Volume 1 No 1 (2021)

CoMBInES
CONFERENCE ON MANAGEMENT, BUSINESS, INNOVATION, EDUCATION AND SOCIAL SCIENCES

Received : February 01, 2021
Accepted : February 05, 2021
Published : February 24, 2021

Conference on Management, Business, Innovation, Education and Social Science
https://journal.uib.ac.id/index.php/combines

Batam Green Initiative : Coastal Design Directives with Natural Innovations

Stivani Ayuning Suwarlan[1] Billy Shevriyanto[2], Angga Setiawan[3], Antoni Wijaya[4], Wahyu Leonardi[5]

stivani@uib.ac.id[1], billyshevriyanto@gmail.com[2], 1912003.angga@uib.edu[3], 1912038.antoni@uib.edu[4], 1912039.wahyu@uib.edu[5]

[1-5]Faculty of Civil Engineering and Planning, Universitas Internasional Batam, Batam, Indonesia

Abstract

The design and development of coastal areas is an effort to increase the value of a city. Utilizing the coastal potential of a city to become a center of destinations is one of the important things to promote and encourage the prosperity of the community in a city. Batam, is a province that is blessed with many and beautiful coastal areas, but not all coastal areas with such great potential have been touched and developed. In Batam by 2020, 30% of the regional revenue and expenditure budget (APBD) is used for infrastructure development. However, coastal areas that are still undeveloped will not be affected positively, therefore design directions are needed for coastal areas with great potential, such as the Batam Green Initiative site area, which has abundant mangrove forests. The research method used is qualitative research. Observations were made as a first step to determine the factual conditions of the research area using a walkthrough analysis. Then research was also carried out related to the condition of the community around the site area, related to their needs and whether the design directions made would maximize the site, and also have a positive impact on the surrounding community, especially from various aspects. The results showed that the potential for mangrove forests in the Batam Green Initiative and its hilly contours, make the Batam Green Initiative a potential site for coastal areas that can be maximized and promote the prosperity of the surrounding community.

Keywords: Design Directions, Coastal, Batam Green Initiative

Introduction

Indonesia is an archipelago consisting of more than 17,508 islands which makes Indonesia has the second longest coastline after Canada (Arifin et al., 2019), with two-thirds of its territory consisting of oceans. This makes Indonesia known for its marine tourism, but in fact not all maritime areas in Indonesia have been developed optimally. The development of the maritime area with all its attractions is one of the efforts to build marine tourism and also

the value of a city (Mahadi & Indrawati, 2010). In the implementation of the Regional Autonomy Program, the central government makes decisions by providing opportunities for provincial governments to advance the regions by utilizing natural resources and all the potential that the regions have. One focus in general is the tourism sector (Sudarwanto & Waterfront, 2012).

Batam is part of the Riau Islands Province with a potential strategic location directly adjacent to neighboring countries, has a land area of 715 km2, while the total area reaches 1,575 km2. More than 50% of the Batam city area is a water area, so it has many areas bordering the sea (Suwarlan, 2020). This makes Batam famous for its tourism sector, but in reality, there are still many coastal areas with extraordinary potential that the government has not developed. The design and development of coastal areas is an effort to increase the value of a city. Utilizing the coastal potential of a city to become a center of destinations is one of the important things to promote and encourage the prosperity of the community in a city. In Batam by 2020, 30% of the regional revenue and expenditure budget (APBD) is used for infrastructure development. However, coastal areas that are still undeveloped will not be affected positively, therefore design directions are needed for coastal areas with great potential, such as the Batam Green Initiative site area, which has abundant mangrove forests.

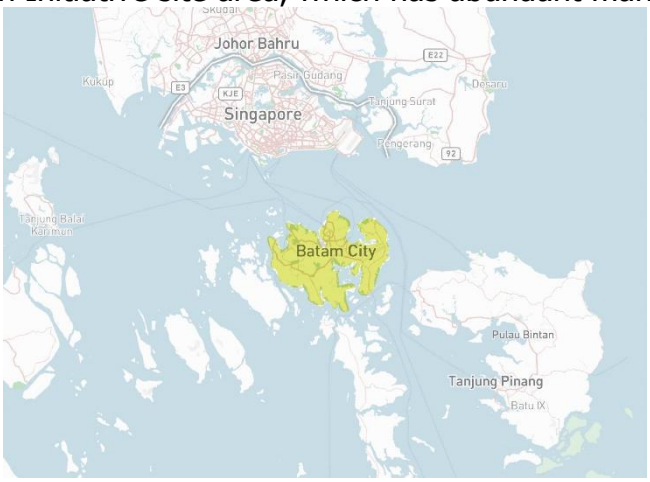

Figure 1. Location of Batam City on Map

Batam Green Initiative is located in Batu Besar, Nongsa District, Batam City, Riau Islands, which is one of the coastal areas with very rich potential. The strategic location which is close to the residential center and also Hang Nadim Airport, as well as natural conditions that are still good with mangrove forests, make Batam Green Initiative a suitable coastal area to be developed in order to increase the value of Batam City. With the design direction of the Batam Green Initiative, becoming a tourism area with the concept of cafes, resorts and open spaces adjacent to nature, is expected to increase the value of the city of Batam, maintain and care for the wealth of mangroves in the area, as well as improve the economic conditions of the people living in the area. around.

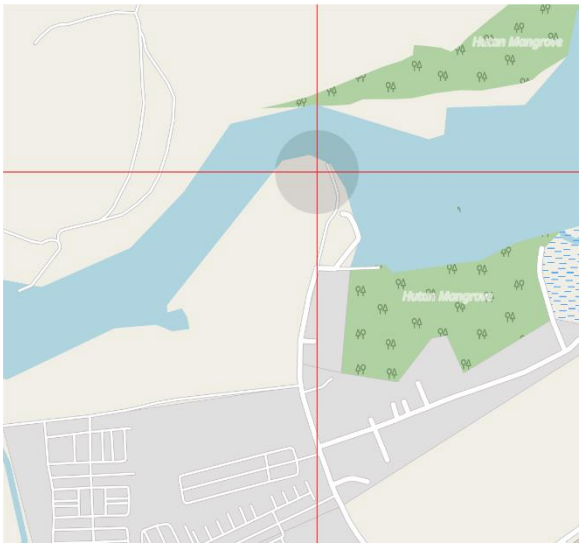

Figure 2. Location of Batam Green Initiative

Literature Review

Coastal Areas

Supriharyono in Dampak et al., 2020, defines a coastal area as a meeting area between land and sea towards land, the coastal area including dry or submerged land, which is still affected by natural processes that occur on land, such as freshwater flow, sedimentation, or due to human activities such as pollution and deforestation.

Meanwhile, the definition of the coast based on the latest international agreement is the transitional area between land and sea, landward includes areas affected by tidal splash, sea, and towards the sea covers part of the continental shelf (Universitas Sumatera Utara, 2012).

From the two definitions, it can be concluded that the coastal area is a special and quite unique area because it is a mixture of land and sea. This certainly affects the physical condition where naturally the area around the sea is flat contour. This situation supports the coastal areas to become potential areas in regional development planning.

Green Architecture

Green Architecture is an architectural planning approach that seeks to minimize harmful effects on human health and the environment. In its application, it has benefits for the user, namely the building becomes more durable, maintenance of the building is done less frequently, is energy efficient, is more comfortable to live in, and is also healthier. Besides the benefits for users, green architecture also has a positive impact in helping to overcome environmental problems, especially the issue of global warming (Rachmayanti & Roesli, 2014).

According to (Karyono, 2008 in Arifin et al., 2019), green architecture is a field of architecture that consumes minimal natural resources, as well as energy, water, and has very minimal negative impacts on the environment. Green architecture is applied by increasing the efficiency of the use of water, energy, and also the use of materials that reduce the negative impact of buildings on health.

Public area

Public open space is a space where people do activities and can be accessed freely by the public (Carr, 1992, p.50 in Teknik et al., 2015). In this case, it is also supported by the definition according to (Madanipour, 1996), namely that public space is an open space for

everyone to move and be accessed, which is managed and provided all the facilities according to public needs. Based on the definition previously mentioned, it can be concluded that the function of the form of public space is to provide the basic needs of society, a place for people to do activities in general, and can be accessed freely, either individually or in groups (Teknik et al., 2015).

Public space made for a purpose to be a place to exchange our opinions and mind with others, and also activities, so that raise the culture and social values that will characterize the area (Wirasmoyo & Yogyakarta, 2009).

According to its nature, open space consists of private open space, semi-private open space, and public open space. The one which can be enjoyed directly by the community is the green open space. The ideal proportion of green open space in urban areas is 30% of the total area, the proportion consists of 20% public green open space and 10% of the private one (Nurbalqis, 2016).

Waterfront

Waterfront in its development has started since the development of the city on the vacant land of the former port in America which afterwards became a reference for cities in Europe, then spread throughout the world. Waterfront development is an example of a good concept with urban resilience according to its needs to adapt to the surrounding environment, in order to take advantage of opportunities to describe the workplace and changes in the community environment, and to manage the impact of a developing technology (Breen & Rigby, 1996 in Teknik et al., 2015).

Research Methods

This research is in the design direction design process using a qualitative descriptive method in finding coastal areas that have potential but have not been maximized. After the design area is found, a thorough assessment is carried out in maximizing the potential of the coastal area (Batam Green Initiative), as well as the design of suitable design directions to maximize the potential of the coastal area.

Method of collecting data

Data collection is one of the efforts made to collect information related to coastal areas that have not been maximized in the city of Batam. Broadly speaking, the data are grouped into two categories. First, primary data obtained directly from the object of the area under study, in the form of photos of existing areas. Second, secondary data obtained by examining various coastal areas in Batam city with various references, as well as instruments. In designing this design direction, data collection techniques used are documentation, interviews, and also direct observation.

Analysis and Design Methods Design Direction

The method of analysis and design in this study is divided into 4 (four) stages. First, the assessment and data organization by sorting out the locations of coastal areas based on their potential. Then in the second stage, data analysis is carried out based on a theoretical study of coastal areas, waterfront design, technology and function of the design area for which design directions will be made. In the third stage, find a solution to the problem in the specified design area. Finally, the fourth stage is determining the design directions that will be applied in the research area.

Results and Discussion

The result of the research is to produce a design direction for the design of the Batam Green Initiative coastal area, Batu Besar, Nongsa District, Batam. The design directives are generated not only based on the theory and potential conditions of the site, but also the surrounding environmental conditions.

Batam Environmental & Community Conditions

The condition of an environment or the condition of the community in a coastal area is also a consideration in determining the location of the design direction. The design direction is not only intended to maximize the potential of undeveloped coastal areas, but is also expected to improve the quality of the surrounding area. Batam Green Initiative is located in Batu Besar, Nongsa District, Batam, is a residential area, on the water's edge, with the potential for rich mangrove forests, but not properly facilitated.

Observations made to the location resulted in data that the environmental conditions, including the facilities in the area, had not been accommodated properly, as evidenced by the absence of paved road areas in the area.

Figure 3. Road conditions to the Batam Green Initiative

The condition of the road that has not been built is undeniably related to the absence of a destination center in the area, the absence of a crowd center and an attraction that is widely known to people. This also has an impact on the condition of the surrounding community. The difficulty of access, and also the very minimal intensity of the crowds, also certainly has an impact on the economy of every family in the area. Based on the survey, it was found that the local community did business such as small workshops, or a place for making brick materials, as well as collecting used goods. However, with the lack of crowds in this area, the people's economy is also hampered, and it seems like a suburb that is not touched by the government at all.

Figure 4. Condition of a house in the Batam Green Initiative

The condition of the surrounding environment and the community in the Batam Green Initiative area reveals the need for development with attractiveness, maximizing the potential of the area, as well as introducing the advantages of the area. With the design of a central area for people to gather, with the concept of green architecture in the design of the area, which maximizes the potential of mangroves, in addition to adding value to the area, but also improving the condition of the surrounding environment, and taking care of the mangroves in the Batam Green Initiative area.

Batam Green Initiative Design Concept

The design concept in the Batam Green Initiative is the result of elaboration from various studies that have been analyzed, and considered with needs as well as advantages that can be maximized in the design area. The design concept is divided into 3 sectors, namely nature tourism, entertainment, and economy.

The concept of nature tourism is maximized by making a mini-resort area in the coastal area, by maximizing the presence of mangrove forests in the area. Apart from being aesthetic and distinctive, mangrove plants also help in preventing abrasion. In the entertainment sector, a public space area was built with the aim of gathering people, with a cafe with a green architecture concept, with a view towards the mangrove forest. The community economy is intended to be developed with an economic sector containing a shop house area, as a transaction center in the Batam Green Initiative area.

Design proposal

The concept obtained includes the division of 3 sectors, namely nature tourism, entertainment, and economy, manifested in a design proposal that is in accordance with the Batam Green Initiative coastal area.

The design of natural tourism is in the form of a nature-themed mini-resort with mangrove forests, because making a mini-resort in the mangrove forest area will be a fresh attraction for the wider community, giving a fresh and new impression. The placement of a mini-resort on the water, can be accessed by a bridge that is formed, connecting the resort buildings with each other, to the main access. In addition to enjoying the atmosphere of living in the resort area, visitors can also walk to enjoy the atmosphere of the mangrove forest while heading to the resort building.

Figure 5. A look at the design directions for the mini-resort area

The main attraction area of the Batam Green Initiative is in the entertainment area in the form of a public space with a green architecture concept café. The café design is formed according to the existing conditions in the Batam Green Initiative area, the roof shape and the shape of the building are designed according to the site conditions as well as the geographical of the area.

Figure 6. A perspective view of the café direction

Figure 7. A perspective view of the café

The application of the café roof concept is intended to dispel the hot sun which is quite hot in the north, towards the design site. The application of green architecture in the café building is applied to the roof garden at the bottom of the roof, and also the vertical garden in the front area of the café.

The application of the economic concept to the Batam Green Initiative area by making a shop house area starting from the side of the main road, the middle and the end of the site (towards the resort).

Figure 8. A perspective view of the shop house area

The design of the shop house and mini-resort area is still in the form of a building mass, without building details. The white block area is the shop house area that was designed. The design directions for shop houses and mini-resorts are still in the form of locations that are considered effective and maximum in the design area, according to the zoning of the design. Detailed forms are given to the café in the design center area, as the identity of the design

direction area. The site condition chosen in the design area is higher than the access road, in order to increase the visual and attractiveness of the design area in the main access area of the residential center.

Conclusions

Many potential coastal areas in the city of Batam, have not been maximized properly, this has a big impact on the surrounding residential area. Utilization of the coastal area by maximizing the potential that exists in the area, besides being able to increase the value of the city of Batam, in the field of coastal tourism, it also helps improve the quality of life of the surrounding community. The design of the Batam Green Initiative area, by maximizing the slightly high contour conditions of the site, with the potential for mangrove forests, to become a central area for human gathering, in the form of natural mini-resorts, cafes, and shop house areas, is proposed to be a solution to problems in coastal areas that are not maximized, community economy and environmental conditions of the Batam Green Initiative, as well as increasing the value of tourism in the city of Batam.

This study has limitations, only limited to the design direction of the Batam Green Initiative area design so that researchers hope that there will be further research related to the design of coastal areas in Batam City with rich potential, but has not yet been developed, especially in the Batam Green Initiative area. Hope from researchers, the coastal area in Batam can be better known for its potential, and maximized, in order to increase the value of life of the surrounding community, preserve natural potential, as well as increase the value of tourism in the city of Batam.

References

Arifin, R., Prayogi, L., & Ashadi. (2019). Penerapan Konsep Arsitektur Hijau Pada Pusat Konservasi. *Jurnal Arsitektur Purwarupa*, *3*(July), 207–212.

Dampak, A., Pasir, P., Terhadap, P., Lingkungan, K., Sumktaki, P., Lingkungan, S. T., Teknik, F., Morotai, U. P., Selatan, K. M., Morotai, K. P., Sub-district, S. S. M., & Island, M. (2020). *Jurnal Ilmiah Wahana Pendidikan*. *6*(4). https://doi.org/10.5281/zenodo.4310457

Mahadi, K., & Indrawati, F. (2010). Arahan Pengembangan Obyek Wisata Pantai Tanjung Pasir Kabupaten Tangerang. *Jurnal Planesa*, *1*(1), 19–27.

Nurbalqis, O. (2016). Arahan Perancangan Taman Kota Sebagai Pemenuhan Kebutuhan Ruang Publik di Kecamatan Kota Juang. *Ruang*, *2*(3), 207–215. https://doi.org/10.14710/ruang.2.3.207-215

Rachmayanti, S., & Roesli, C. (2014). Sri Rachmayanti ; Christianto Roesli. *Green Design Dalam Desain Interior Dan Arsitektur*, *5*(9), 930–939.

Sudarwanto, B., & Waterfront, H. R. (2012). Hotel Resort Di Kawasan Mandeh Kabupaten Pesisir Selatan Sumatera Barat. *Imaji*, *1*(3), 415–422.

Suwarlan, S. A. (2020). Perancangan Urban Farming Pada Pesisir Kampung Kelembak Kepulauan Riau. *Jurnal Linears*, *3*(1), 20–25. https://doi.org/10.26618/j-linears.v3i1.3134

Teknik, F., Diponegoro, U., Teknik, F., Diponegoro, U., Legendsriverfront, T., & Space, P. (2015). *ARAHAN PERANCANGAN RUANG PUBLIK DENGAN PENDEKATAN KONSEP RIVERFRONT DI SUNGAI TUNTANG KABUPATEN DEMAK PENDAHULUAN Pengembangan*

Kota Hijau (Green City) (3), 373–388.
Universitas Sumatera Utara. (2012). *Kawasan Wilayah Pesisir*. http://repository.usu.ac.id/bitstream/handle/123456789/32310/Chapter II.pdf?sequence=4
Wirasmoyo, W., & Yogyakarta, U. T. (2009). *Optimasi Lahan Terlantar Menjadi Ruang Publik Di*. 217–225.