



A QUALITY OF URBAN DESIGN ELEMENTS IN FISHING VILLAGE AT TELUK KUMBAR, PENANG

Abdul Munir Najmuddin ^{a*}, Mohammad Firas Azmi ^a, Ahmad Sanusi Hassan ^a,
Muhammad Hafeez Abdul Nasir ^{a*}, Boonsap Witchayangkoon ^b

^a School of Housing, Building & Planning, Universiti Sains Malaysia, MALAYSIA

^b Department of Civil Engineering, Thammasat School of Engineering, Thammasat University, THAILAND.

ARTICLE INFO

Article history:

Received 14 April 2019

Received in revised form 05 July 2019

Accepted 18 July 2019

Available online 31 July 2019

Keywords:

Kevin Lynch; Seaside settlement; Seaside landscape; Mental mapping; Seaside layout plan; Coastal architecture configuration.

ABSTRACT

This study discusses and identifies the urban design elements in the fishing village in Teluk Kumbar, Pulau Pinang. The study area has its attraction of urban seafront elements. The area, however, is having a threat from urban development that will degrade the existing landscape of fisherman settlement. This study applies a qualitative method in analyzing urban design elements of Kampung Nelayan (Fishing Village) Teluk Kumbar and Kampung (Village) Paya Teluk Kumbar. The data was taken from fieldwork survey conducted in the area. Some data obtained directly from the location include interviews with the local residents. The layout setting of the Kampung Nelayan Teluk Kumbar and Kampung Paya Teluk Kumbar was influenced by local people's needs and daily fishing activities. The geographical location of the two villages has a relationship with every aspect of the economy and its urban design. The study shows that the layout plan of Kampung Nelayan Teluk Kumbar and Kampung Paya Teluk Kumbar is influenced by the dominant sea line, which is the urban design element of edge.

© 2019 INT TRANS J ENG MANAG SCI TECH.

1. INTRODUCTION

The objective of this paper is to identify in quality of urban design elements in Teluk Kumbar Fishing Village. Teluk Kumbar is one of tourist attraction in Penang. The purpose of this study is to identify the quality of urban design elements in the area. Five elements of urban design are incorporated in creating the layout plan of the fishing village, which are, nodes, paths, districts, edges, and landmarks. Each element has a particular function and helps people to have better experience in the area. The significance of these urban design elements toward the village itself. The usage of figure-ground plan to guide the mental mapping's study of the village help to identify the urban design elements (Trancik, 1986). Teluk Kumbar Fishing Village is chosen as the case study due to its unique environment with a traditional settlement pattern with urban hierarchy. This paper will further discuss

*Corresponding authors 1.(Abdul Munir Najmuddin) Tel:+60-124213626, munirnajmuddin@gmail.com. 2.(Mohammad Firas Azmi) Tel:+60-1111778144, firasazmi94@gmail.com. ©2019 International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies. Volume 10 No.11 ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8 Paper ID:10A11C <http://TUENGR.COM/V10A/10A11C.pdf> DOI: 10.14456/ITJEMAST.2019.138

how the quality of the urban design elements can affect and influence the fishing village's layout.

The case study will be analyzed with urban design elements namely path, edge, node, district and landmark (Lynch, 1960). Due to urban expansion, this rural-urban fringe faces both urban and rural land-use problems that result in traffic jams, environmental pollution, and low quality of life (Yan, Hao & Xia, 2010). Urban elements are playing a crucial role in designing a layout of a city where it influences the movement in a city (Mohamed Pauzi, Hassan, Arab & Abdul Samad, 2018). A good layout plan will help the user to be more direct and precise whenever they are moving toward a destination (Mohd Yasin, Hassan & Al-Ashwal, 2017).

2. CASE STUDY

Located on the south of the island of Penang, Teluk Kumbar is a district or small bay located near to Penang International Airport (*Figure 1*). The settlements were founded in the late 18th century by two Malay explorers who were Nakhoda Sedin and Panglima Long. This agricultural town was one of the autonomous early Malay settlements during that time. Not until the late 20th century, the community there depended on rice farming or agriculture and fishing in the sea as the main economic activities (Ghazali, 2011). By the time in the 1990s, the development of Teluk Kumbar was selected and initiated by the Penang Regional Development Authority (PERDA), to be developed from rural areas to a new township.

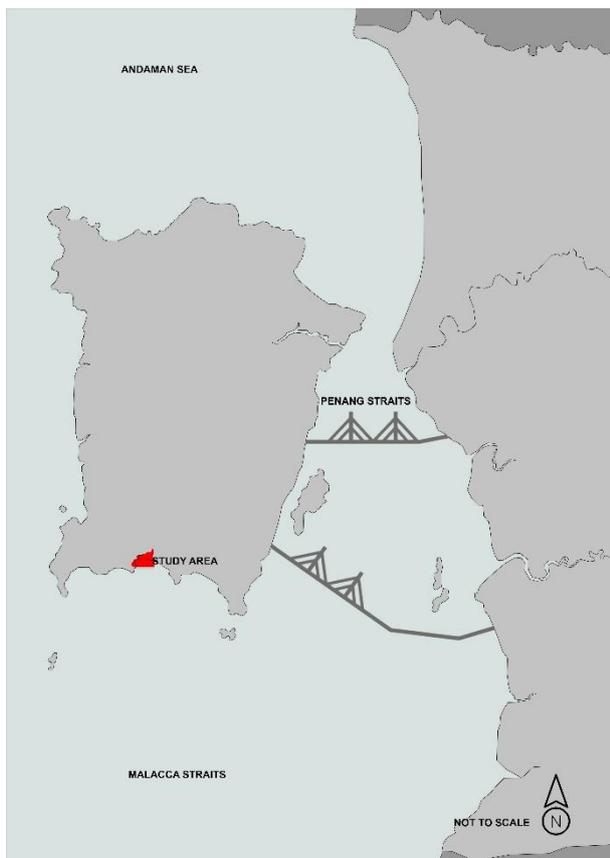


Figure 1: Key Plan (Penang, Malaysia)

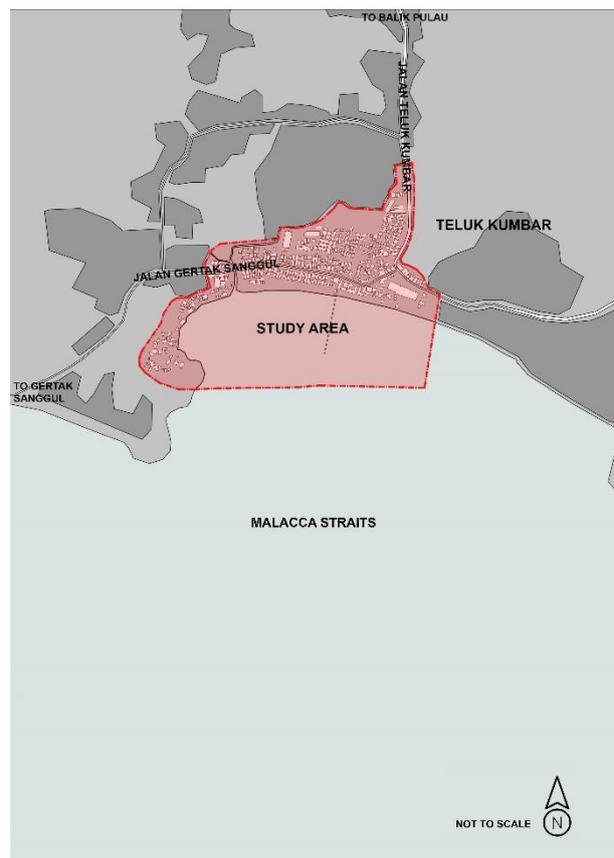


Figure 2: Location Plan

According to Department of Statistics Malaysia (2010), Teluk Kumbar comprises of 1,084 population with Malays formed more than three-quarter of the total population, while the Chinese are made up the balance of the population. The selected area is located along the Gertak Sanggul Road

and Teluk Kumbar Road. It comprises of two villages, Kampung Nelayan Teluk Kumbar and Kampung Paya Teluk Kumbar (Figure 2 & 3). The community who live in the study area are mostly fishermen. Thus, most of their work and source of income is related to the sea (*Teluk Kumbar*, 2019 & Ghazali, 2011). The area has its unique seafront attraction. It is currently a threat to from the urban development that will perish many existing and historic buildings. Currently, these two villages are surrounded by a newly constructed township. As a result of city development around it, and recently a threat from reclaimed the human-made islands by the state government which is to be relocated not far from this village.

In general, fisherman village has family-trust and characteristic within its geographical site (coastal area) or from its people activities that are most familiar or native to the sea. Thus, it gives the local community an identity which categorizes as a characteristic of the area which transforms the building massing and urban development.

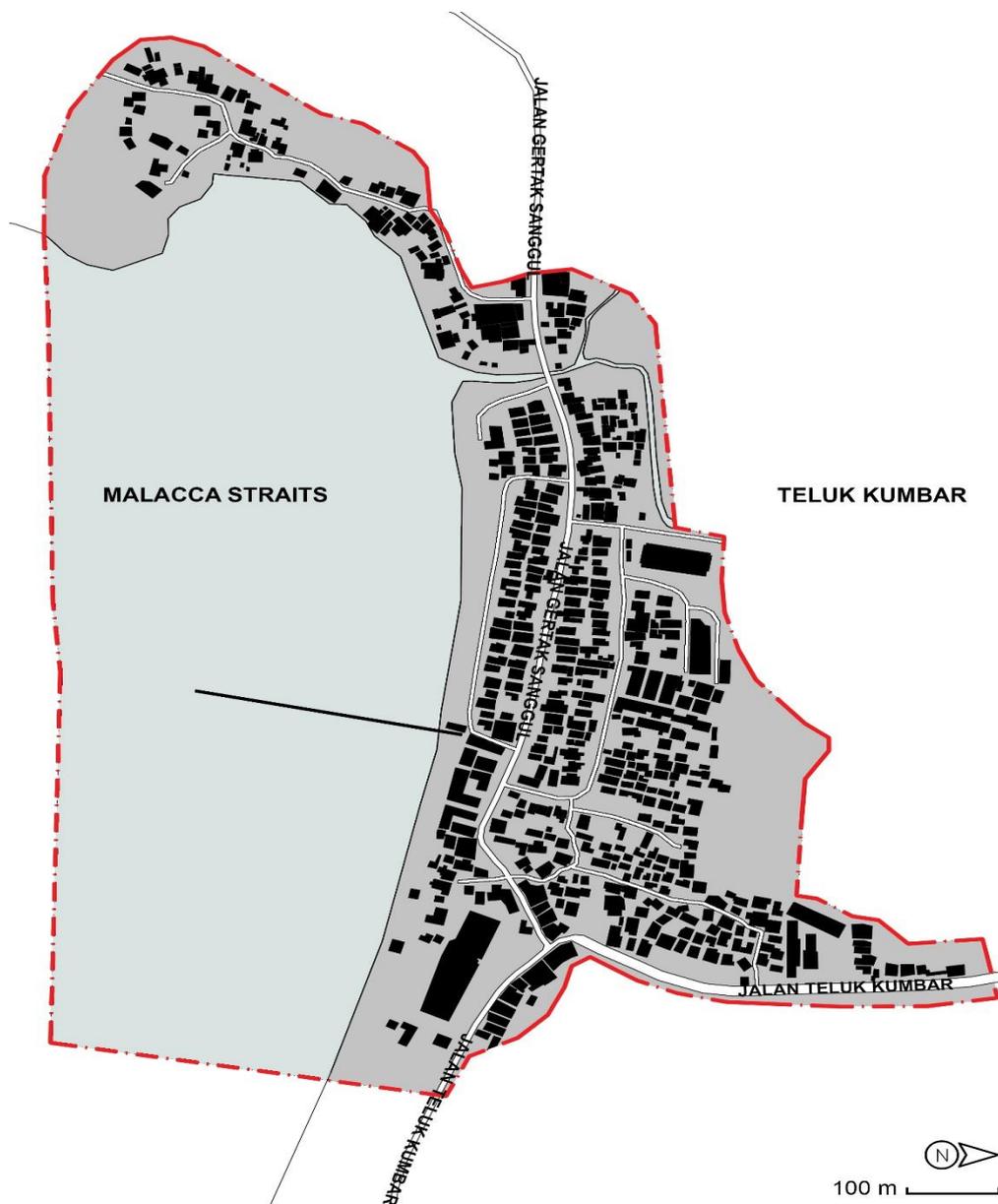


Figure 3: Site Plan.

3. METHODOLOGY

This research applies the qualitative descriptive method to study and analyze the existing urban elements in Kampung Nelayan Teluk Kumbar and Kampung Paya Teluk Kumbar. A drawing in Figure 3 was redrawn by using AutoCAD for the mental mapping analysis. Data was also obtained directly from the site, including interviews with the community and local people on 11th April 2019. This method was selected because it can identify in detail and recognize the urban design elements and how the fishermen arranged the layout of villages identifiable from their mental mapping. This study focuses on two types of the survey and analysis to collect data and to understand basic urban design elements within Villages in Teluk Kumbar.

4. ANALYZED RESULTS

4.1 PATHS



Figure 4: Primary Access from Bayan Lepas to Teluk Kumbar

The element to be analyzed is the path (Figures 4 & 5). The main entrance is coming from Bayan Lepas, which is Jalan Teluk Kumbar, the only access to Teluk Kumbar for both locals and tourist. The road is the only path for people to go in or go out of the villages. As the place has rapid

development, most of the locals will use the road to go to their office out in the town while tourist will come through the path to enjoy the villages itself. Before this, the road is very congested especially during the peak hour, but after the completion of the federal highway and the flyover connecting Teluk Kumbar and Penang International Airport back in Dec 2017, its congestion issue is greatly reduced.

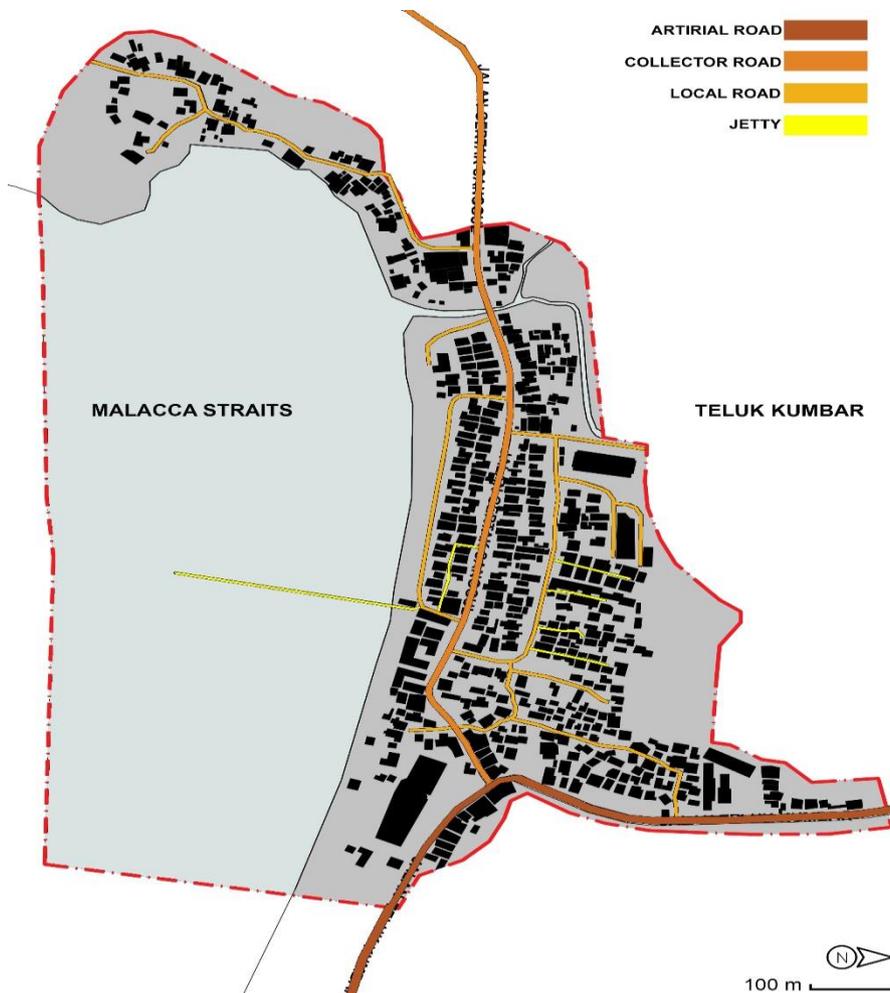


Figure 5: Paths' diagram in the studied area.

Continuing from the Jalan Teluk Kumbar is the collector road that is highlighted with the colour of darker orange, which is Jalan Gertak Sanggul which moves toward the western part of the area. This road has a width of 7 meters which fit two way of lanes for vehicles and has a distance of approximately around 750m which is from the junction of the arterial road and the river. Connecting the collector road is the local roads which majorly occupy the road hierarchy here in Teluk Kumbar. They are highlighted with the colour of lighter orange where it provides mean of access to the local houses in the area. This road has a width of 2.5-3 meters where most of the local road is unpaved and can only fit one car at a time. The road highlighted with yellow colour is a pedestrian and motorway, which is less than 1.2 meter. They are unpaved and sandy. This road provides a connection between the local road and the houses located in the Kampung Teluk Kumbar.

4.2 EDGES

The second element is the edge. Dermaga Teluk Kumbar (Figure 6) is connected with a river which divides the area to 2 parts. Edge 1, which is the sea lines, are considered as the edges or the

boundaries for the villages. The sea line which connected to the second edge, the river line divides the western and eastern part of Teluk Kumbar. These two edges helped to distinguish between the boundary line of the land and differentiated the land area for each section. Edge 3 is the forest line where it limits and creates the area of each village. Finally, Edge 4 helps to distinguish between 2 types of building where the boundary between traditional and modern buildings is created.

The gulf shape of the edge of the sea line creates a more private settlement for the village, especially in the western part of the area, which is the Chinese village. It affects the arrangement of the houses in the layout of the village-owned by fishers. So, the houses are built near to the seaside. The beachfront is sandy and can be accessed by visitors. This place has good scenery suitable for a photo session for a wedding and many more. On top of that, connecting the sea-line of the gulf shape area, the sea line is straight, and a bit curvy suitable for boat parking. It makes much easier for the fishermen to go to the sea.

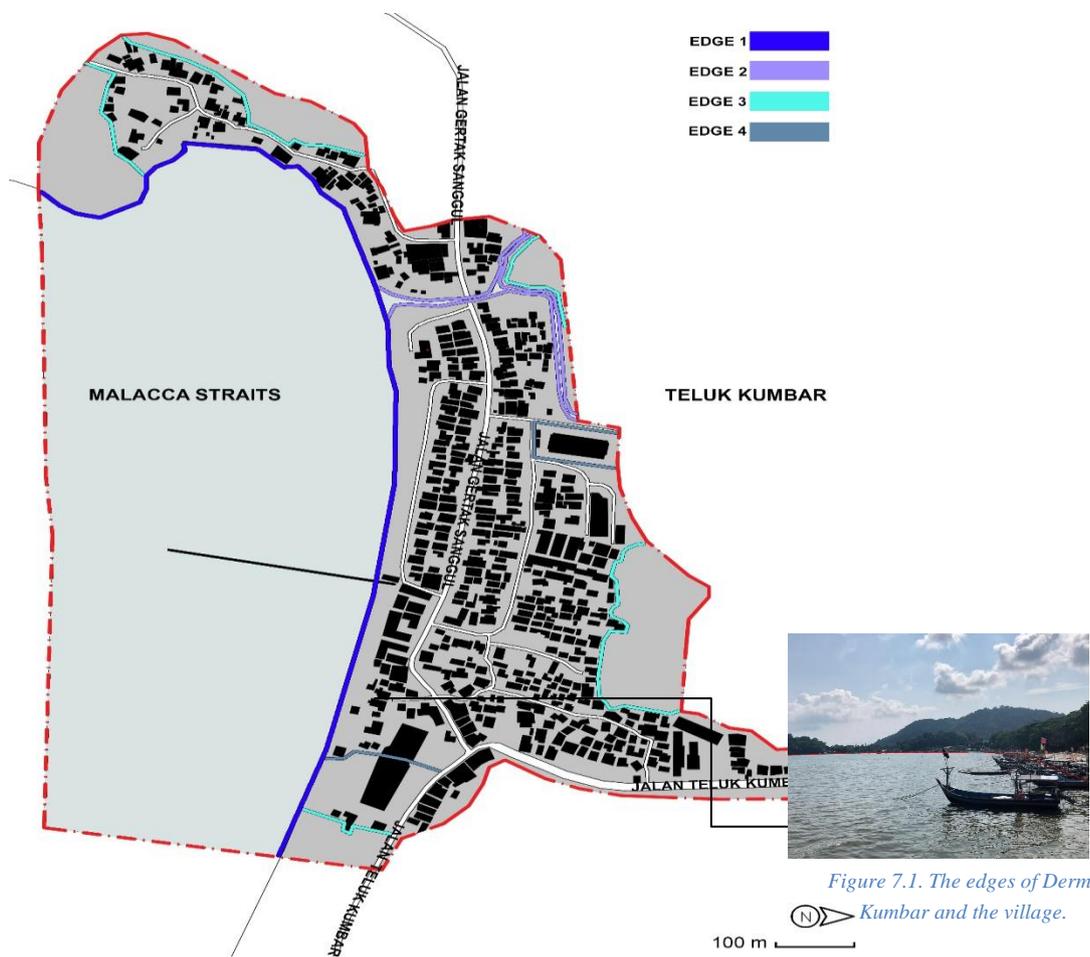


Figure 6: The edges of Teluk Kumbar Villages.

4.3 DISTRICT

The next element in line is the district (Figure 7). District 1 is a residential and settlement area, which is the primary district for the locals living in the Kampung Teluk Kumbar. Traditional Architecture with timber houses is scattered around in this district. The Malays are staying in the eastern area of the district while the Chinese are in the western area of the district. Most of the residents run their business directly from home. District 2 is also a residential area, but with Modern Architecture where concrete houses, medium-rises, and high rises are built here. While District 3 is the amenities and facilities which comprises of Police Station, Mini Markets, and Workshops. Next

is District 4, the coastal area where the fishermen use this area prepare their boats before going out to the sea. The boats are parked at the coastline. District 5 is a greenery zone where trees and forests reside in the area.

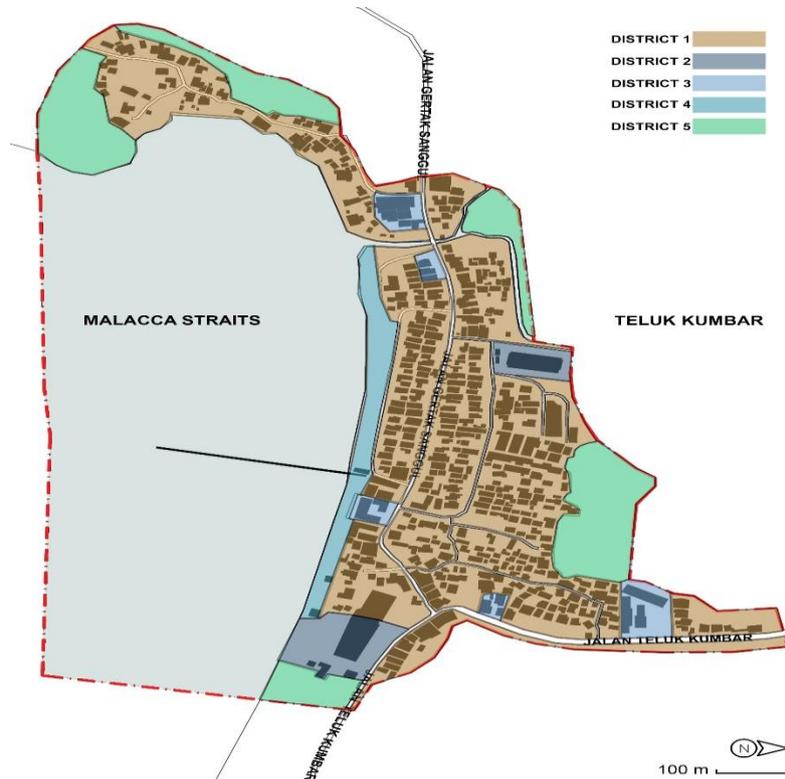


Figure 7: The districts at Teluk Kumbar.

4.4 NODES

Six nodes (Figure 8) are identified during the site visit, which is node 1 is the Chinese Temple, which is located next to the seaside. It is a place of gathering during a specified period for worshipping, and the Chinese Community mostly occupies this area. Node 2 is the fisherman jetty where most of the area is reside by the Malay Community, and the Malay fishermen park their boats and keep their fishnets before and after they go for fisheries activities. Although the seaside is a sandy beach, the area is packed with unorganized fisherman boats. This causes the area less attractive, and besides the seawater quality also is not suitable for swimming. The area has many seafood restaurants. Node 3 has the most popular restaurant in the area, Salwa Mee Udang Restaurant specialized in local pride "prawn/shrimp noodles". Based on the info from local people, the area had numbers of the seafood restaurant. Next is Node 4, Water Sports Training Center of Teluk Kumbar, which is a place providing facilities of the Water Sports Association in the state of Penang. It organizes water sports activities to their members as well as the public. Also, the Water Sports Activity Center is aimed at furthering Penang's water sports activities. Next is Node 5, which is Teluk Kumbar Wet Market. Regularly this node is crowded with visitors during weekends and crowded with local people going in and out during peak hour in the early morning. Lastly, Node 6 is Sekolah Kebangsaan Telok Kumbar, which will be crowded with parent's car going in and out during peak hour in early morning and afternoon.

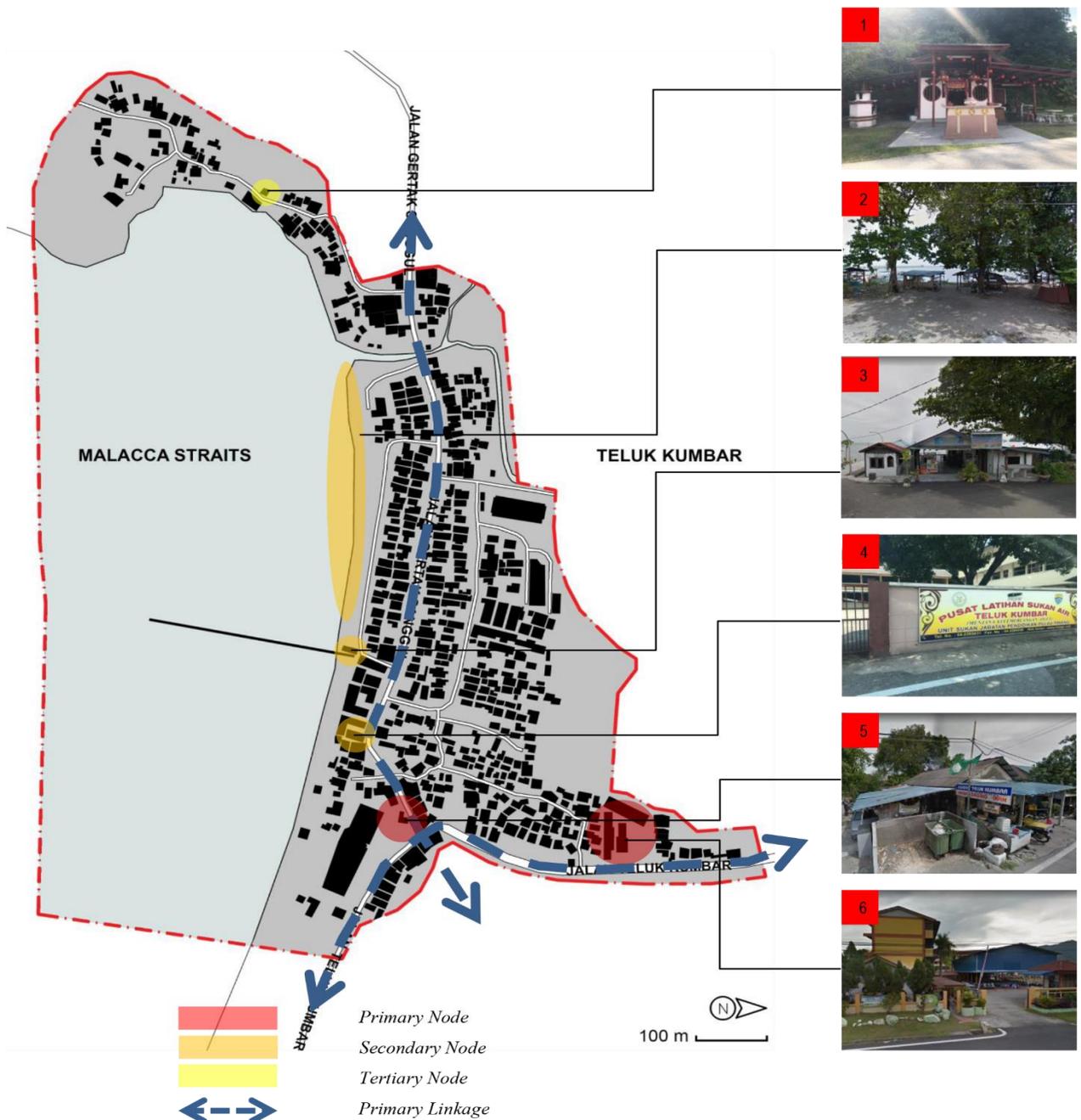


Figure 8: Nodes around the area.

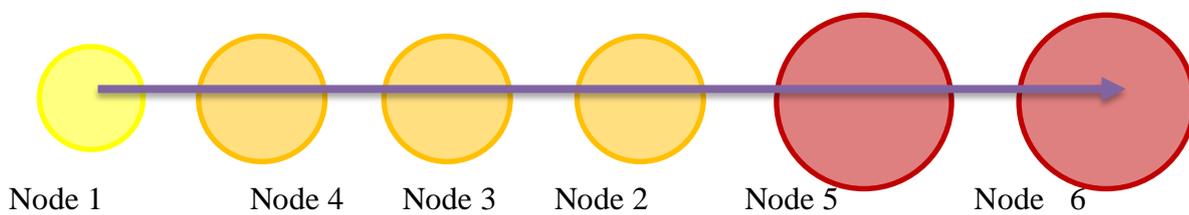


Figure 9: Hierarchy order of the Nodes.

Based on Figures 8 and 9, the studies show that the most prominent nodes are located near to the primary linkage of that area, which is Jalan Teluk Kumbar. Thus, making it easier for accessibility. As it moves further than the primary linkage, the nodes become less important and difficult to access. Overall, the nodes only served for the local people and can be considered as less successful because most of the nodes are does not attract outsider visitors.

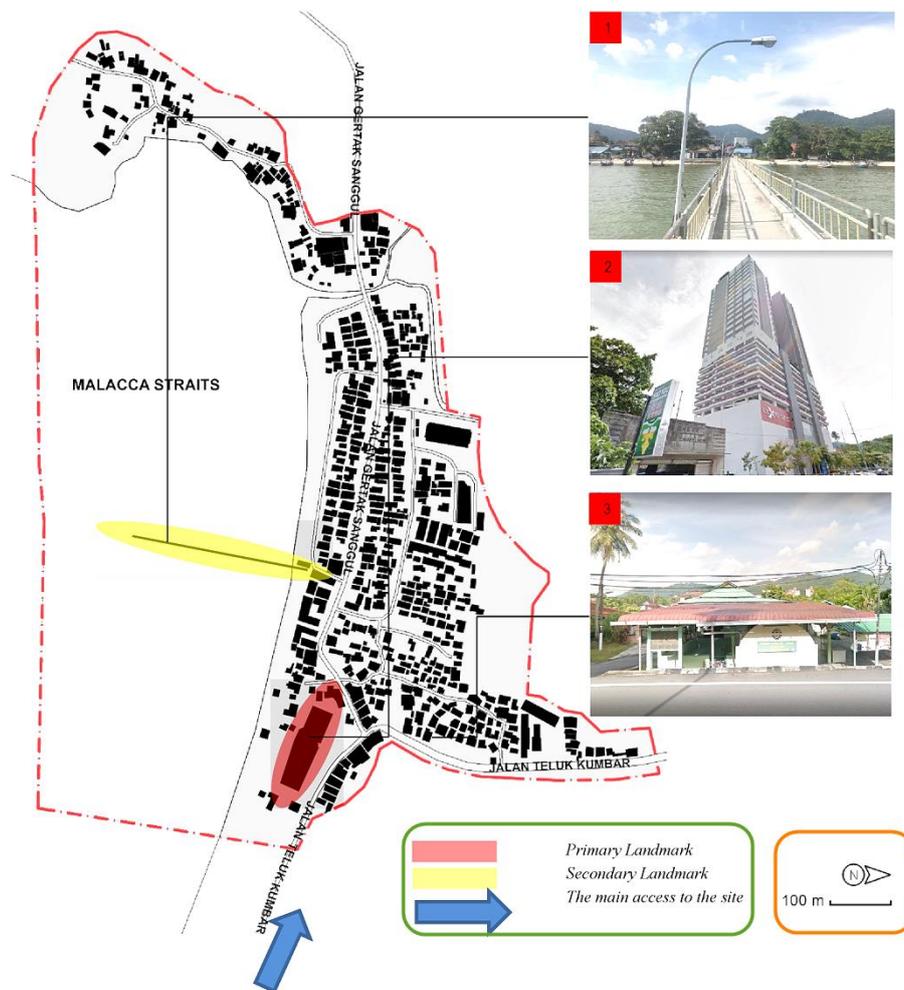


Figure 10. Landmarks around the area.

4.5 LANDMARKS

There are two primary landmarks as a point of reference in the area, Figure 10. The primary landmark is located along the main route while the secondary landmark is located off the route visible around the site. Surrounded by new development, the area is kept on developing. Therefore, a new landmark is being built there, the same phenomena as argued by Stern et al. (2013). Landmark 1 is a new observing jetty where it serves as an attraction point to the area. This jetty was built for the fishermen to park their boat, but later its usage was abandoned. Now it is used for sightseeing and a place for fishing. While landmark 2 is a new high-rise hotel and service apartment. Lexis Suites Penang is the most iconic seaside properties in Teluk Kumbar. One of a kind, where it is the only hotel that provides a private pool and steam room in every suite. Next is landmark 3, which is Surau Al-Ikhwan (a small mosque, not used for Friday prayer) located along the Jalan Teluk Kumbar. It is a place of Muslim gathering for worshipping by the Malay Community. Based on the observational study, the jetty is identified as a landmark because of its particular function and length visible from a distance from the seas. The Lexis Suites Penang is also a landmark because of its height visible from far away. The other landmark is a surau (a small mosque) located beside the main road as a centre for Muslim community. All the above landmark does not succeed in term of projecting the grand images of Teluk Kumbar since the outsider does not recognize those landmarks.

5. DISCUSSION

5.1 PATH

The hierarchy of entrance to the village is affected by the connectivity of the vehicular access, Jalan Teluk Kumbar that comes from Bayan Lepas where it is important as the primary access to the site. The road dimension and amenities influence the role in determining the order of hierarchy in the village. The local roads are the primary path used by the locals and visitors. They, however, lack in the proper standard of the road specification where some of them are unpaved and sandy. The road widths vary which affect the smooth movement of vehicles maneuvering inside the village itself.

5.2 EDGE

Edge for the Kampung Teluk Kumbar would be the Dermaga Teluk Kumbar which help to distinguish between the local houses and their primary source of incomes which is the fisheries. It creates a housing layout that revolves around the sea. The second edges, the river line help to create a division between the Malay residents and the Chinese residents. The third edges that can be identified are the forests around the village that separates nature and manmade. Finally, Edge 4 helps to create divisions between 2 type of building where their material and architecture differ to each other.

5.3 DISTRICTS

The districts are defined based on their function and the physical element. There are five districts at Kampung Teluk Kumbar which are the traditional settlements, modern settlements, amenities, coastal area, and the greeneries zone. Each district has its function and physical traits that help to distinguish the main activities among the districts. The most noticeable element that can help to differentiate between the districts is the architecture of the houses. The area is mostly occupied by the traditional village in which they are built from timbers.

5.4 NODES

The accessibility plays a significant factor in creating a node that attractive and more comfortable to the local people and outside visitor to visit the site. In the studies, we found out that the most prominent nodes are located near to the primary linkage of that area, which, is Jalan Teluk Kumbar. Thus, making it easier for accessibility. As it moved further than the primary linkage, the nodes become less important and difficult to access. Overall the nodes we found are mostly for the local people and not to attract outsider visitor. Thus, the nodes are unsuccessful.

5.5 LANDMARK

While the area is kept on developing, therefore new landmark is being built there. The new landmark being the urban signage and icon of the site. The landmarks became a reference point of the place. Its height, length, and activities can identify a landmark. Thus, in the study, we found out that the landmark does not make successful in term of projecting the image of Teluk Kumbar since the outsider does not recognize those landmarks.

6. CONCLUSION

The quality of urban design elements in a fishing village in Teluk Kumbar is a result of influences of the existing housing layout. The cluster of the layout plan is randomly distributed and informal settlement (Hassan, 2010). The main activities of the locals, which is the fisheries, help to focus the

urban design elements around the village format and create the mental mapping of the area. Edges are the most active elements that help visitors and locals to distinguish the division between the land and sea, the modern building and traditional building as well as man-made structure and nature. It helps to create the layout of the village where the sea line influences the orientation of the village. The houses are built around the sea line, thus creating activities that revolve along the coastal area. These edges help to limit the boundary for each district using a physical element or function of each district.

The district is majorly occupied by the residential area, which is the traditional village. This village is occupied by the fishermen, which are the locals living in the area. The districts that co-existed in the area can easily be distinguished between each other due to the noticeable element of the district, which is the architecture. Next, the local road has the highest number existed in the village. The traditional village is mostly designed in a way the houses are very much near to each other. So, the local road helps to connect the collector road to the houses, which are a more private area. There are not much of functional nodes in the area, which can be identified as an element attraction to the village. The increasing number of the traffics and newly introduced development surrounding Teluk Kumbar Village, making it overcrowding and congested at certain times, which mean a proper layout road and zoning should be considered. Besides, the three landmarks, as stated in the study above, not much landmark in the village, can be counted. Although the jetty was built for the fishermen to park their boat, now it already changes its function as a sightseeing platform. Hence, a proper fisherman jetty with enough height should be built to solve this problem.

7. ACKNOWLEDGEMENT

We would like to express our sincere appreciation to Universiti Sains Malaysia for a support to this study with a Bridging Grant Number 304.PPBGN.6316521.

8. DATA AVAILABILITY STATEMENT

The used or generated data and the result of this study are available upon request to the corresponding author.

9. REFERENCES

- Department of Statistics Malaysia. (2010). *Report of Statistics Malaysia*. Putrajaya, Malaysia.
- Ghazali, S. (2011). Safeguarding natural and cultural heritage: The experiences of Teluk Bahang fishing communities, Penang, Malaysia. *Malaysian Journal of Environmental Management*, 12(1), pp. 47-58.
- Hassan, A.S. (2010). Fishing Villages: Resemblance of pre-colonial city landscape at the Straits of Malacca in Peninsular Malaysia. *The Arab World Geographer*, 13 (2), 93-107. Toronto: AWG Publishing.
- Lynch, K. (1960). *The Image of the City*. Boston: MIT Press.
- Mohamed Pauzi, M.H., Hassan, A.S., Arab, Y., Abdul Samad, M.H. (2018). A Study on Mental Mapping: Case of Government Buildings, George Town, Penang. *International Transaction Journal of Engineering Management & Applied Sciences & Technologies*. 9(3). 211-219.

Mohd Yasin, N., Hassan, A.S., Al-Ashwal, N.T. (2017). Investigation of Mental Mapping in Urban Design: Case of Queensbay, Penang. *International Transaction Journal of Engineering Management & Applied Sciences & Technologies*. 8(4). 261-273.

Stern, R.A.M., Fishman, D., Tilove, J. (2013). *Paradise Planned: The Garden Suburb and the Modern City*. New York: The Monacelli Press.

Teluk Kumbar, Penang. (2019). Retrieved on 20th April 2019 at <https://www.penang-traveltips.com/teluk-kumbar.htm>

Trancik, R. (1986). *Finding Lost Space: The Theory of Urban Design*. New York: Van Nostrand Reinhold Company.

Yan, J., Hao, C., Xia, F. (2010). Toward improved land elements for urban–rural integration: A cell concept of an urban–rural mixed community. *Habitat International*, Volume 77, July 2018, Pages 110-120.



Mohammad Firas Azmi is a Master's Degree student at the Universiti Sains Malaysia, Penang, Malaysia. He obtained a Bachelor of Science in Architecture from Universiti Sains Malaysia, Penang, Malaysia. His research encompasses to the Quality of Urban Design Elements in Fishing Village at Teluk Kumbar, Penang.



Abdul Munir Najmuddin is a Master's degree student at Universiti Sains Malaysia, Penang, Malaysia. He obtained a Bachelor of Science in Architecture from Universiti Sains Malaysia, Penang, Malaysia. His research is about the quality of urban design elements in fishing village at Teluk Kumbar, Penang.



Professor Dr. Ahmad Sanusi Hassan is a Professor in Architecture Programme at the School of Housing, Building and Planning, Universiti Sains Malaysia (USM), Penang, Malaysia. He obtained a Bachelor and Master of Architecture degrees from University of Houston, Texas, USA, and Doctor of Philosophy (PhD) degree from University of Nottingham, United Kingdom. His research focuses on Sustainable Architecture and Urban Design Development for Southeast Asia, history and theory of Architecture, Computer-Aided Design (CAD) and Computer Animation.



Muhammad Hafeez Bin Abdul Nasir is a PhD student at the School of Housing Building and Planning, Universiti Sains Malaysia. He earned a Bachelor of Design Studies and a Master of Architecture degrees from the University of Adelaide, Australia. His research interests are in the fields of Architectural Sciences and Engineering.



Dr. Boonsap Witchayangkoon is an Associate Professor of Department of Civil Engineering at Thammasat University. He received his B.Eng. from King Mongkut's University of Technology Thonburi with Honors. He continued his PhD study at University of Maine, USA, where he obtained his PhD in Spatial Information Science & Engineering. Dr. Witchayangkoon current interests involve Applications of Emerging Technologies to Engineering.