

# The Effect of Sungai Bilu's Riverside Design to the Physical Characteristics of the Riverside Architectural Spatial Identities in Banjarmasin

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**Abstract.** The growth of population, the urbanization phenomenon, and economy factor raise the amount of riverside settlement in Banjarmasin. The increase of the riverside settlement also raises an equal amount of problems such as the slum existence, reducing the river width-space, and architectural identity. To solve this problem, the government was beginning to design the riverside settlement. As a pilot project, the government has begun to design the Sungai Bilu Riverside settlement on the Martapura Riverside. The riverside ideal design should not drop the characteristic of the spatial and architectural riverside settlement identity of Banjarmasin but strengthen. There are some changes in Sungai Bilu's Riverside settlement design. The first is the new design of *titian*, second is the fence design, and the last is the changing material. Based on the research, the design is not in line with the physical characteristic of the Banjarmasin Riverside settlement.  
**Keywords:** physical characteristics, riverside design, spatial identity, settlement

## 1 Introduction

The Banjarmasin city location is on the Barito Riverside and crossed by the Martapura River. In addition to the two major rivers, there are 102 (one hundred and two) rivers consisting of large, medium and small rivers. Since long time ago, the expansion of power, religion, culture, and trade related to these rivers, therefore the settlement always close to the river network. Today, the growth of population, the urbanization phenomenon, and economy factor raise the amount of riverside settlement. The increase of the riverside settlement also raises an equal amount of problems such as slum existence, reducing the river width-space, and architectural identity.

The government has begun to design a riverside settlement to reduce the urban slum in also to make it as city attraction and branding as a river city. The expectation is people no longer make the river as a backyard, but as a home façade. As a pilot project, the government has begun to design the Sungai Bilu Riverside settlement on the Martapura Riverside. Sungai Bilu is one of kampong in the East Banjarmasin sub-district. The design's location is on the riverside of Martapura River, about 800m. The design of the Sungai Bilu settlement

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which starts in 2016 and finished in 2018 has done by repairing the building façade, painting houses, titian, public space, and sanitation. Now, this kampong famous as a green village, because the area is dominated by green color.

The riverside ideal design should not drop the characteristic of the spatial and architectural riverside settlement identity of Banjarmasin but strengthen. The question is, whether the design changing in the Sungai Bilu Riverside settlement in line with the physical characteristic of the Banjarmasin Riverside settlement or not. To answer these questions, this research did. With understanding the physical characteristic of cities, especially Banjarmasin, hopefully, can help designers to make better guidance design for new places and to know what to keep existing places.

### **1.1 The image of the city**

An environmental image analyzed into three components: identity, structure, and meaning [Lynch, 1960: 8]. A workable image need the object identification, which implies its distinction from other things, its recognition as a separable entity. Second, the image must include the spatial or the pattern relation of the object to the observer and to other objects. Finally, this object must have some meaning for the observer, whether practical or emotional.

Lynch [Lynch, 1960: 9] gives emphasis on physical qualities in the mental image, which related to the identity and structure of the environment. The qualities that influence the image of the environment are imageability, legibility, and visibility. It could be that shape, color or arrangement which facilitates the making of vividly identified, powerfully structured.

The city does not create accidentally; it is a product of conscious and unconscious decisions in the areas of the economy, social, and culture. The three-dimensional form of the city impact as an interaction between the visible urban elements of landscape, ground-plan, open space and buildings [Trieb, 1988: 14 on Heru Wibowo Poerbo, 2001: 40].

Trieb [Trieb, 1988: 14 on Heru Wibowo Poerbo, 2001: 42S] suggested a planning process for urban design that consists of four phases, beginning with research of the history of the image of the city. The second phase is defining the goals of urban design for the city in the form of urban design scenario. The third phase is an analysis of the existing image of the city. The last phase is planning in the form of planning guidelines for the entire city and the parts of the city. That can be guidance for design suggestions and construction measures. Such guideline should not be treated as anything fixed, instead of as a long-term, flexible urban design concept.

### **1.2 The Urban Characteristic**

According to Cullen 1976 as written in [Heru Wibowo Poerbo, 2001], the environment almost entirely through vision, but there are three ways to apprehend the environment, through optic, place, and content of the townscape:

1. Optics: Serial Vision is reached because of our memory about the image of the earlier environment as we move into the next environment. The significant of this is that although the pedestrian walks through the city at a constant speed, the scenery of cities often appears in a series of jerks and revelation. This is called the Serial Vision [Cullen, 1976: 9].
2. Place: It is about the human response to the position of his body in the environment. The point is there's a difference between being Here and Being There. This difference emerges when a perceiving person is inside or outside a place, entering or leaving it. There is a range of experience caused by the major impacts of exposure

and enclosure at this level of awareness. The example is the sense of liveliness when people placed on the edge of a high cliff. But when they are at the end of a deep cave, they will react to the fact of the enclosure. The human body has an instinct to always relate itself to the environment. This sense of position becomes a reason in the environment that should be exploited [Cullen, 1976: 10].

3. Content: this point pertains to the fabric of cities, i.e., color, texture, scale, style, character, personality, and uniqueness. The fabric of the city shows evidence of different periods in its architectural styles and the various accidents of layout because most cities are of old foundations. Many cities display this mixture of styles, materials, and scales. Yet people tend to design a city that has symmetry, balance, perfection, and conformity. Nevertheless, conformity is boring and is difficult to avoid from the point of view of planners. But to avoid it deliberately, by creating artificial diversions, is surely worse than the original boredom [Cullen, 1976: 11]. Within a commonly accepted framework - one that produces lucidity and not anarchy - we can manipulate the nuances of scale and style, of texture and color and of character and individuality, juxtaposing them to create collective benefits. In fact, the environment, thus resolves itself into not conformity, but the interplay of This and That. [Cullen, 1976: on Heru Wibowo Poerbo, 2001: 44]

Physical quality given by a visual system in the area can create a strong image towards the cities. Visual characteristic primarily refers to physical formations that occur within an area or community. Better visual characters due to the harmony between physical form and physical characteristic that exist in an area. Therefore, to study the physical characteristic of the area could be described on eight elements of urban design which consists of: are land use, building form, and massing, circulation, and parking, open space, pedestrian, activity support, signage and preservation [Shirvani, 1985: 9]. From those elements, building mass and form and signage has correlated to the physical and visual characteristic. Furthermore Building mass and form consists of height, bulk, floor area ratio, coverage, street-line setbacks, style, scale, material, texture, and color.

### 1.3 Riverside Spatial Identity's Elements

There are seven (7) components of the spatial identity of riverside architectural in Banjarmasin, that are *lanting* houses, riverbank houses, riverside houses, *titian*, *batang*, dock, and *jamban*. Riverbank houses are dwellings with stage construction built above the river and use *titian* as access to the land [Mentayani 2016]. Riverside house is a house built facing the river with a stage construction above the swamp. *Titian* is a local pedestrian way, built on the water or swamp. In general, the *titian* uses a pole construction and use wood as a floor.

There are three (3) typo morphological aspects of riverbank settlement, (a) function, (b) construction, and (c) material [Mentayani 2010]. Typo morphological aspects of settlement on Banjarmasin's river found in every facility and physical infrastructure used by the local community. The physical infrastructure includes docks, bridges, *titian*, *lanting* houses, and public toilets. In general, construction uses material from *galam*, bamboo, wood, ironwood or boards. Typo morphological aspects of the river building settlement are formed by factors: (a) wetland environment, and (b) river culture. Based on search results (Mentayani, 2001 on Mentayani 2010) people still use the river as an access to go to work, going to the market and another location, although there is land transportation

## 2 Research Method

This research uses field observation and literature study. Field observation aimed to compare the before and after the area, while the study literature aimed to analyze the physical characteristic of the riverside settlement area, as well as its relation to the design that has been done in the Sungai Bilu Riverside Settlement.

## 3 Discussion

### 3.1 Sungai Bilu's Riverside Spatial Identity

Based on the results of observation, it finds that Identities of Spatial River settlement in Banjarmasin which find on Sungai Bilu Riverside Settlement are riverside houses, *titian*, *batang*, dock, and *jamban*.

#### 3.1.1 The riverside houses

Before the arrangement of the sungai bilu riverside settlement, the building material, mostly use is wood or ironwood. The finishing mostly without painting. Like another Banjarmasin wood house, the wooden board has been stacked both on vertical and horizontal rows. Now, the wooden board has been covered by calsyboard and painting with green color domination.



**Fig. 1.** The house before the design



**Fig. 2.** The house after the design



**Fig. 3.** The house before the design



**Fig. 4.** The house after the design



**Fig. 5.** The house before the design



**Fig. 6.** The house after the design



**Fig. 7.** The house before the design



**Fig. 8.** The house after the design

### 3.1.2 *Titian*

*Titian* in the Sungai Bilu Riverside Settlement consists of several types. First, the main *titian* which located on the bank of the Martapura River, second the *titian* which connecting main *titian* to the kampong behind the waterfront, and the last is *titian* which connecting the main *titian* to the riverside houses. All the floor original material was ironwood. In the new design, the main *titian* used concrete to cover the ironwood. In addition, the *titian* is also fenced off. The fences used iron and concrete for the columns material. The fences have been painted with black color and use minimalist style. In accordance with the houses, the fence columns also have been painted with green color. In some places on the fence, there are doors (gates) to connecting the bridge with the river.



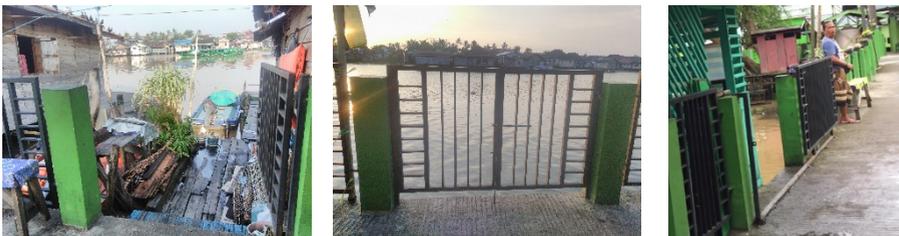
**Fig. 9, 10.** The main *titian*



**Fig. 11, 12, 13, 14.** The *titian* to the settlement behind the waterfront



**Fig. 15.** The *titian* to the riverside houses



**Fig. 16, 17, 18.** The types of gate

### 3.1.3 *Batang*

*Batang* is a rectangular place with a raft or pillar structure, floored by wood but not roofed. *Batang* has functioned as a toilet and washing area, loading goods and passengers from *kelotok* and *jukung* (banjar traditional river transportation). *Batang* also as a place whom people waiting for traders to buy some goods. (Mentayani 2016). There are two types of the location of *Batang* in this location, first on the inside of the main *titian* and close to the houses, and second on the outside of the main *titian*.



**Fig. 19, 20.** The *batang* on the outside of the main *titian*



Fig. 21, 22, 23. The *batang* on the inside of the main titian and close to the houses

### 3.1.4 Dock

The dock was used to tether boats as the one and only transportation mode at that time and has been functioning as a place to utilize river water as a source of drinking water and sanitation (Daud, 1997 on Mentayani 2016). There are some docks in this place made from ironwood. One of it is a dock under the tree still on the original condition and use for river public transportation and there is a wooden chair which people use for sitting, relaxing and waiting for the traders and boats. This area also completed with *batang* and *jamban*. In addition, there is a parking area for motorcycle close to the dock.



Fig. 24, 25, 26, 27. The Docks

### 3.1.5 Jamban

There is a *jamban* in this location which located in the one area with the dock and *batang*. *Jamban* has functioned as a place to bathing, washing, and toilet for people on the riverside. This *Jamban* also has open spaces for bathing, washing and to interact with boats or traders.

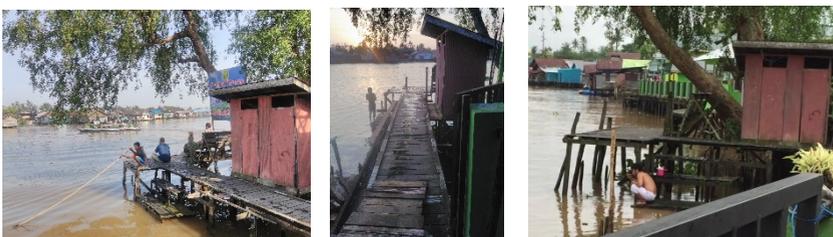


Fig. 28, 29, 30. The *Jamban*

## 3.2 The changing of Sungai Bilu's Riverside Design

The spatial riverside settlement has their own identity, especially in Banjarmasin. The changes in the physical environment have an effect on the environmental characteristics

either make it stronger or weaker. The best place is when people not only feel comfortable, but also has an attachment and feel the identity of the space.



**Fig. 28.** The Height Before the design



**Fig. 29.** The Height after the design



**Fig. 9.** The river-view houses before the design



**Fig. 10.** The river-view houses after the design

**Table 1.** The Height of Sungai Bilu Riverside Settlement

<b>Height</b>		
	Before arrangement	After arrangement
The riverside houses		There is no change

**Table 2.** The Bulk of Sungai Bilu Riverside Settlement

<b>Bulk</b>		
	Before arrangement	After arrangement
The riverside houses		There is no change
<i>Titian</i>		There is no change
<i>Batang</i>		There is no change
Dock		There is no change
<i>Jamban</i>		There is no change

**Table 3.** The FAR of Sungai Bilu Riverside Settlement

<b>Floor Area Ratio</b>		
	Before arrangement	After arrangement
The riverside houses		There is no change

**Table 4.** The Coverage of Sungai Bilu Riverside Settlement

<b>Coverage</b>		
	Before arrangement	After arrangement
The riverside houses		There is no change

**Table 5.** The Street-line setbacks of Sungai Bilu Riverside Settlement

<b>Street-line setbacks</b>		
	Before arrangement	After arrangement
The riverside houses		There is no change

**Table 6.** The Style of Sungai Bilu Riverside Settlement

<b>Style</b>		
	Before arrangement	After arrangement
The riverside houses		There is no change
<i>Titian</i>	Used ironwood as a floor and there is no fence	<ul style="list-style-type: none"> <li>▪ Adding the fence</li> <li>▪ Used concrete as a floor and minimalist style on the fence</li> </ul>
<i>Batang</i>	There is no change	There is no change
Dock	Used ironwood as a floor	There is no change
<i>Jamban</i>		There is no change

**Table 7.** The Scale of Sungai Bilu Riverside Settlement

<b>Scale</b>		
	Before arrangement	After arrangement
The riverside houses		There is no change
<i>Titian</i>		There is no change
<i>Batang</i>		There is no change
Dock		There is no change
<i>Jamban</i>		There is no change

**Table 8.** The Material of Sungai Bilu Riverside Settlement

<b>Material</b>		
	Before arrangement	After arrangement
The riverside houses	Wood	Covered by calsyboard on façade
<i>Titian</i>	ironwood	Ironwood covered by concrete
<i>Batang</i>	ironwood	There is no change
Dock	ironwood	▪ Ironwood
<i>Jamban</i>	zinc	There is no change

**Table 9.** The Texture of Sungai Bilu Riverside Settlement

<b>Texture</b>		
	Before arrangement	After arrangement
The riverside houses	Natural wood	paint
<i>Titian</i>	Natural wood	Concrete
<i>Batang</i>	Natural wood	Natural wood
Dock	Natural wood	Natural wood
<i>Jamban</i>	Zinc	Zinc

**Table 10.** The Color of Sungai Bilu Riverside Settlement

<b>Color</b>		
	Before arrangement	After arrangement
The riverside houses	Natural wood dominance	Green dominance
<i>Titian</i>	Natural wood	Concrete
<i>Batang</i>	Natural wood	Natural wood
Dock	Natural wood	Natural wood
<i>Jamban</i>	Red-pink	Red-pink

There are some changes in Sungai Bilu Riverside settlement design. The first is the new design of *titian* by adding the fence on along the river, which is no fence on *titian* in Banjarmasin physical characteristics. The second is the material and style of fence design. The fence made from iron and column made of concrete and use minimalism style. There is no Banjar identity has been visualized on the fence design. The third is the material changing, from wood to concrete and from wood to calsyboard. The material changing has a significant effect on the Sungai Bilu Riverside settlement physical characteristics. Those new materials did not display the texture of wood. Wood like *Galen*, bamboo, ironwood, and boards for a long period has been characteristics of Banjarmasin riverside settlement. As Mentayani research that material is one of typo morphological aspects of riverbank settlement beside function and construction.

## 4 Conclusion

The character of the city could be seen from 3 elements, identity, structure, and meaning. The identity and structure have related to physical qualities. The physical environment changes in the area have an effect on the physical qualities and indirectly to the image of the city of Banjarmasin. In the case of the Sungai Bilu Riverside settlement, the design is not in line with the physical characteristic of the Banjarmasin Riverside settlement.

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