



The Design of Eco-friendly Resort, Asu Island (Organic Architecture)

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Abstract. This study aims to design an eco-friendly resort based on an organic architecture approach on Asu Island, Sirombu District, West Nias Regency, North Sumatra Province. The design with an organic architectural approach aims to create a space that can harmonize the indoor space with the outdoor space and can provide a space experience close to nature for resort users. In more detail, the design of eco-friendly resorts on Asu Island aims to meet tourist accommodation needs, facilitate space with attention to tourists, and analyze energy sources and utility systems on Asu Island. The site's location is right on the edge of the sea coast off Asu Island, Sirombu District, West Nias Regency, and is directly opposite the Indian Ocean. The site location selection method is measured from indicators including view, surrounding function, environment, soil condition, an overview of city structure, and accessibility. The location selection for the site was chosen based on several considerations such as view, the location of the resort that is separated from the city crowd, tourist convenience, searching for site locations via google maps and conducting direct surveys to determine site conditions. The approach used in this design is a literature study, a user approach by searching for user room data in resort design, and field studies that are directly carried out to review the condition of the site and the area around the site.

Keywords: architecture, Asu, island, organic, resort

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1. Introduction

The significance or basis of this study stems from the fact that the tourism sector, especially in Asu Island, Sirombu District, West Nias Regency, has become a natural tourist attraction to be visited by domestic and foreign tourists. The national tourism sector is one of the priority sectors in national development. According to the Travel and Tourism Competitiveness Index (TTCI) 2017, Indonesia is ranked 42 out of 136 countries [1]. This island is one of the outer islands in the Nias Archipelago and is directly connected to the Indian Ocean with an area of 18 km². Asu Island is located in Sirombu District, West Nias Regency, North Sumatra Province. Nias Islands is famous for its beautiful beaches and challenging waves for surfing sports

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activists who can be done on several beaches in both South Nias Regency and West Nias Regency. Asu Island is one of the marine tourism destinations on Nias Island with the nickname "The Paradise on Earth. Asu Island is included in the designated ecotourism-based nature tourism area environmentally friendly tourism (Article 33 Paragraph 6 letter b) [2]. The main goal of eco-friendly resorts is the experience of creating an environmentally friendly place and provide ecotourism that is an attraction for domestic tourists and provides a space experience that is closer to nature for tourists. Natural conditions can be achieved through design by applying environmentally friendly concepts to resort buildings. Organic architecture is architecture without space and abstract form by combining the idea of buildings with nature in the land environment [3].

2. Literature Review

Based on the meaning of each word in the title "Eco-friendly Resort Design with Organic Architecture Approach," it can be concluded that this design will build a tourist attraction in the form of a resort that is environmentally friendly and uses an Organic Architecture approach on Asu Island to meet tourist space needs and build the tourism sector On Asu Island.

Resort is a temporary change of residence for a person outside his residence with the aim of, among other things, to get the freshness of body and soul and the desire to know something. It can also be related to interests related to sports activities, health, conventions, religion and other business needs [4]. According to Gee, Chuck Y. (1988) in the citation of the journal Ghassani (2019) Resort is an area that provides accommodation equipped with recreational facilities in it for tourists [5]. Resort is a tourist or recreational place that is often visited by people where visitors come to enjoy its natural potential [6].

The conclusion of the definition of a resort from several experts and sources above is that a resort is a temporary residence with a location close to nature equipped with entertainment, recreation, lodging, food and beverage services with the target user being out, couples as well as individuals.

The characteristics of the resort are as follows: Having a private location or far from a distance with natural views such as beaches, lakes, and mountains, one of the main goals of tourists visiting is to find peace away from the daily routine of tourists, resorts always have supporting facilities such as very private rooms, swimming pools, sports arenas, the building is a low-rise building and also multi-mass. resort rooms require large space because they meet the space needs of visitors who are on vacation in the long term (7-14 days) and short term (4-7 days). Generally resorts are designed with 2 rooms and a family room [7]. there are requirements for

building facilities, there are Parking lot, Sports and recreation area, Minimum 50 bedrooms, Restaurant, Bar, Lobby, Lounge, Front of the house, Back of the house, and ME Building [8].

There are 8 principles of organic architecture according to David Pearson (2002) building as nature, continuous present, form follows flow, of the people, of the hill, of the materials, youthful and unexpected, and living music [9].

In Ian Thomson's (2007) book entitled *Frank Lloyd Wright: A Visual Encyclopedia*, there are 5 principles of organic architecture according to Frank Lloyd Wright. There are simplicity, multiple styles, sympathy with environment, the "nature" of material, and buildings should bring people joy [10].

The approach used in this design is Organic Architecture. The Organic Architecture is architecture inspired by nature [11]. According to Flemming, Honor, and Pevsner, there are two understandings of Organic Architecture. Organic architecture is a term used in buildings or parts of buildings based on biological analogies that can remember natural forms. Organic architecture is a concept that is visually and environmentally harmonious, integrated with the site. It reflects the architect's concern for the process and the natural environment [12].

Organic architecture forms the impression of being accessible and expressive. This architectural concept is closely related to nature, making a place to live and nature creating harmony. Frank Lloyd Wright is credited with being a pioneer of organic architecture. Frank's first organic architectural concept work was *Taliesin Wisconsin*. This design was built in 1911-1930 with the function of the building as a house as well as Frank Lloyd Wright's studio [13].

3. Methodology

The design method used is a qualitative method by collecting primary data and secondary data. Primary data collection was obtained from a field survey by observing the condition of the site and around the area directly, which was then documented in the form of pictures, videos, and sketches. Secondary data collection was obtained from pre-existing reports, journals, theses and theses, and books related to selected theories and themes. The secondary data collection carried out will be processed into a source of theory in research on the design of eco-friendly resorts on Asu Island.

The selected location for the site was chosen based on several considerations such as view, the location of the resort that is separated from the city crowd, tourist convenience, searching for site locations via google maps, and conducting direct surveys to determine site conditions. Things to consider in site selection are; the site area has a view and maintained natural

conditions, away from the center of the crowd, good air conditions. For site selection, the Boarding School Location should be in a safe location, protected from hazards that threaten health and life safety, low traffic jams, and free from water pollution, air pollution, and noise. (Regulation of the Ministry of Education and Culture Number 7 of 2007) The location should not be in a location that is too crowded and creates noise and should not be far from access to public transportation and public services [14].

4. Results and Discussion

This eco-friendly resort design's location is on Asu Island, Sirombu District, West Nias Regency, North Sumatra Province. The site has an area of $\pm 30,000 \text{ m}^2$ or 3 ha. The front side of the site is directly adjacent to the coast of Pulau Asu and is surrounded by coconut plantations (Figure 1).

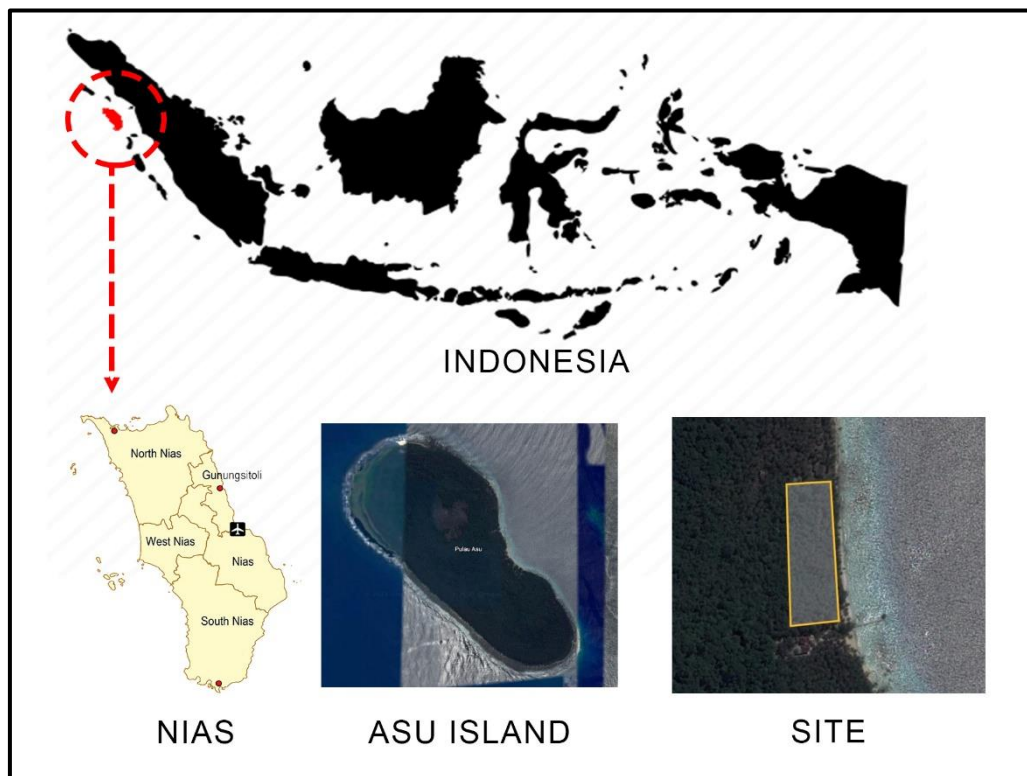


Figure 1 Project Location

Site Potential

The land allocation on Asu Island is based on the Gistaru (Geographical Spatial System) from the Ministry of Agrarian and Spatial Planning or the National Land Agency, which is divided into 2, namely: Dry Land Agriculture and Coastal Borders. Currently, the function around the site is coconut plantations which are one of the primary sources of livelihood for residents by producing copra as the main ingredient for making coconut oil, for the main building view oriented directly towards the coast of Asu Island Beach (Figure 2). In addition, there are several

other inns along the coastline [15]. The natural conditions in the area around the site are surrounded by coconut trees, a source of local products in producing copra. Asu Island also has beach conditions with clear water so that marine life can be seen from the water surface very clearly. The beach's cleanliness on the coast of Asu Island is also maintained with white sand to create magnificent scenery.

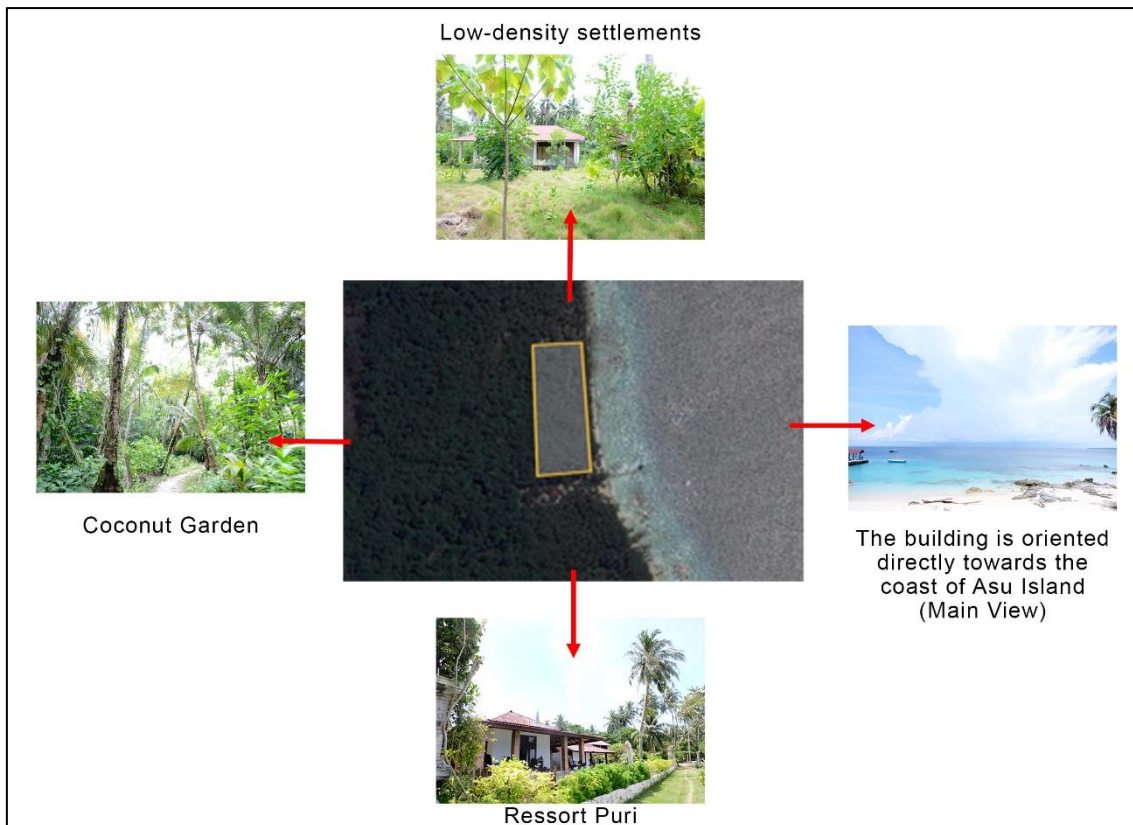


Figure 2 Site Potential

Building mass concept

The basic concept of applying the theme to the resort's design with the theme approach of Organic Architecture is based on the principles of Frank Lloyd Wright. Organic architecture is architecture that cares about the environment around the site. In addition to meeting user needs for buildings, designers are also encouraged to pay attention to the natural environment around the site as the central element in the design. The design of eco-friendly resorts is designed by creating a space that can unite living things with the surrounding environment by adopting the shape of the surrounding nature into the form of the building.

The main building design concept comes from the traditional house of North Nias, namely Omo Hada Utara. This building applies the design of the North Nias traditional house to public buildings such as ballrooms, restaurants, main lobbies (Figure 4) and lounges. This building has a unique roof shape with a more oval mass shape. on the roof of the building using thatch roof coverings derived from coconut tree leaves (Figure 3).



Figure 3 Main Buildings



Figure 4 Lobby

The building concept applied to private buildings such as management offices (Figure 6), employee rooms (Figure 5), residential towers and cottages (Figure 7) uses the concept of the traditional house of Central Nias, namely Omo Hada Tengah. The shape of the higher roof makes the building unique. The concept of this building uses a thatched roof covering which is coated with aluminum foil to anticipate leaks on the roof.



Figure 5 Employee Rooms



Figure 6 Management Office



Figure 7 Cottage Arrangement

The concept of the building follows the state of the surrounding environment, such as the use of local materials as the primary material in the building. Utilization of coconut leaves as roofing material and using wood as walls. The location on the coast of Asu Island causes the area to be prone to natural disasters such as earthquakes. Therefore earthquake-resistant structures are used as building protection.

Outdoor Layout

The zoning arrangement of the outdoor space on the site is based on the grouping of functions of space activities. The dominant front zoning is private, where the cottage will be placed at the front of the site. For service zoning, it is placed on the left side of the site with separate access. It is located in the middle of the site, with outdoor access to the site oriented towards the building for public and semi-public areas. The service area is the resort's utility processing center. The service area contains a Control Room, Solar Panel Room, Pump Room, Generator Set Room, Garbage Treatment Room, Laundry Room, and Warehouse. Access to the service area can be through the cargo dock to go directly to the service area.

A private area is an area that certain people can access. The private area consists of the Management Office Room, Managing Guest House, Employee Room, Cottage, and Residential

Tower. The public area is an area that all resort users can access. This area consists of the Main Building, Swimming Pool, Spa House, and Rented Area (Figure 8).

The access to the site can be through direct access to Asu Island by using the pier infrastructure facility, which has approximately 50 meters from the site location.

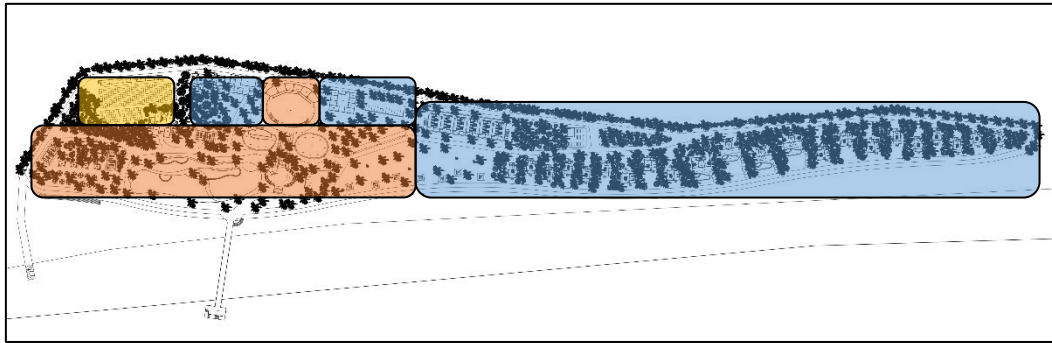


Figure 8 Site Zoning

Indoor layout

The layout of the resort building uses linear circulation in the arrangement of the circulation of space in the building mass. The concept of interior space used in the main building applies: Big opening, application of design that gives an inviting impression to visitors, utilization of natural light as lighting during the day, and application of efficient air circulation (Figure 9).



Figure 9 Natural ventilation and natural lighting through openings

Zoning on public and semi-public spaces refers to; space placement is related to activity function groups and space users, laying space openings in the form of doors, windows, ventilation related to the opening needs of each room, and the amount of circulation path according to need.

Zoning of private space refers to; the placement of each room is related to the proximity of each function space, laying each room based on the needs of each user space, openings in the room based on the user's circulation needs in each room. There is a separate circulation for the manager's room and workers.

The zoning of the service room refers to; the need for circulation paths distinguished from managers and tourists, laying the room based on the market for the proximity of each room, openings in the room based on the user's circulation needs in each room (Figure 10).

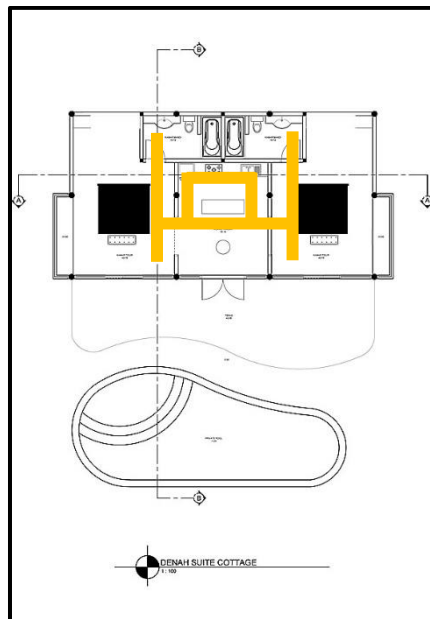


Figure 10 Indoor Layout

Room Programming

There is a resort design room program sourced from the Time Sever Standard for Building Type, Architect Data, Fred Lawson, Hotel and Resorts Planning, Design and Refurbishment, the Ministry of Health the Republic of Indonesia, comparative studies, and the author's assumptions (Table 1).

Table 1 Amount Of Space

No.	Activity Group	Amount Of Space
1	Public Activity	866.4 m ²
2	Residential Activities	2486.3 m ²
3	Support Activities	7401.9 m ²
4	Management Activities	1041 m ²
5	Service Activities	523.8 m ²
TOTAL		12319.4 m²

5. Conclusion

The conclusion of the design of Eco-friendly Resort on Asu Island is to design an inn that can meet lodging standards and meet all the space and tourist needs of tourists who want to visit Asu Island, Sirumbu District, West Nias Regency. With the condition of Asu Island, isolated

from urban activities, it can provide more privacy for tourists. The design uses organic architecture so that the presence of nature around the site is maintained and maintains the authenticity and beauty of the site environment so that it still creates an authentic natural atmosphere. The material application that utilizes coconut trees growing on the site to be used as a cover and roof structure so that the mass of the building can blend in with the environment around the area.

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