

## **THE GREEN OPEN SPACE PLANNING IN MAHAKAM RIVERBANKS SAMARINDA BASED ON SUSTAINABLE URBAN RIVERFRONT**

### **ARIE RANUARI<sup>1</sup>**

Urban Design, Department of Architecture,  
Sepuluh Nopember Institute of Technology.  
Surabaya, Indonesia  
[arieranuari@gmail.com](mailto:arieranuari@gmail.com)

### **BAMBANG SOEMARDIONO<sup>2</sup>**

Lecturer  
Department of Architecture,  
Sepuluh Nopember Institute of Technology.  
Surabaya, Indonesia  
[bbsoem@arch.its.ac.id](mailto:bbsoem@arch.its.ac.id)

### **HARYO SULISTYARSO<sup>3</sup>**

Lecturer  
Department of Architecture,  
Sepuluh Nopember Institute of Technology.  
Surabaya, Indonesia  
[haryo.its@gmail.com](mailto:haryo.its@gmail.com)

**Abstract**

The lack of regional identity in line with the development of the city made an impact like slum impression, obstruction of view dan direct public access along the river bank, socio-economic conditions that are not balanced with environmental conditions, as well as the linkage aspect of the existing green open space along the riverbanks. The purpose of this research is to identify the tourist attraction potential of Mahakam River based on sustainable aspect. The paradigm of this research is naturalistic with descriptive qualitative approach. The data were analyzed with descriptive qualitative analysis and walkthrough analysis techniques which understand image and perception of the environment by observing user behavior in order to obtain the proper design criteria. The result is the concept of open space arrangement that applies the principles of sustainable urban riverfront through improving the physical and non-physical quality of the green open space of the Mahakam Riverbanks.

**Keywords: development, holistic, planning, sustainability, tourism**

## **1. INTRODUCTION**

### **1.1 Background of Research**

Changes in land use and functions of public spaces, consciously or not create some significant impact. Living in limited environment and space pose a serious social impact. The presence of open spaces to integrate and to provide comfort for the various levels of the social strata are supposed to relieve the social gap which is a phenomenon that occurs primarily in major cities in Indonesia.

The existence of untreated green open spaces had deteriorated sharply in terms of visual quality. Therefore, a research to reorganize the city park or green open space through the design of landscape-based approach is needed to measure sustainable city for region's identity restoration. The old paradigm of development that typically exploit natural resources with all its negative impacts on the environment resulted in the shrinking of natural resources such as oil, minerals and forests should begin to be abandoned. The new paradigm of sustainability must be initiated and implemented so as to create new development that can produce high economic growth with minimal negative impact on the environment destruction.

Mahakam River is the biggest river in East Kalimantan province. Mahakam river can be said to be the heart of life for most people of East Kalimantan. Mahakam Riverbank areas used by the public as a place to relax, especially in the afternoon. By late afternoon, there are dozens of merchants open stalls of food and drinks along with a sitting area to relax. The amusement park is also available for those who want to spoil their children. However, this still causes negative impacts such as the potential beautiful view of the river obstruction and public access to the open spaces. This impact is continuously deteriorating as the region faces visually destruction and environmental damage that is not directly proportional to the socio-economic activities. It is essential to improve and handled based on the sustainable landscape which is the waterfront area. The outcome of this research is to formulate the concept of the green open space arrangement of Mahakam River in accordance with the principles of sustainability.

### **1.2 Location of Research**

The green open space area that located along the Mahakam Riverbanks in Samarinda, East Kalimantan, with the length reaches  $\pm 1.5$  km<sup>2</sup>. Observations were made on the physical and non-physical aspects, the pattern of economic activity and social life of the community related to the procurement and accessibility to infrastructure and means of green open space side of Mahakam River.



**Figure 1** Mahakam Riverbank as area of study

## 2. THEORETICAL REVIEW

### 2.1 Sustainable Urban Landscape

The Concept of a sustainable urban landscape is implemented into the fabric of urban design which has a positive impact on society now and then, the use of "low-impact" material-based and a pattern of good social relations within the city. Thus, it can be said that the concept of the sustainable urban landscape should include the issue of ecological, social and economic. Cultural aspect also can be added by linking the sustainable development that is in harmony with the local cultural community.

### 2.2 Waterfront City

Waterfront Development also means a process of development results that have visual and physical contact with the water and part of the efforts to develop urban areas that are physically located close to the water in which the face of the city construction development that occurs oriented toward the water.

### 2.3 Visual Quality

The most important factor that makes an area has a good environment quality is because of its visual quality (Shirvani, 1985). The visual quality is a visual condition that people see from a series of a good environment, proper position, and comfortable neighborhood (Cullen, 1975). The visual quality becomes a peculiar attribute at the visual system determined by cultural values and the physical property that being essential (Smardon, 1986 in KD. Kartika, 2008).

## 3. METHODOLOGY

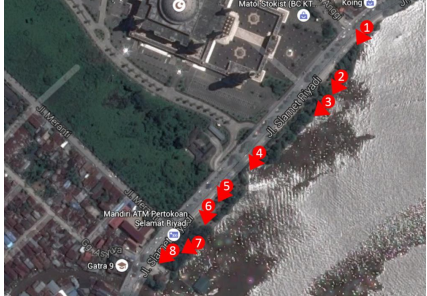

This research is classified into the qualitative study by using naturalistic paradigm. Qualitative research multimethod in focus, involving an interpretive naturalistic approach to its subject matter. The components of qualitative research are an emphasis on natural settings, interpretation and meaning, and how the respondents make

sense their own circumstances and multiple tactics to manifest the aims. (Groat & Wang, 2002). This research used Walkthrough Analysis to obtain the potentials, problems, and design criteria by walking through an area and recording observations and impressions along the way (Urban Design Toolkit, 2006). The activity conducted from north boundary area to south boundary area of the Mahakam Riverbank.

#### 4. RESULT AND DISCUSSION

Urban design toolkit (2006) explained that walkthrough is an understanding of the internal street condition by evaluating the urban quality and design’s problem, this technique is done by walking through a region and recording observation along the way. The advantages are to provide an overview of the design issues and establish the extent to which a design is required.

Table 1: Walkthrough Analysis  
 Source: Google Earth and Personal Documentation, 2016

Keymap	Street View
	
Aspect	Potential and Issues
<p>Ecology</p>	<ul style="list-style-type: none"> <li>- Soft scape protection from pedestrians should be given</li> <li>- The importance of vegetation that can be used as an aesthetic aspect and at the same time become a barrier to the median and pavement.</li> </ul>

Economy	<ul style="list-style-type: none"> <li>- The necessity to use a more durable material in the facility and garden material</li> <li>- Selection is needed of the right paving materials for the safety of pedestrians</li> <li>- Handling more on the soft scape parks and vegetation</li> </ul>
Social	<ul style="list-style-type: none"> <li>- More varied facilities and activities along the river banks</li> <li>- Vendor arrangements in order to be more presentable</li> </ul>
Linkage	<ul style="list-style-type: none"> <li>- Spot between green open space as water Attraction</li> </ul>
Visual Aesthetic	<ul style="list-style-type: none"> <li>- The absence of locality and culture elements in terms of materials</li> <li>- Lighting can be given with more variation to add visual aesthetic, especially at night.</li> </ul>

After analyzing every aspect conclusion, the design criteria will be developed based on the field potential and issues and theoretical review to produce the required design concept in this study.

Table 2: Ecology Concept

Design Criteria	Concept
<p><b>Ecology</b></p> <p>Use of vegetation should be further improved and pavement should be minimized so it retains its function as a green open space;</p>	



Pavement on large aspects of green space in terms of damaged and dries soft scape condition that causing no boundary on the pavement. This is handled by extending the coverage soft scape than hard scape and no clear definition of the addition of vegetation. It also restores the identity of the region as a green open space.



Figure 2 Ecology Concept Illustration



Table 3: Economy Concept

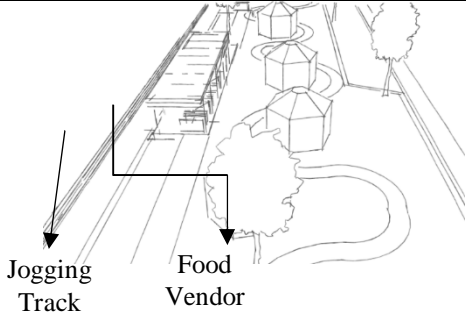
Design Criteria	Concept
<b>Economy</b> The material used should be a material that is durable, environmentally friendly and efficient.	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Stone</p> </div> <div style="text-align: center;">  <p>Ironwood</p> </div> </div>

Problems in economy aspect are in terms of material efficiency, whether it is for pavement and its furniture. In this case, the selection of materials that are durable and friendly to the environment becomes an important factor. In the selection of material on the use of ironwood and stone for gazebo chosen because of resistance to weather.



Figure 3 Economy Concept Illustration

Table 4: Social Concept

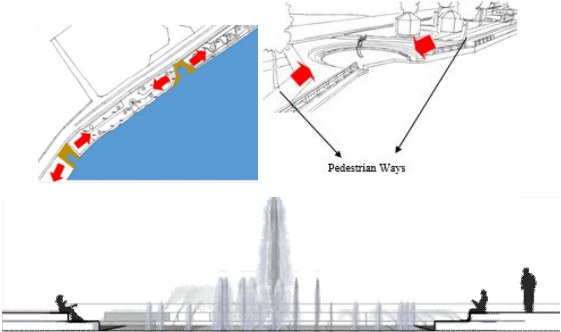
Design Criteria	Concept
<b>Social</b> Should be given more varied activities along the riverbanks, thus stimulating leisure activities to be more occurred.	

The social aspect tends to move the center of activity that was originally located in the middle of the park to be more oriented towards the river. The food vendor have i'ts own zone so that the zone in the green open spaces becomes integrated without obscuring view towards the river.



Figure 4 Social Concept Illustration

Table 5: Linkage Concept

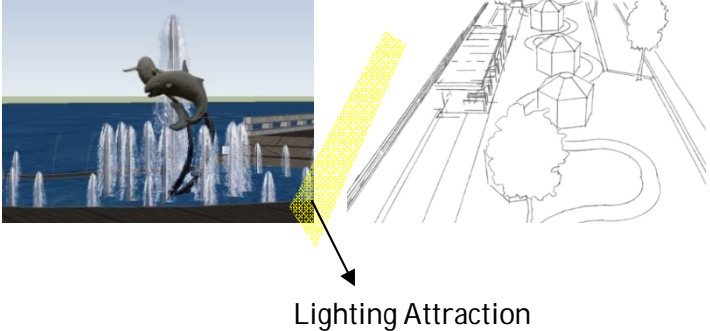
Design Criteria	Concept
<p><b>Linkage</b> Green open space must be connected with other green open space through the access road and visually connected through the uniformity of the material.</p>	

Discontinuation of direct access to the river banks each green open space causing lack of connectivity in the region, this causing the visitor to exit onto the sidewalk side of the road to access the other green open space. This is dealt through the access road and visually connected through the uniformity of materials and vegetation. This spot also meant to be riverfront activities that become a connective interaction between visitors with river water.



Figure 5 Linkage Concept Illustration

Table 6: Visual Aesthetic Concept

Design Criteria	Concept
<p><b>Visual Aesthetic</b> Facilities and furniture on green open space should be given symbol or elements of cultural locality. In addition, the lighting attraction is also provided so as to highlight the impression along the riverbank</p>	



To strengthen the visual aspect of the green open spaces, it should be given symbol or elements of the local culture; It is applied to the connecting zone by giving the sculpture that is unique to the Mahakam river to reinforce the identity of Green Open Space.

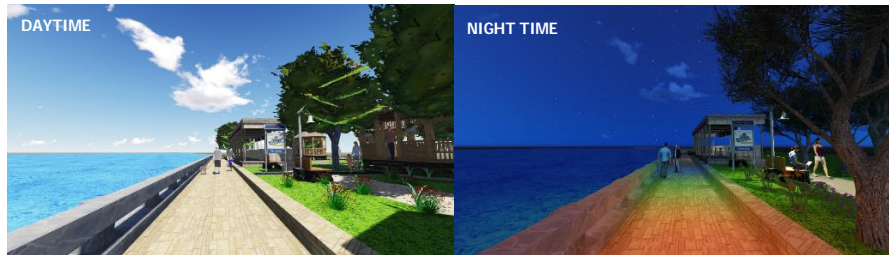


Figure 6 Visual Aesthetic Concept Illustration

## 5. CONCLUSION

Based on the previous analysis, it was concluded that there are numbers of potential that has not been optimized and issues such as existing green open spaces that yet interlinked and that the center of activity has not been oriented facing toward the river. Problems encountered in the green open spaces will be handled by:

1. Moving the center of activity from the central part of the park to facing towards the riverbank to provide a venue for the street vendor at the riverside area without obscuring the view from the direction of green open space to the river.
2. The absence of connectivity between the green open spaces that is addressed by providing pedestrian access ways at the linking area with a fountain as binders of space that providing visual pleasure.
3. Facilities on green open spaces to be given the local characteristic of the local culture with the use of sculpture that is unique to the Mahakam river to reinforces the identity region Open Space green area of Mahakam river bank.

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