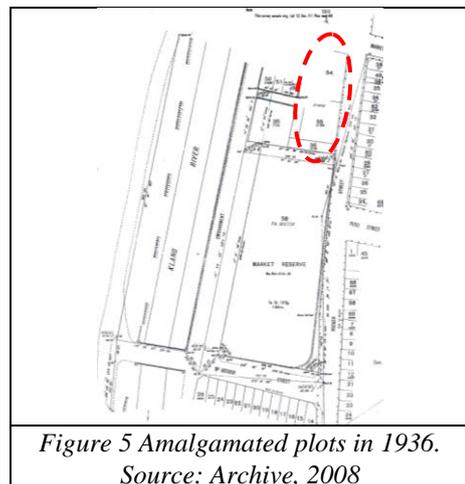


Figure 5 Amalgamated plots in 1936.
Source: Archive, 2008

Examples of this can be clearly seen in the plots along Market Street. Four lots (6,7,8,9)(Figure 2) were amalgamated to become two lots (54 and 55) (Figure 5). This situation occurred in many parts of the city. Due to the high concern about uncontrolled development of buildings in the heart of the city, the proposal to regulate the controls on future buildings for both public and private purposes in the heart of

Kuala Lumpur using plot ratio and plinth control was put forward during this time (TPD, 1960).

Building

Building development continued to be active in the 1920s but by the early 1930s the industry was halted due to the world economic crisis and by the Pacific War that occurred between 1939-1945. Some of the brick and masonry building construction continued. In the year 1936, the masonry building called the Central Market was erected replacing the previous old market with the same double frontage design (Davis, 1937). Soon after the war ended the building industry started to pick up again (Concannon, 1958).

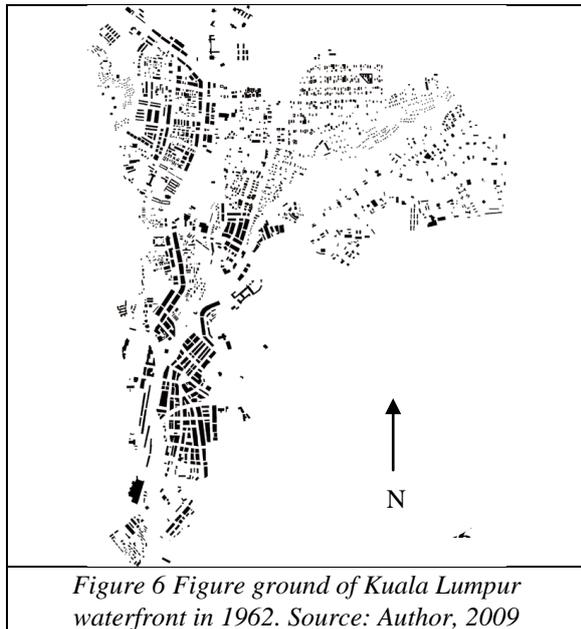


Figure 6 Figure ground of Kuala Lumpur waterfront in 1962. Source: Author, 2009

After the war, as there were great increases in population, so was the building expansion along and in between the two rivers (Figure 6). According to Concannon (1957), there were a few completed blocks that varied from five to ten storey. Further concern heightened with the continued development of the skyscrapers which were not only restricted to office building but also the residential building (Concannon, 1957).

The waterfront treatment

Based from the morphological analysis of the second period (1911 to 1978), another eight types of waterfront treatments were identified with two being repetitive from the earlier situation (Figure 7). The first type (B1) are buildings that were built to face the main road and backing the river with a backlane in between the building and the river. This situation is apparent at the shoplots which faced the Old Market Square along the Klang River. The second type (B2) are buildings that were built facing the

main road, sitting paralleled to the river with having a street in between. This situation is obvious for the end lot of the shophouses at Ipoh Road.

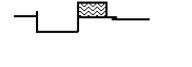
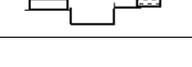
River decline - commencement of 'waterfront regeneration' (1911-1978)		
Type	Diagram of type of waterfron treatment	Description
B1		Building backing the river with backlane in between
B2		Building facing the main street perpendicular to the river with street in between
B3, A5		Building built facing the river with street in between
B4		Double frontage with open space in between building and river
B5		Building backing the river facing the road with street in between
B6		Building backing the river with backyard in between
B7		Building facing the street and abutting (backing/perpendicular) to the river
B8, A2		Building built parallel with the river with open space in between

Figure 7 Waterfront treatment between 1911-1979. Source: Author, 2009

The third type (B3) is a repetitive situation of 'A5' (Figure 4). These were buildings built facing the river but having a street in between. Examples of this can be seen along Church Road and Ampang Road.

The fourth type of treatment (B4) is the double frontage building with entrances from the main street and the river. This type of waterfront treatment can be found at the Central Market building. The fifth type (B5) is buildings that were built facing the road, with back to the river and having another street in between the building and the river. This situation can be found in the Convent School at Church Road and the Police Station at Bandar Road. The sixth type (B6) is building which are facing the street and having the backyard in between the building and the river. This type of buildings can be seen in the houses built along Raja Abdullah Road. And the seventh type (B7) is buildings that were built facing the road, abutting and backing the river. This type of waterfront treatment can be seen in the residential buildings built along Raja Laut Road and in Wisma Yakin on Melayu Road. The final waterfront

treatment (B8), a repetitive situation with 'A2' (Figure 4), are buildings that were built parallel with the river, with side elevation facing the river and an open space in between the building and the river. Example of this situation is the HSBC building along Benteng Road.

'Waterfront regeneration' till current (1979 – 2008)

By the late 1970s and 1980s, the city was congested due to population increase. As Malaysia moved towards an industrial base from an agricultural economic country, many people swamped the city centre from the rural areas in search for work (Muhammad, 1999 in Sulaiman, 2000). This had somehow increased the squatter problem in the city due to the low affordability of houses in KL. According to United Nations (1996), there were about 150,000 squatters in Kuala Lumpur which made up 17% of the total population of KL and many of them settled at the waterfront. According to Gan (2008), in the mid 1980s, massive relocations of the squatters along Klang and Gombak River were done. To reduce the congestion in the city, new development areas were opened up at the outskirts of the city (KLSP 2020, 2004). By the 1990s, with the limitation and high priced land and allowance for higher plot ratios, the buildings were built higher in storeys and some of them are evident at the waterfront area. By this period also, policies and laws started to be drafted and gazetted to promote the contextual integration between the waterfront and the river (Shamsudin et.al,2008)

River

During this time, much effort was made in cleaning and straightening the river (Refer Figure 9). The main purpose was for flood mitigation and easier maintenance. The riverbanks were 'improved' by concreting and channelizing them (Hajeedar, 2008). However, this had transformed the form of the natural banks to be a 'monsoon-drain like' feature (Star Online, 2008). It was in the late 1980s that the Mayor then make a move with the support from the Prime Minister to 'renaturalised' the river at the confluence of the Gombak and Batu River. In the late 1980s, walkway along the river in the city centre were improved to allow pedestrian access along the river and since then buildings were encouraged to face the river (Zulkarnain, 2008).

Street

By this period, the roads in the older area remain intact but in other areas within the city centre changes were made from time to time to accommodate the increasing private transport and also provision for public transportation facilities (Juminan, 2008).

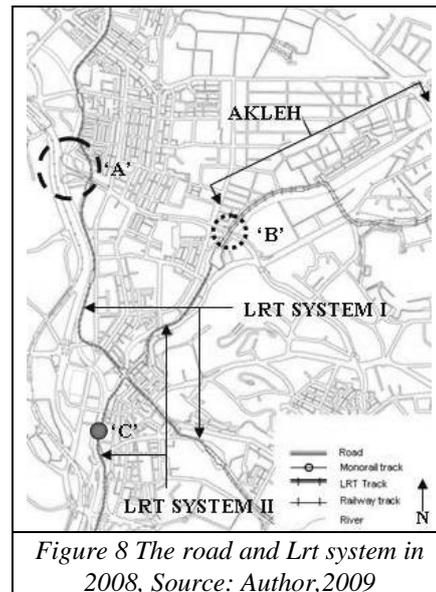


Figure 8 The road and Lrt system in 2008, Source: Author,2009

In the early 1990s the by-pass between Sultan Ismail Road and Raja Laut Road to and from Kuching Road was constructed which crosses the Gombak River as shown as 'A' (Figure 8). The years 1993 – 1998 saw the construction and completion of the Light Rail Transit (LRT) where most of the alignments of the rail tracks were constructed along the river (CHKL, 1996). The entire LRT System I was completed in 1998 which runs on a viaduct. Partial tracks of the LRT System II before point 'C' from the south also run on a viaduct and then they descended into a tunnel system for the rest of the track of system II northwards within the city centre. With the completion of the tunnel system, the pedestrian promenade above the tunnel at Benteng Road along the waterfront was also completed (CHKL, 2008). In 2001, the first 7.9km elevated highway in Malaysia known as the Ampang-Kuala Lumpur Elevated Highway (AKLEH) was completed by having the Klang River sandwiched in the middle. By 2007, many pedestrian walkways along the river were also upgraded and paved.

Plot

As in the previous period, many of the smaller plots were amalgamated to build bigger buildings. According to Hijjas (2008), it will take at least eight plots of shoplots to make up a feasible highrise building. There are also some new plots which were opened up in the late 1970s that were larger in size such as the ones along the Gombak River waterfront at Raja Laut Road. This is where many highrise buildings were concentrated in the city centre.

Building

The 1980s, 1990s and 2000s saw the mushrooming of highrises in Kuala Lumpur many of which were also located at the waterfront area. LRT stations were

also built as the construction of the LRT tracks were taking place. By this time, new buildings built along the waterfront were required to address the river and this can be seen implemented at the Medan Selera Batu Road which faces the river and is landscaped and terraced (towards the river) with public space provided in between the building and the river. However, with the present requirement in place, there were also new buildings built that having their services and car park facing the Klang river.

The waterfront treatment

Based on the morphological analysis of the third period (1979-2008), another thirteen types of waterfront treatments were identified with six having repetitive features from the first and second period (Figure). The first category of waterfront treatments (C1) during this period are midrise/ highrise buildings, backing the river and having a backlane in between. Under this category there were two types of developments, which are i) those built on amalgamated plots of the old shoplots and ii) those built on new, larger plots. The second category (C2) is a repeat of (B7) (Figure 7). These were buildings that faced the street and at the same time abutting (backing/perpendicular to) the river (backing or perpendicular to it). Category three (C3) is a repeat of B6 (Figure 6) where the buildings are backing the river and having backyards in between. These kinds of treatments are obvious at the PWTC building. The following category (C4) do not comprise buildings but rather development along the river which has the river form 'naturalised'. This treatment can be seen at the confluence of Gombak and Batu Rivers. The fifth category (C5) is a repeat situation of A5 (Figure) and B3 (Figure 7). This is one of the most common treatment identified which is where the buildings faced the river with street/ LRT in between.

The sixth category (C6) is also a repeated category from the previous period (B2)(Figure 7). These are waterfront developments that face the street and having a side elevation facing the river with another street in between. These situations are obvious for corner lots of terraced shplot buildings at Ipoh Road. The seventh category (C7) is a repeat situation of (B5) in the previous period (Figure 7), buildings which face the road and back the river while having a street in between. This situation is apparent at the Sogo building on Raja Laut Road. The eighth category (C8) are buildings which perch at the river edge either suspended or having columns in the river channel. This situation can be seen at the LRT stations such as the Station Pasar Seni and Station Bandaraya along Raja Laut Road. The ninth category (C9) are developments which were built above/ crossing the river. These are obvious at LRT station Masjid Jamek and LRT Station PWTC.

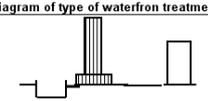
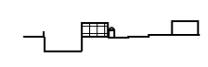
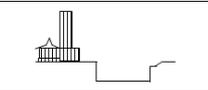
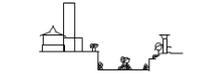
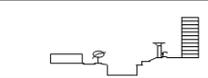
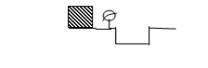
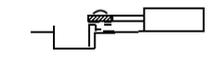
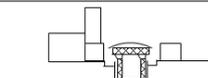
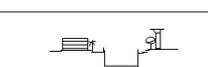
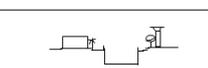
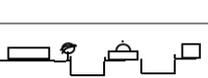
Commencement of 'waterfront regeneration' till current (1979-2009)		
Type	Diagram of type of waterfront treatment	Description
C1, B1		Mid and Highrise building backing the river with backlane in between
C2, B7		Building facing the street and abutting (backing/perpendicular) to the river
C3, B6		Building backing the river with backyard in between
C4		River feature 'naturalised'
C5, B3, A5		Building built facing the river with street/LRT line in between
C6, B2		Building facing the main street with side elevation facing the river with street in between
C7, B5		Building backing the river facing the road with street in between
C8		Building perched at the river bank with columns in the river channel
C9		Building - on top of the river
C10		Building which originally faced the river is now blocked
C11		Building facing the river with public space in between building and river
C12		Terraces built facing the river for public
C13		Building which originally has direct connection to the river is now doesn't

Figure 9 Waterfront treatments between 1979-2009. Source: Author, 2009

The tenth category (C10) is development which is facing the river but blocked by other urban elements. This is apparent at the Central Market Building and waterfronts along Ampang-KL highway (AKLEH). The Central Market, which used to have a double frontage (refer to B4) that addressed the river and Hang Kasturi/Roger Street, were totally blocked from the river by the wall built for the tunnel track system which descended at this point from the viaduct track system. And the waterfront at the area where AKLEH was built was also totally blocked both physically and visually from the river. The eleventh category (C11) comprises developments which were built facing the river and having public space in between. This is obvious at Medan Selera, Batu Bata Road. The twelfth category (C12) is

development of terraces which face the river and allow the public to enjoy the river. This is evident at the waterfront along Pekeliling Bus station which was part of the Masterplan for the Medan Selara Batu Bata Project. The final category (C13) is buildings that originally had direct access from the river and now do not due to channellisation. This is apparent at the Masjid Jamek building as to date.

THE CONCLUSION

From the morphological analysis we can identify the trends of waterfront treatments since the birth of Kuala Lumpur until the current situation. It is apparent that the contextual integration between the waterfront and the river were occurring during the first period when the river was the life line of the city. The waterfront treatments in the second period were governed by roads for both facing and backing the river when there was no focus to contextually integrate the waterfront and the river. As for the third period, it was the mix of the two situations where the scenario is different because the laws, policies and guideline to promote the contextual integration with the river are in place. Future research may look into on why there are still developments which are 'ignoring' the integration with the river and why some waterfront areas have changed from initially having integration with the river to one that does not as at C9 and C13 (Figure 9). Acknowledging these waterfront treatments as vital, future research may look into the reasons for both the positive and the negative situations of the waterfront treatments that can be found throughout these periods in order to be able to make a better decision for a more sustainable development of the future waterfront of Kuala Lumpur and not to repeat some apparent mistakes of the past.

ACKNOWLEDGEMENT

To all interviewee whom contributed during the research and the Ministry of Higher Learning of Malaysia who funded the research.

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