

Strategy for Settlement Area with Eco-Waterfront Approach in Lakkang Island, Makassar City

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Abstract

This study aims to analyze the site structure of houses and their supporting facilities for zones that face the waters of Lakkang Island, to analyze the attractiveness and tourist visits that can influence the development of supporting functions for residents' activities in the waterfront area of Lakkang Island, and to develop a structuring strategy. This research employs observation, interviews, documentation surveys, and theoretical studies as data gathering methods. Spatial, comparative, and SWOT analysis are used as study methods. According to the findings of the study, the site structure of houses in water-oriented zones consists of water zones, such as rivers, ponds, and mangrove vegetation, which are the center of community activities such as fishing and farming, river border zones, such as rice fields, and settlements in the region. Located on the riverside, where the rice fields on Lakkang Island can only be harvested once a year, and where the villages along the river boundary consist of 35 homes fewer than 100 meters apart. The settlement zone and its supports, i.e. the pattern and orientation of buildings, tend to be linear, following the road and river, with street-facing orientation predominating. The type is characterized by non-stilt structures, whereas permanent structures dominate the construction materials. Bamboo groves are often utilized as photo locations, and there is a bunker on home property.

Keywords: Eco-Waterfront; Housing area; Tourism

Introduction

Residential development is growing rapidly in coastal areas and small islands. Coastal areas that develop into residential areas are one of the most complex things, where in addition to economic, social and cultural aspects, the community will be involved. With the availability of abundant natural resources, not only the indigenous people who live in the area, but also the immigrants are also involved in the development process. The process of planning and building a settlement does not always go well. One of the settlement problems that arise as a result of the irregularity of the development process and the preservation of the environment that is not maintained causes environmental problems, namely settlements that are not suitable for habitation. The settlements of Lakkang Island, which have various potentials, have problems, namely irregular building arrangements, poorly maintained environmental conditions, and a decrease in mangrove area due to human activities that turn mangrove areas into settlements, agricultural land and ponds. According to (Arifin et al. 2019), the environmental conditions of the Lakkang Island settlements are growing rapidly and are unfit for habitation due to uncontrolled settlement development due to land use changes that are not in accordance with the designation plan, such as the shifting of functions of mangrove forests and bunkers into

settlements and ponds that are This results in a decrease in the area of mangrove forests and bunkers. Seeing from the condition of Lakkang Island which is not yet optimal, a strategy for structuring residential areas on Lakkang Island, Makassar City is needed with an Eco-Waterfront approach. With the Eco-Waterfront Approach, it is hoped that it can preserve nature, the environment and society, so that the ecosystem of Lakkang Island will be maintained and developed into a sustainable tourist destination.

In light of the fact that the current state of Lakkang Island is not yet ideal, it is necessary to devise a plan for the eco-friendly development of a residential area on Lakkang Island in Makassar City that takes into account the waterfront. It is envisaged that the Eco-Waterfront Approach would be able to conserve nature, the environment, and society. This will allow the ecology of Lakkang Island to be preserved and developed into a tourism destination that is environmentally responsible.

The waterfront area is an area that borders the waterfront such as seas, lakes, rivers, and the like that supports biodiversity and other ecosystems but has the potential to integrate ecology and waterfronts that provide opportunities to reduce environmental impacts from urbanization and restore ecosystem functions on the edge. urban sea. Eco-waterfront development according to Ramadhani et al. (2020) is a combination of ecological and waterfront concepts which includes the formation of function zones, access to transportation/circulation, public space management (open space), building mass arrangement and sanitation. According to Yoeti (1996) In developing a potential area to become a tourist destination to be attractive and worth visiting, the area must have 3 conditions, namely: (1) the area must have something to se, (2) the area must have something to do, (3) the area must be available something to buy. Therefore, all the potential of Lakkang Island requires a structuring strategy with an Eco-Waterfront approach in order to preserve the environment and the development of the area can be controlled and does not cause problems and does not diminish the existing potential. so that all regional potentials in relation to the growth of residential areas can be utilized optimally and also so that residents living on the island can maintain and maintain investments that can provide added value for the development of the island itself.

Methods

In order to gather information for this study, the researchers relied on primary sources of information such as interviews, questionnaires, and documentation in addition to direct observational data. Data gathering from agencies or departments that are directly associated to the study site is called primary data collection. Secondary data, on the other hand, is gathered through theoretical studies that may include legislation or past research.

The kind of sampling that was used in this investigation was a probability sampling method, more specifically, a technique known as simple random sampling, which involves selecting samples from a population in an unpredictable manner. The number of respondents in the sample might go as high as 70 if the Slovin formula is used to calculate the size of the sample. People who reside on Lakkang Island and those who occupy any of the island's houses make up the population that is being studied for this project.

A qualitative descriptive study, backed by comparison analysis and spatial analysis, was utilized to examine the layout of the home construction and its supporting facilities for the zones of Lakkang Island that are oriented to the seas of the island. Second, to analyze the tourist attraction and visitation that can affect the development of supporting functions for residents' activities in the waterfront area of Lakkang Island, specifically quantitative qualitative descriptive analysis supported by spatial analysis. This will be done in two parts. First, to analyze the tourist attraction and visitation that can affect the development of supporting

functions for residents' activities. The third objective is to devise a plan for residential area planning that takes into account the eco-waterfront philosophy of Lakkang Island in Makassar City, specifically. SWOT This analysis is predicated on a logic that may maximize advantages and possibilities while, at the same time, minimizing disadvantages and dangers.

Results and Discussion

Layout of House Buildings and Supporting Facilities for Zones Oriented to the Waters of Lakkang Island

The determination of the classification of zone functions on the island of lakkang is based on land cover arrangements. The zoning of Lakkang Island is divided into 3, namely the water zone, the river border zone and the residential and supporting zones. The classification map for the Lakkang Island zone can be seen in Figure 1.

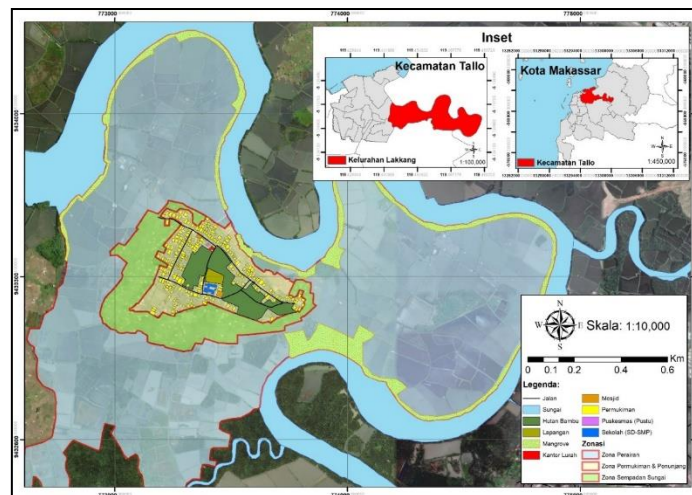


Figure 1. Zone Classification Map on Lakkang Island

Aquatic Zone

Water land cover consists of 3, namely rivers, ponds and mangroves. Geographically, the Tallo Watershed is located at coordinates between 5° 6' - 5° 16' South Latitude and 119° 3' - 119° 46' East Longitude. The Tallo River Basin is located in 3 (three) city and district administration areas, namely Makassar City, Gowa Regency, Maros Regency with a total area of 407 km². The amount of river water discharge using the Mock Method obtained a maximum discharge of 79.685 m³/s occurred in the rainy season and a minimum discharge of 21.141 m/s occurred in the dry season. The results of the calculation of the average discharge of 43.834 m³/s. The Tallo River has an average width of 110-126 m² while the length of the Tallo River from upstream to downstream reaches 72.00 km with a watershed area of 339.90 km². The water level of the Tallo River at maximum discharge conditions reaches 3.18 m from the bottom. river and at minimum discharge conditions it reaches 1.66 m. The depth of the river upstream to the Tallo bridge is approximately 4.00 m and to the estuary up to 6 m

The use of pond land in the waterfront area of Lakkang Island is based on an area of 77% or about 172.79 hectares of the total area of Lakkang Island. The results of ponds on Lakkang Island are dominated by types of pond fish, namely tilapia, milkfish and shrimp. Some of the results from the pond are used for personal needs and are also sold. Generally, pond farmers or fishermen will collect their results to one of the collectors on Lakkang Island, but there are also those who bring it to the center of Makassar City for sale or buyers themselves who come to the island to make transactions with pond owners. Pond cultivation activities that utilize coastal areas as cultivation land can increase the number of jobs for the community on Lakkang Island.

The use of mangrove land in the waterfront area of Lakkang Island is based on an area of 6%, around 13.21 hectares of the total area of Lakkang Island. Lakkang Island is a conservation area which is a delta area in Makassar City with mangrove potential in the form of mangrove trees and nipa trees. Mangroves are a potential tourist attraction on Lakkang Island, which until now has often become a tourist destination for local and foreign tourists.

Mangrove vegetation on Lakkang Island can be found along the riverbanks. Tourists and local residents can also learn many things and benefits from the potential of natural resources such as nipa palm trees which can be used as building materials, fuel, and food. Meanwhile, mangrove ecosystems have ecological functions such as natural waste collectors and processing (bioremediation) or natural biofilters which are very effective in tackling pollution and supporting fishery activities, causing this area to be widely used for aquaculture at the expense of mangrove vegetation (H. and K 2012). It is hoped that the water border can become a green belt area as a safeguard against rising river levels or attractive ecological-based public spaces and stop the construction of housing towards the river to support tourism on the island of Lakkang.

River Border Zone

The use of paddy fields is 9% about 20.2 hectares of the total area of Lakkang Island. The use of paddy fields is quite extensive due to the community's livelihood as farmers. Most of the rice farmers only use the results from their work as personal needs and some are sold, but not much. This is because the rice fields on Lakkang Island are rainfed rice fields. So that the rice fields can only be harvested once a year.

Based on existing data, there are several buildings located in the river border area of Lakkang Island with disorganized conditions and seem unfit for habitation due to the construction of houses that tend to be unplanned and develop according to the needs of the owner without regard to land use and existing regulations. This border area is not possible to build permanent buildings, because the characteristics of the protected function zone are or are prohibited.

Riverside settlements are generally linear in pattern, because they are lined up along the riverbank following the shape of the river. However, the reality that occurs in the river border area of the island of Lakkang is that the dominant areas occur unplanned so that in the end it gives rise to its own character about the physical area which tends to have an unclear pattern.

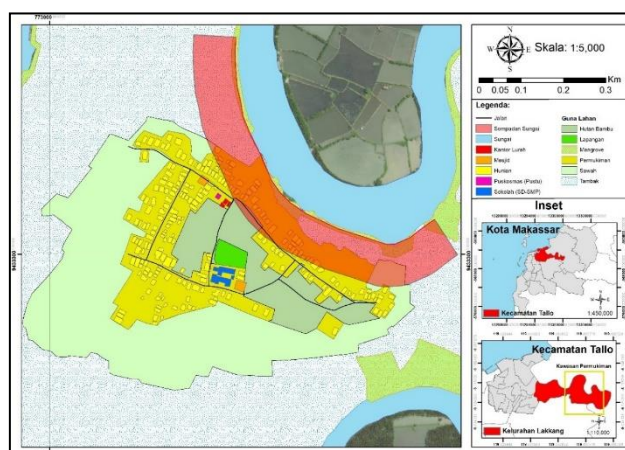


Figure 2. Map of the Lakkang Island River Border

This river border zone consists of 35 dwellings. There are several housing conditions located at a distance of less than 100 meters from the Lakkang river and seen semi-permanent to non-permanent construction/building materials. This is of course not in accordance with applicable

regulations. According to the Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 28/Prt/M/2015 concerning Stipulation of River Border Lines and Lake Border Lines that the boundaries of large rivers without embankments are determined to be at least 100 meters. The map of the Lakkang Island river border can be seen in Figure 2.

Settlement Zones and Supports

The use of residential land on Lakkang Island is based on an area of 6%, around 13.84 hectares of the total area of Lakkang Island. The settlement pattern on Lakkang Island tends to be linear following roads and rivers that spread in several parts of the Lakkang Island area according to the environment. The current condition of the settlement pattern on Lakkang Island is created because the community's land needs are increasing. The various patterns that are formed are also created because of the adjustment to the existing geographical conditions in building a house. The current pattern also does not differ much from the existing early settlement pattern.

There are 3 kinds of orientations in the Lakkang Island settlements. Linear settlements along the road are oriented towards the road, linear settlements along the river are oriented to the river and settlements are facing the river or ponds.

Based on existing data, the orientation of buildings on Lakkang Island is 2% facing the river, 85% facing the road, and 13% facing rice fields and ponds. The orientation of some buildings tends to turn their backs on the river, as this has more potential to pollute the environment, because all waste, both solid and liquid waste, will be easier to dispose of if the house has its back to the river. While the orientation of the building partially faces the river and rice fields because the river and rice fields are the main orientation for housing development (Keman, 2005) and the location of community livelihoods on the island of Lakkang. The settlement pattern map can be seen in Figure 3.

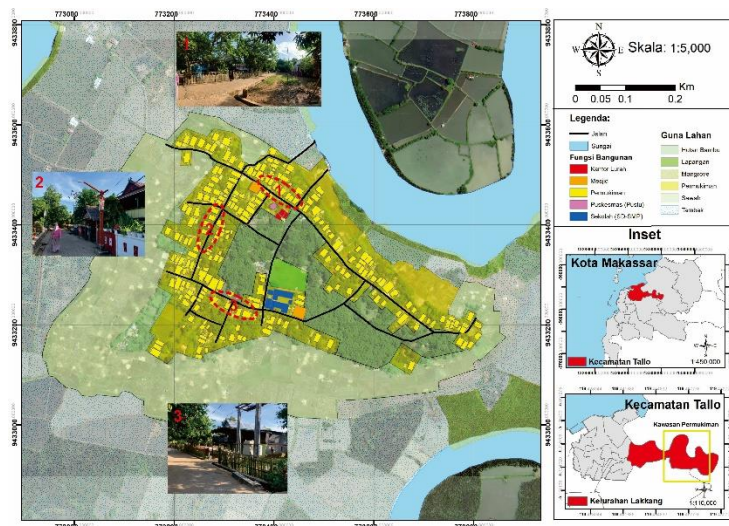


Figure 3. Map of Settlement Patterns

There are two types of buildings found in Lakkang Island settlements, stilt buildings and non-stilt buildings. For the type of house on stilts, 103 houses and non-stilt houses 133 houses. For non-stilt buildings, it dominates and grows to the mainland because the building is stronger.

There are fewer stilt houses on Lakkang Island and still have a traditional aspect to the settlements where the majority of the population is ethnic Makassar and most of them come from or are native to the island of Lakkang. This traditional building has a very attractive beauty and characteristic as a tourism supporter because nowadays it is very rarely found, especially

in urban areas. In addition, the stilt houses on Lakkang Island still maintain the roof shape of the traditional Bugis people's houses which are marked by the presence of an 'ajong' at the end of the roof of the house. Under the house they also usually use for economic activities. For a map of the type of building can be seen in Figure 4.

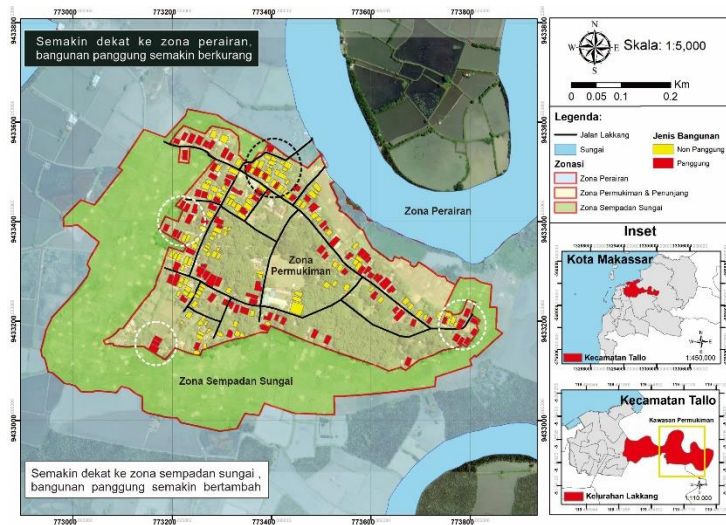


Figure 4. Building Type Map

Building materials on the island of Lakkang consist of permanent, semi-permanent and non-permanent buildings. Of the 236, 56 (24%) built non-permanent houses, 89 (38%) built semi-permanent houses, and 91 (38%) built permanent houses. The characteristics of the building are dominated by semi-permanent buildings.

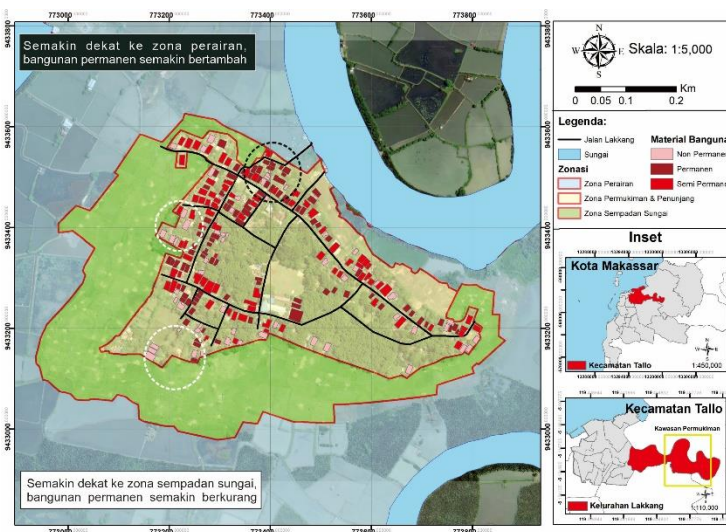


Figure 5. Building Material Map

For buildings with non-permanent materials, usually the buildings are made of wood or boards with wooden or bamboo poles. For semi-permanent materials, usually part of the building has been turned into stone. Starting from the foundation of the house that has been paved and followed by some of the board walls being replaced with stone. For permanent building materials, they are more commonly found in areas closer to the mainland. People who change their houses to non-permanent ones have reasons to make their houses more durable. However, this condition is contrary to the local wisdom of the people of Lakkang Island there, namely using non-permanent houses. The map of building materials can be seen in Figure 5.

This bamboo forest is located in the middle of the island. The use of bamboo forest land based on the area is 7%, which is 4.91 hectares of the total area of Lakkang Island. Bamboo forests are often used as photo spots and camping areas by visitors. This condition also applies to the potential of bamboo forests that are so abundant in Lakkang. This educational utilization can be done through the construction of a craft center based on local materials in Lakkang Village.

The bunkers on Lakkang Island are spread over three locations which are quite close together. One of them has been fenced off and given a nameplate. However, there is one bunker located right in the middle of a residential area. Thus, to see it, you need to pass through a resident's house. This is because the bunker is located on residential land.

Based on the survey conducted, the community obtains clean water from deep bore wells and dug wells. Currently, there are two wells with reservoirs that serve to serve the clean water needs of the Lakkang residents. The drilled well on Lakkang Island is then connected to the residents' houses through pipes. Its use is controlled through measuring instruments that become the benchmark for costs incurred by residents.

Before using drilled wells, the community used PDAM as a water source. However, since 2015, PDAM no longer irrigates pipes on Lakkang Island due to pipe damage/the increasing number of housing developments in Pampang Village and unstable water flow causing less water flow to reach Lakkang Island. Regarding waste management in the Lakkang Sub-District Area, currently waste management in the Lakkang Sub-District has been served by the presence of 4 WWTP buildings. Of the 4 WWTPs, only 3 WWTPs are functioning. The other WWTP building is not functioning yet because it is still under construction.

The drainage network on Lakkang Island does not have good connectivity, this is indicated by the discontinuous condition of the drainage network so that the drainage network has an unintegrated flow. Based on the established standards, the drainage network has good continuity starting from local drainage, tertiary drainage, secondary drainage and then primary drainage which then flows into water bodies (rivers). Drainage flows are also directly flowed into the sea without any treatment. Based on this, it can be seen that the carrying capacity of the drainage is not adequate in the settlements of Lakkang Island.

Electricity is everything related to the supply and utilization of electric power and the business of supporting electricity. Energy needs, in this case the electricity needs that serve the Lakkang community, are sourced from PLN. The electricity needs are served through a substation located in RW 1. In addition, there are street lights along the main road network of Lakkang Island which was built in 2019. Previously, local residents relied on residents' house lights as street lighting at night.

Waste management is carried out by dumping and burning. The current waste transportation system has been supported by the existence of garbage transportation in the form of garbage motorbikes that serve waste transportation in each resident's house. At a cost of Rp. 10,000/month per house. However, there is no system for transporting waste from Lakkang Island to the TPA. In addition, the location of waste disposal on Lakkang Island is carried out in areas that are not designated, this can damage the environment and cleanliness on the island and there is no waste management effort including classification based on the type of waste generated. According to Yoselisa, Evierni (2012) that good waste management is collected and transported. This waste is the responsibility of the community to create a clean and healthy environment.

For telecommunication needs, the people of Lakkang Village are supported by the existence of two telecommunication towers. Apart from having a BTS (Bas Transciever Station) which

functions as a signal sender and receiver, there is also a Wifi Transmitter serving Lakkang Island which is located in RW 1.

There are 2 mosques that are quite large in size, located in RW 1 and RW 2. The condition of the mosque is in a decent condition to serve the residents of Lakkang Island. The size of this mosque can accommodate the entire population of the island of Lakkang. However, there are still many male residents who perform Friday prayers in Makassar City, such as the Al-markas mosque. The existence of the mosque as the only means of worship indicates that the majority of the population on Lakkang Island is Muslim.

Trading facilities are a means of complementing the needs of visitors in carrying out tourism activities. There are several shops or stalls that serve local residents or tourists and are set up in the courtyards of residents' homes that provide food and soft drinks. Meanwhile, to fulfill basic needs, residents usually go to the city center to shop. The availability of souvenirs or typical souvenirs on Lakkang Island will certainly be the main attraction for visitors.

Open Space on Lakkang Island is more dominant in open spaces such as rice fields, fields, river borders, ponds and bamboo forests. The field in this area is often used by local people for sports and as a place for children to play. Meanwhile, rice fields, ponds, river borders and bamboo forests are used to improve the people's economy.

Tourist attraction and visitation that can affect the development of supporting functions for residents' activities in the waterfront area of Lakkang Island.

According to Cooper and Hall (2007) there are 4 (four) components that must be owned by a tourist attraction, namely accessibility, attraction, amenities and ancillary.

Accessibility

Access to the Lakkang Village area can only be reached using a motor boat that has been designed, with a distance of about 15-20 minutes. The fee charged is Rp. 5,000 in one go. The access to the pier begins through the monkey pier located in the Makassar UNHAS Campus area. While the transportation used on the island is by foot. Most residents walk to access locations between dwellings and between dwellings. However, there are also residents who use private transportation facilities, namely motorbikes and bicycles.

Lakkang Island has 7 piers that are spread out and connected by a main road network so that the role of the pier becomes a connecting point with other areas. The access to Lakkang Island can be reached through 2 piers, namely the monkey pier and the toll pier. The monkey pier can be traveled in approximately 20 minutes, while the toll jetty can be traveled in approximately 10 minutes. While the operating time depends on the time of visitors, generally when they go to work and come home from work, namely from 07.00-09.00 Wita and when they come home from work, namely 16.00-17.00 Wita.

Accessibility to Attractions based on Road Conditions

Footpaths and some neighborhood roads generally follow a residential pattern, do not regularly follow the development of buildings and cannot be passed by four-wheeled vehicles. Roads in the Lakkang sub-district have been supported by the type of paving block pavement with a road width of between 2-3 meters. One of the supporting factors for good accessibility is the availability of a road network to make it easier for visitors to an area. However, at some points there are still uneven roads that prevent pedestrians and motorized vehicles based on the Indonesian National Standard (2004) for environmental roads 1 from meeting the standards. The circulation analysis map on Lakkang Island can be seen in Figure 6.



Figure 6. Map of Circulation Analysis on Lakkang Island

Attractions

Based on the results of the survey and data processing, it can be seen that the tourist attractions at the research site have several tourist attractions consisting of nature tourism, historical tourism, and special interest tourism. In accordance with Yoeti (1996) that an area must have "something to see" meaning that in that place there must be a tourist attraction that is different from what is owned by other regions.

Natural potential is natural tourism that has the potential of natural resources that can be enjoyed and utilized by the environment such as boating, rivers, nipah and mangrove vegetation, as well as bamboo and rural atmosphere. According to Fandeli and Mukhlison (2000), destinations that are of interest to ecotour tourists are natural areas.

Lakkang Island is a conservation area with mangrove potential in the form of mangrove trees, nipah and bamboo. Mangrove vegetation (mangroves and nipa palm) on Lakkang Island can be found along the riverbanks. Tourists and local residents can also learn many things and benefits from the potential of natural resources such as nipa palm trees which can be used as building materials, fuel, and food.

Lakkang Island also has diverse flora and fauna. Typical plant types along the river (soft scape) found around this island are Nipa plants (*Nypa fruticans*) and mangrove plants (*Rhizophora conyugata*). In addition to the two typical aquatic flora, there are also other plants that appear to dominate on Lakkang Island, namely rice (*Oryza sativa*), bamboo (*Bambusa arundinacea*), cassava (*Manihot utilisima*), corn (*Zea mays*), and bananas (*Musa paradisiaca*). The fauna found on this island is dominated by pond fish species, namely tilapia, milkfish and shrimp. In addition to the fauna of pond fish species, there are also community pets that exist but do not dominate like other types of pond fish, including cows, chickens, and ducks. The problem of flora and fauna is the threat of the existence of specific flora and fauna due to the increasing activity of human behavior that is not environmentally sound. Often river water is black and smells causing many aquatic ecosystems to die and decrease in number. The amount of garbage along the river area also emits an unpleasant odor. In addition, the high damage/cutting of nipah and mangrove trees and the increasing area of mangrove converted into open-air ponds are the main factors for changing the mangrove ecosystem. Therefore, conservation is needed with a mangrove revitalization program with replanting activities on riverbanks as green lines and planting mangroves on open ponds with an intercropping pond pattern.



Figure 7. Natural Potential on Lakkang Island

Historical potential is an influential thing to become a tourist attraction, where there are historical relics there such as Japanese heritage defense bunkers and can enjoy the pattern of socio-cultural life of the local community by holding events every time there is an event so that tourists can participate and play a role in the local community, because the family system on Lakkang Island is still very strong, it needs to be maintained and preserved. Historical tourism, namely the Japanese heritage bunker, the location is not far from Makassar City, there is local cultural wisdom with the concept of a house shape that is still a model of a house on stilts. The bunkers on Lakkang Island are spread over three locations which are quite close together. One of them has been fenced off and given a nameplate. However, there is one bunker located right in the middle of a residential area. So to see it, you need to pass through a resident's house. This is because the bunker is located on resident's land. Most tourists who come to Lakkang Island travel by visiting the Japanese Bunker and traveling around the village by bicycle, especially on weekends.



Figure 8. Historical Potential on Lakkang Island

Based on the survey results, it can be seen that on the island of Lakkang there are several stalls and places to eat that sell a variety of food, drinks and special foods, namely 'Lawar Ikan' and 'Pallu Unti-untia' using ingredients available on Lakkang Island. The community also often makes various kinds of handicrafts made of bamboo by utilizing the potential of the bamboo forest available on Lakkang Island. In addition, there are also plastic crafts and the like which are produced directly by the people on the island of Lakkang. However, the typical foods of Lakkang Island and handicrafts are marketed by residents only during certain events, for example when important guests come to Lakkang Island or during exhibition events held in Makassar City. According to Yoeti (1996) a tourism area must have something to buy at all times, which means that there must be facilities for shopping, especially souvenirs and folk crafts as souvenirs to take back to the place of origin of tourists.

From the survey results that on Lakkang Island there are 11 residential units that are used as homestays for tourists who want to stay on Lakkang Island so that tourists feel at home and have the desire to visit again and have ponds, rivers, and rice fields that can be used as recreational facilities but it is not used as a recreational facility, it is not in accordance with what Yoeti (1996) said that an area must have something to do, which means that in an area recreational facilities must be provided that can make tourists feel at home longer in that place. Therefore, Lakkang Island must have / utilize natural potential as special interest tourism, namely a type of tourism that has just been developed in Indonesia, where this tour is prioritized for tourists who have special motivations, which usually tourists must have expertise. Special

interest tours offered on Lakkang Island are fishing for fish and shrimp, fishing for fish and growing rice. A map of the distribution of tourism potential on Lakkang Island can be seen in Figure 9.

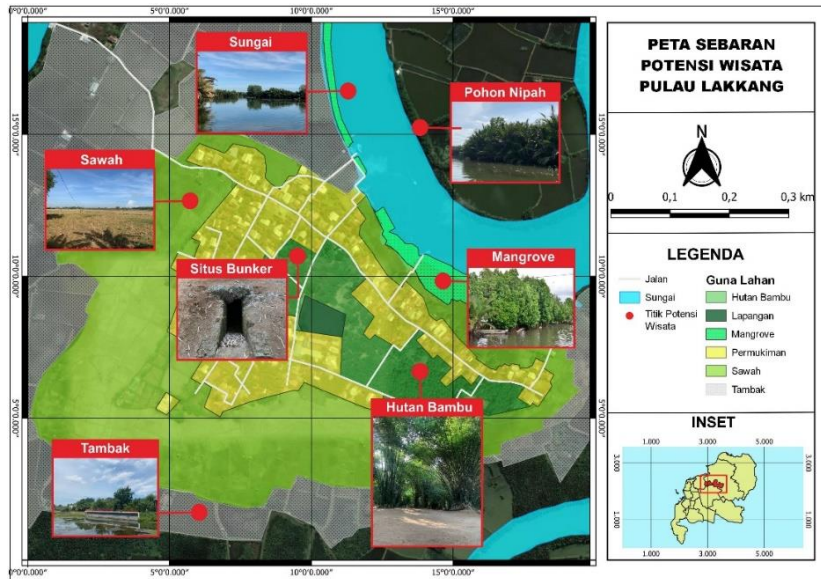


Figure 9. Map of Circulation Analysis on Lakkang Island

Facilities (Amenity)

There are several community houses that double function, namely as residences and homestays. For people who own more than one house, only one house is used as a residence and the other is rented out. There are thirty houses that they rent out if there are visitors. The price per night is 300,000.00 and plus the meal is 50,000 per day if tourists do not bring lunch. By renting out people's houses, it is certainly very good for improving the economy of the community in the research area because it can become one of the livelihoods and support for tourism on the island of Lakkang.

There are typical traditional foods, namely fish lawar and pallu unti-untia on offer on the island of lakkang. In addition, there is a group of PKK women consisting of housewives who have received training in making culinary menus but there is no marketing facility for traditional specialties typical of the local population. There are community groups who have received training on making handicrafts from bamboo and used materials but the training provided to these groups is not sustainable.

Institutional Providing Additional Services (Ancillary)

The lack of promotion/information about tourist attractions in the Lakkang Island area to tourists/community so that people/visitors who want to find information about Lakkang Island. The level of security on Lakkang Island is quite good. This is evidenced by the absence of criminal cases that occurred on Lakkang Island. There is an Environmental Security Post located in RW 1. Apart from being a security post, the place is also a means of social interaction between residents.

Organized management of tourism activities which include the government, local government, private sector and the community. Tourism management on Lakkang Island is still very minimal even though the driving force for the tourism sector is inseparable from the role of managers and parties who have driven the success of tourism. Good and appropriate management methods will be a potential that can increase regional income. Therefore, the

government's role is needed to develop a comprehensively planned tourism development so that optimal benefits can be obtained for the community, both in terms of economy, social and culture.

Lakkang Island has several community groups based on the profession and expertise of interest. These groups include the Farmer's Group, the Pond Farmers' Group, the Fisherman's Group, the Mangrove Group, the Bamboo Crafts Group, and the PKK Group. There are community institutions that are still active and some are not. The obstacles faced by these community groups are the unequal distribution of assistance and no continuous training or guidance provided by the government.

Strategy for Settling Settlement Areas with Eco-Waterfront Approach Lakkang Island, Makassar City

SWOT Analysis Matrix

The following is a SWOT analysis matrix using the IFAS and EFAS methods based on information obtained from the identification of internal and external factors in the eco-waterfront-based Lakkang Island tourist area as follows:

Table 1. IFAS Matrix

Aspects	Element	Weight	Rating	Weight x Rating
Strength	The existence of natural potentials such as bamboo forests, mangrove forests / river biota vegetation, as well as various flora and fauna that can be used as the main tourist attraction.	0,12	3	0,36
	There is a Japanese heritage defense bunker that can be one of the historical tourist destinations in Makassar City.	0,11	3	0,33
	Located in the middle of Makassar City which still has a rural area based on people's life patterns that are thick with culture and have special foods and houses that are typical of Makassar.	0,10	3	0,30
	Located in the <i>Waterfront</i> area where access to Lakkang Island must use a boat which has the potential to be a river comb tour and has a pier as an accessibility.	0,10	3	0,30
	The friendly attitude of residents welcomes tourists and the community is ready to be involved in tourism management where there are residents' houses that can be rented out as homestays and the community mostly knows each other and has kinship relationships.	0,12	3	0,36
	Total	1	-	1,65
Aspects	Element	Weight	Rating	Weight x Rating
Weakness	Rivers that have been polluted due to factory waste that affects fish catches and are prone to the threat of overflowing the Tallo river.	0,08	-2	-0,16
	Supporting facilities for tourist activities are inadequate or inadequate.	0,06	-2	-0,12

	Lack of accessibility to the Lakkang Island area due to limited boat fleets and uncertain schedules.	0,08	-1	-0,08
	The lack of knowledge of the local community about tourism activities so that they have not been able to take advantage of craft training for making souvenirs.	0,09	-3	-0,27
	Lack of promotion / information about tourist attractions in the Lakkang Island area to tourists / the public.	0,05	-1	-0,25
	The physical environment of community settlements is uninhabitable and growing rapidly due to the uncontrolled construction of settlements due to the conversion of mangrove forests and bunkers to housing and ponds.	0,09	-2	-0,18
	Total	1		-1,06

Table 2. EFAS Matrix

Aspects	Element	Weight	Rating	Weight x Rating
<i>Opportunities</i>	Based on the Regional Regulation (PERDA) of Makassar City Number 4 of 2015 concerning the Makassar City RTRW of 2015-2034 concerning the Spatial Pattern Plan, Tallo District is an area intended as a tourism area which includes cultural tourism areas, natural tourism areas and artificial tourism areas.	0,20	4	0,80
	The Tallo River Area is a strategic area for Regional IV tourism, the strategy implementation program that will be carried out in the form of <i>Historical</i> and ecotourism <i>Creativity Center</i> in accordance with the RIPPDA of Makassar City 2015-2035.	0,19	3	0,57
	The Tallo River has the potential to be used as a water transportation route.	0,18	3	0,54
	Total	1	-	1,91
Aspects	Element	Weight	Rating	Weight x Rating
<i>Threat</i>	The attractions are not varied	0,09	-2	-0,18
	The economy of society does not improve	0,08	-1	-0,08
	The rapid development of the times that can affect the pattern of life of customs and culture as well as the architecture of houses typical of Lakkang Island	0,11	-2	-0,22
	The local government has not implemented the policy optimally so it is necessary to develop a definite planning	0,08	-1	-0,08

	Prone to pollution in rivers that can affect the sustainability of rivers and the life of existing river biota and siltation of river flows	0,06	-1	-0,06
	Total	1		-0,62

X = Strengths + Weaknesses

$$= 1,65 + (- 1,06)$$

$$= 0, 59$$

Y = Opportunities + Threats

$$= 1,91 + (- 0,62)$$

$$=1,29$$

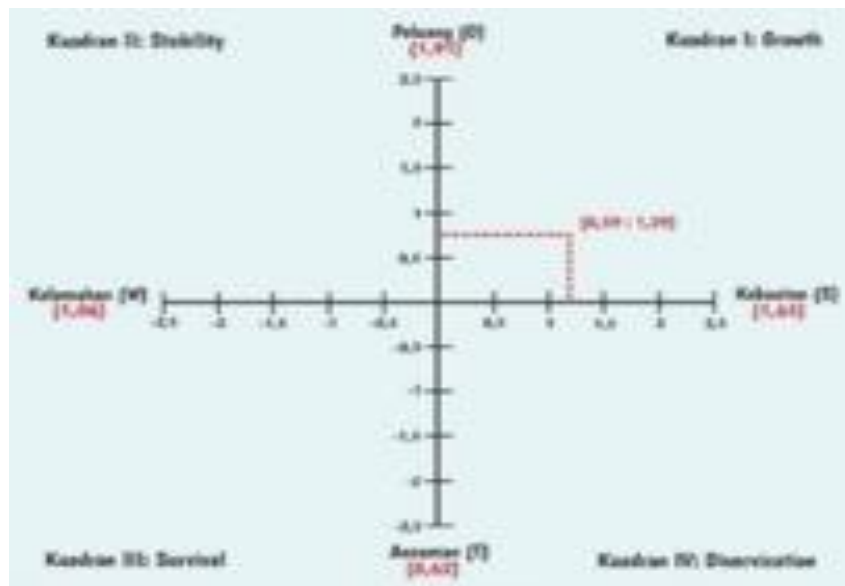


Figure 10. Structuring Position in swot quadrant

Based on the SWOT matrix above, it shows that the Lakkang Island area is in Quadrant I, where this indicates that the Makassar City Lakkang Island Settlement Area with the Eco-Waterfront Approach is in a position where it is necessary to improve quality which is a strength factor to maximize the utilization of existing opportunities. Then the priority of the arrangement lies in the strategy (S-O). The S-O are as follows:

SO1. Utilize and develop a variety of tourist attractions in accordance with the natural conditions and existing land functions while maintaining environmental sustainability. Efforts are needed to develop variations in tourist attractions such as the potential for uniqueness, the physical character of the rural natural environment as well as the socio-cultural life of the community, which is managed and packaged in an attractive, natural and planned manner so that it can become an attraction for tourists.

SO2. Maintenance and repair of Japanese bunkers to become a tourist attraction so as to preserve history. Improvement of the bunker location as a historical site needs to be done as a historical site which is the main tourist attraction on Lakkang Island.

SO3. Maintaining the traditional traditional house of the community and the typical food of Lakkang Island to become a characteristic and developing existing cultural attractions by displaying these attractions without waiting for certain moments. There needs to be an effort from the government and the community to maintain the community's traditional traditional house.

SO4. Treating waterfront areas and providing guidance to managers regarding good object management in relation to environmental conservation as well as maintaining and increasing the number of dock accessibility and boat accommodations. The addition of the number of boat transportation serves to bring tourists to Lakkang Island for river and mangrove tourism activities, while the addition of the Tallo River bus stop so that it can improve the integration of public transportation on the Tallo River. For the direction of repair and maintenance of boat accommodation, the safety and comfort of passengers must be considered (Arifin et al., 2020).

SO5. Management and maintenance of homestays as well as improving welfare by opening employment opportunities for the surrounding community by being directly involved in tourism activities.

This homestay maintenance is needed in terms of cleanliness and comfort. This is so that tourists who visit feel comfortable and have the desire to return to visit

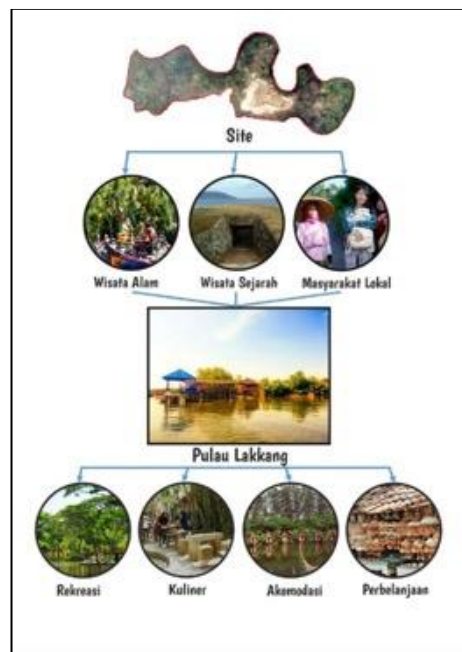


Figure 11. Structuring Strategy Scheme

Thus, in the strategy of structuring the residential area of Lakkang Island, Makassar City with an eco-waterfront approach, each of which needs to have criteria, namely making water tourism environmentally friendly by involving the community so as to increase economic value, in which Eco-Waterfront can be used as a tourist spot with an eco-friendly approach. Ecotourism and community based ecotourism, each of which also has the following criteria; (1) ecotourism, which increases the value of environmentally friendly conservation, increases the value of culture and nature tourism, and increases the value of community and economic participation; (2) community-based ecotourism, which increases the value of community participation, the value of community education, and the economic value of the community. However, it still prioritizes the Eco-Waterfront principle, namely water tourism that is environmentally friendly by involving the role of the community and increasing economic value. The following is a scheme of a structuring strategy with an Eco-Waterfront approach.

Based on the above scheme, Lakkang Island as a place of recreation, this is an effort to revive and increase the types of recreation on Lakkang Island, such as several water and land recreations with attractive views. Lakkang Island is also a culinary tour where after being satisfied with recreation, tourists can eat the typical food of Lakkang Island while enjoying the natural scenery. Not only that, tourists can also shop because there are shops that sell various

souvenirs typical of Lakkang Island for visitors to have as souvenirs, while enjoying the view of Lakkang Island. And there are also several lodging accommodations for visitors who want to stay on Lakkang Island, where this inn is the home of one of the residents so that visitors can socialize directly with the people on Lakkang Island. Thus, the strategic role of structuring the residential area of Lakkang Island in Makassar City with an eco-waterfront approach can increase the active role of the community, apart from being a tourist place, it can help the community in tourism activities on Lakkang Island by providing facilities and services for related tourism objects that are environmentally friendly and sustainable.

The strategy for structuring the residential area of Lakkang Island, Makassar City, continues to prioritize the Eco-Waterfront principle, namely water tourism that is environmentally friendly by involving the role of the community and increasing economic value.

The concept applied to the research location contains several points that can be used as references and limitations in planning, namely as follows; (1) Green open space, judging from the condition of green space in coastal settlements, is very lacking; (2) Green water, inadequate water supply conditions in settlements; (3) Green waste, the waste disposal system is not managed properly, local residents often throw garbage carelessly to pollute the residential environment.

Conclusion

The layout of the house building and its supporting facilities for the zones oriented to the waters of Lakkang Island consists of 3 classifications of zone functions. The water zones are rivers, ponds and mangrove vegetation which are the center areas of community activities who make a living as fishermen and pond farmers. The river border zone is the rice fields and settlements located on the river border where the rice fields on the island of Lakkang can be harvested once a year and the settlements on the river border consist of 35 dwellings. There are several housing conditions located at a distance of less than 100 meters from the Lakkang river and seen semi-permanent to non-permanent construction / building materials that are not in accordance with applicable regulations.

The settlement zone and its supports are the pattern and orientation of buildings, types of buildings, building materials, bamboo forests, bunkers and facilities and infrastructure. The pattern of settlements on Lakkang Island tends to be linear following the roads and rivers that spread in several parts of the Lakkang Island area according to the environment. Based on existing data, the orientation of buildings on Lakkang Island is 2% facing the river, 85% facing the road, and 13% facing rice fields and ponds. The orientation of the building tends to be behind the river. For non-stilt buildings, it dominates and grows to the mainland because the building is stronger. Meanwhile, based on building materials, permanent settlements are dominated, this condition is contrary to the local wisdom of the Lakkang Island community there, namely using non-permanent houses. The bamboo tree is located in the middle of the island and is often used as a photo spot and camping area by visitors. While the bunkers on Lakkang Island are spread over three locations which are quite close together, however, one bunker is located on residential land. Furthermore, facilities and infrastructure are still minimal and in poor condition.

The attractiveness and visiting power of tourists that can affect the development of supporting functions for residents' activities in the waterfront area of Lakkang Island is the difficulty of accessibility to the Lakkang Delta area because to be able to reach this location visitors must use water transportation modes whose schedule is not every time. There are several tourist attractions found on the island of Lakkang, namely the natural potential that can be enjoyed and utilized by the environment such as boating, rivers, nipah and mangrove vegetation, as well

as bamboo and rural atmosphere. In addition, there is also a historical potential in the form of a Japanese heritage bunker. The lack of supporting facilities for tourism activities on Lakkang Island results in the discomfort of tourists carrying out existing tourism activities. There are community institutions that are still active and some are not. The obstacles faced by these community groups are the unequal distribution of assistance and no continuous training or guidance provided by the government

Based on the SWOT Cartesian matrix which is in quadrant I, the development priority lies in the strategy (S-O) which is to utilize and develop a variety of tourist attractions that are in accordance with the natural conditions and existing land functions as well as maintaining environmental sustainability, maintenance and repair of Japanese bunkers so that they become tourist attractions. tourist attraction so as to preserve history, maintain the traditional traditional house of the community and the typical food of Lakkang Island so that it becomes a characteristic and develop existing cultural attractions by displaying these attractions without waiting for certain moments, processing waterfront areas and coaching to managers regarding the management of objects both in terms of environmental conservation as well as maintenance and increasing the number of dock accessibility and boat accommodation as well as the management and maintenance of homestays as well as improving welfare by opening employment opportunities for the surrounding community by directly involving the local community. and tourism activities. Further study of research sites is needed in order to obtain more complete and accurate information so that the providers of assistance and training to the residents of Lakkang Island can provide further guidance so that it can be of productive and economic value.

The arrangement with an eco waterfront approach is needed because the settlements on Lakkang Island are increasingly disorganized. Therefore, development with an eco-waterfront approach can be achieved if the present and future communities participate in maintaining the natural, historical and settlement potentials of the present and the environment. This eco-waterfront planning is expected to focus on improving the quality of settlements and improving the community's economy. In addition, the attraction and carrying capacity of Lakkang Island tourism aims as a tourist attraction by paying attention to the potential and functions of the existing land.

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