



# The Design of The Tuk-Tuk Lakeside Resort Lake Toba (Green Architecture)

*Imam Faisal Pane*<sup>1\*</sup>, *Muhammad Fadhilah Nasution*<sup>1</sup>

<sup>1</sup>Architecture Department, Faculty of Engineering, Universitas Sumatera Utara, Medan, Indonesia

**Abstract.** The high number of tourists who come to visit during the holiday season comes to Samosir Island. However, the number of tourists who come to the island of Samosir and the number of accommodations available at this time have not been able to meet the high interest of visiting tourists. The design of the Tuk-Tuk Lakeside Lake Toba Resort is one way to help achieve the benefit of tourists visiting the current Samosir island for comfortable lodging facilities and still feel what it is like to return to nature. The research methodology begins with collecting data, studying literature, surveying the location of the research, and also designing problem-solving. In creating an object to be designed, the designer can carry out a variety of alternative design approaches, one of which is to approach the theme that will be used in the designation, Green Architecture. The selection of Green Architecture themes in buildings is considered capable of describing functions and describing culture. Approach to the idea that takes air circulation systems that do not use the air conditioner or ac that is applied to the main buildings of hotels, restaurants, and resorts. Air and contour on the land on the plains of the unspoiled island of Samosir can become local wisdom that can be utilized in designing Tuk-Tuk lakeside Danau Toba Resort.

**Keyword:** *green architecture, hotel, resort, and tourists*

## 1. Introductions

Indonesia is in tropical Southeast Asia and has vibrant natural resources. Many natural resources that have not been moved by the Government. So a lot of private parties or non-government wants to free more of the natural riches of Indonesia. By opening a lodging place or tourist attractions close to nature. Moreover, from private parties, built an Inn with a set of themes that are interesting to bring in many local and international tourists to enjoy a break from the routine that exists in urban areas with spoiled by several tourist attractions located in the lodgings and facilities.

A tour is a form of human needs that must be met. With the creation of means of accommodation located near tourist attractions, it is expected to be able to meet the needs of the community of the city, especially when the facility has facilities that can eliminate fatigue. Go

---

\*Corresponding author at: Architecture Department, Faculty of Engineering, Universitas Sumatera Utara, Jalan Perpustakaan Gedung J07, Medan 20155, Indonesia

E-mail address: imamfpane@gmail.com

on a trip expected to give new atmosphere, refresh the mind and body of a man who is always filled in daily work routines will be in urban life, so for those who come from outside the city and abroad feel more enjoy their holiday after experiencing.

## 2. Literature Review

Resort or hotel is a type of accommodation at the retreat area that apply some or all of the building to provide lodging, food, and drink, other means of additional facilities and services to the public that can support and streamline activities break guests aiming to sightsee/leisure in the area.

Hotel sense, according to [1]. Foster, in his book "An Introduction to Travel & Tourism," reveals that in a broader sense, the hotel may refer to any lodging, while the narrower meaning, the hotel is a building built specifically for the provide lodging for lovers with food and beverage service [1]. According to Transport Minister SK. No. PM. 10/Pw. 301/Phb. 77; The hotel is one of the types of commercial accommodation, i.e., a form of commercially-run housing, provided for any person to obtain services and lodging here eating and drinking[2].

The theme used is Green Architecture. Green Architecture is a mindset in the architecture that is noticed and makes use of the four essential elements of the natural environment. It is in and can create mutually beneficial relationships with nature as air, including temperature, wind, climate, etc. Water including water, moisture, etc. Fire including the Sun, heat, etc., and the last Earth including factors of soil elements, habitats, flora, and fauna, etc.[3].

According to Cheah Kok Ming describe that sense about Green Architecture. A design Process in reducing the environmental impact of a less good, improve the comfort of humans with increasing efficiency, reduction of energy resources, land usage, and waste processing is useful in landscape architecture[4].

The principles of Green Architecture include Conserving energy, working with climate, minimizing new resources, the use of building materials that are not harmful to ecosystems and natural resources. No impact negative to the health and comfort of building occupants/Respect for a site, responds to the state of the footprint of the building/Respect for the user, and the last Set the entire principle – the principle of overall green architecture/Holism[5].

## 3. Methodology

In this research using qualitative methods. Methods of qualitative research is a field that collects the data and information about the condition directly from the community about the behavior observed in the region thoroughly. After it is received and compiled in the form of words and attached the results also pictures taken directly in the field. After it was made and sentences into

a paragraph of the results. On a method of qualitative research also have variations. The variations mentioned in the design this time around is a variation of the concept of diversity. A variety of diversity also described an abstract from an idea into a phenomenon. Variable that will be included in this study, there are several shapes and characteristics. Below are already attached to some variable which will be examined in the research design of this. Likes pattern of a resort that will be designed, orientation view, or a view of the resort will be created, the influence of Lake Toba against design, enter local wisdom that exists on the island of Samosir Lake Toba, and activities, activities or habits that occur at a resort.

In doing the process of site selection for the location for "the design of Tuk-Tuk Lakeside Toba Resort," found some of the following criteria like, it is not too far away from other attractions, have high tourism potential, Aksesibilitas in a comfortable, safe and convenient for visitors, and the manager, good environmental display characters such as contextual visual history and the contours of the land and others, have an image as a tourist region, and the last high-interest reactions that are high society that has not been able to meet the needs of the land.

#### 4. Results and Discussion

Project location Hotel and resort is situated on the main road to the town of Tuk-Tuk Siadong. Where this road is the only road for travelers heading for the Tuk-Tuk Siadong. It was pointed out that the location of the project is very profitable. Besides, the site of this project is also located on the edge of Lake Toba; it is one of the value-added to this resort and hotel projects, due to it being one of the views which can be enjoyed from this resort and hotel (Figure 1).

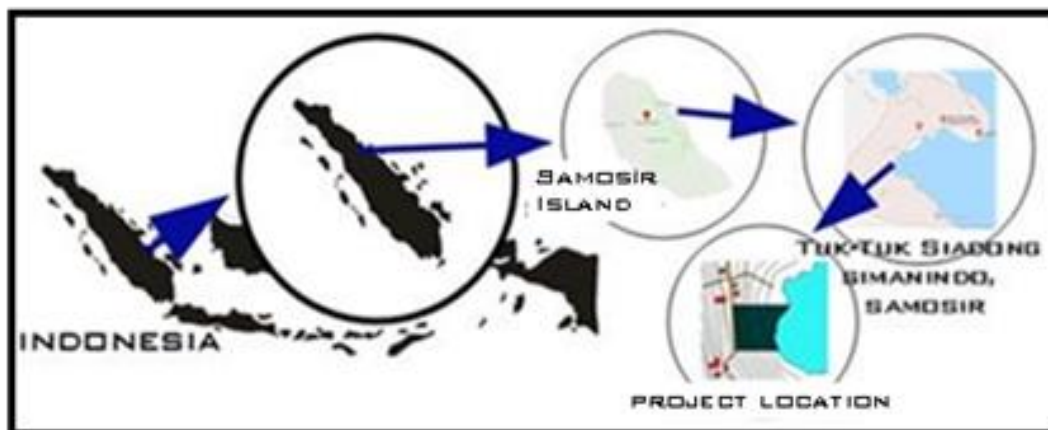
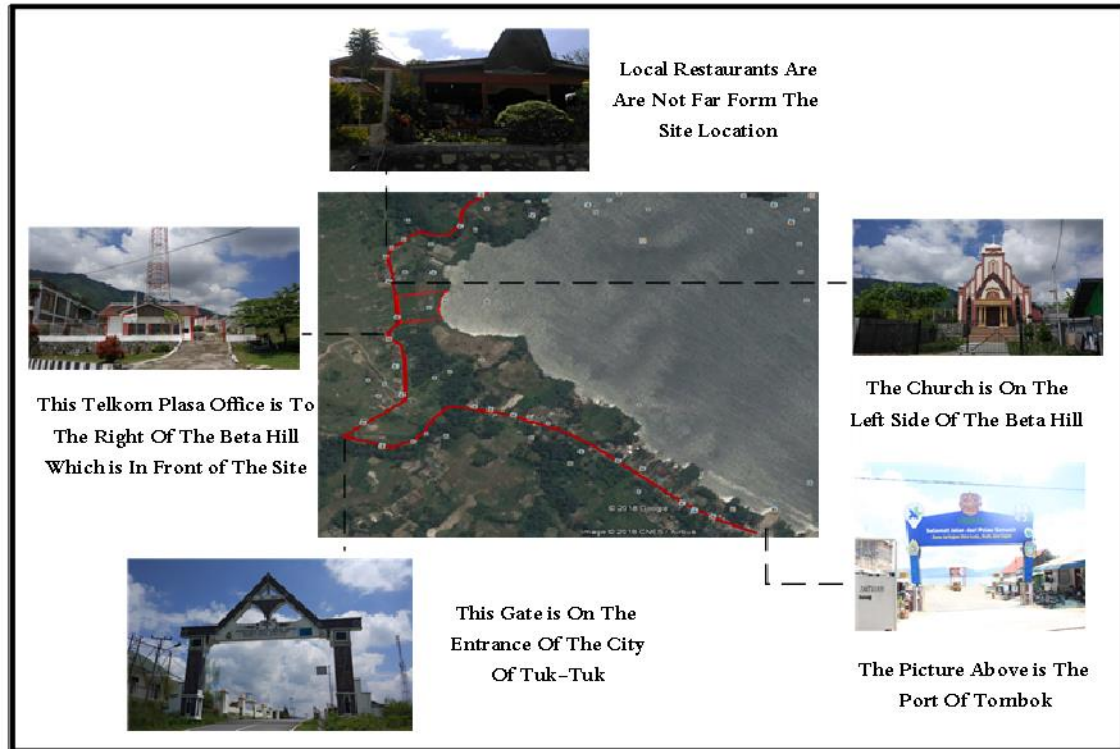


Figure 1. Project Location

This project title is Tuk-Tuk Lakeside Lake Toba Resort, and project Status is fictitious, project location at Lingkar Tuk-Tuk street, land area, is  $\pm 2.2$  Ha (approximately 2,200 m<sup>2</sup>), the land allocation is tourism activity, The function of the plantation island and rice, the last fields is relative Contours ramps

The public area is not too far from the location of the project that the bias used for visitors or tourists to the project. Preference using the Ferry, which is a location not too far from the site of the project (Figure 2).



**Figure 2.** Potential Site

### **Building Mass Concept**

For the mass of the buildings on the site is divided into four sections, namely, the main celebration of hotels, cottages, restaurants, and retail. On the hotel's main mass creations comes from the shape of the letter "Y" in the modifications. Some form of this mass is affected to benefit from a good view kea rah Lake Toba. The main mass influences home bolon by taking part in the House stage. Cottage by the masses made the concept of home staging that was home to the celebration of similarly bolon restaurant, which takes the theme of home staging House bolon.

Basic concepts in the design of the Tuk-Tuk Lakeside Toba Resort implemented an idea of green architecture. The application of this concept due to incorporate some of the elements, as planting vegetation, wear trinity, wear secondary skin to the function of aesthetic, a building that is not attached to the ground, wear a window that can be opened and closed, and the last do not use air conditioners.

The application of the concept of Green Architecture at the building coupled with the inclusion of local wisdom on around the area of design, like, make the main building as the bolon home is

seen as home staging, and beliefs of the odd numbers It is believed the people of Batak as lucky numbers.

The basic concept of design that uses the basic idea of the letter "Y" and the shape of the pieces into rectangles and cubes. pieces of a square-shaped into resembling the letter "Y." After combining and in the coak became the letter Y "in in the cut again into a rectangle and hexagon. The results of the piece in the project form reunite into the hotel building (Figure 3-6).

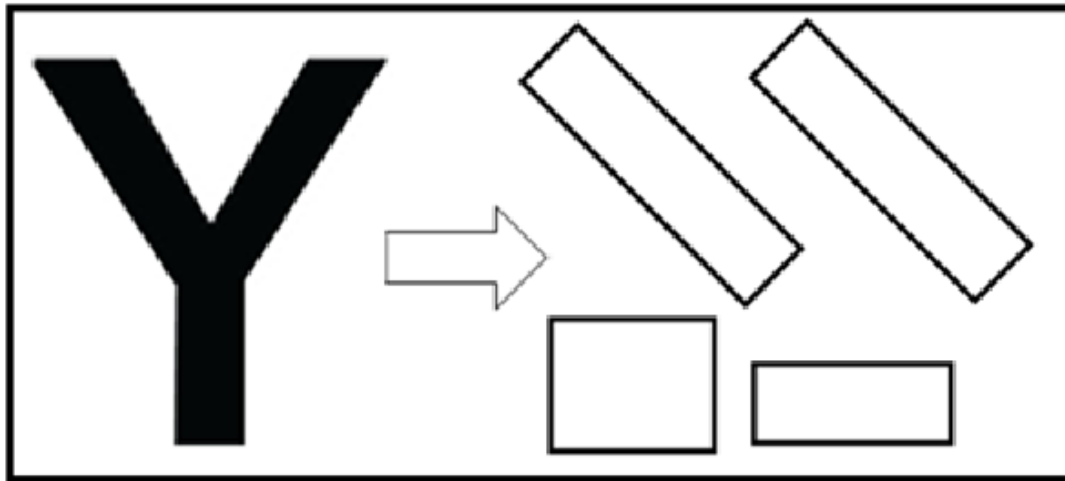


Figure 3. Basic concepts of design

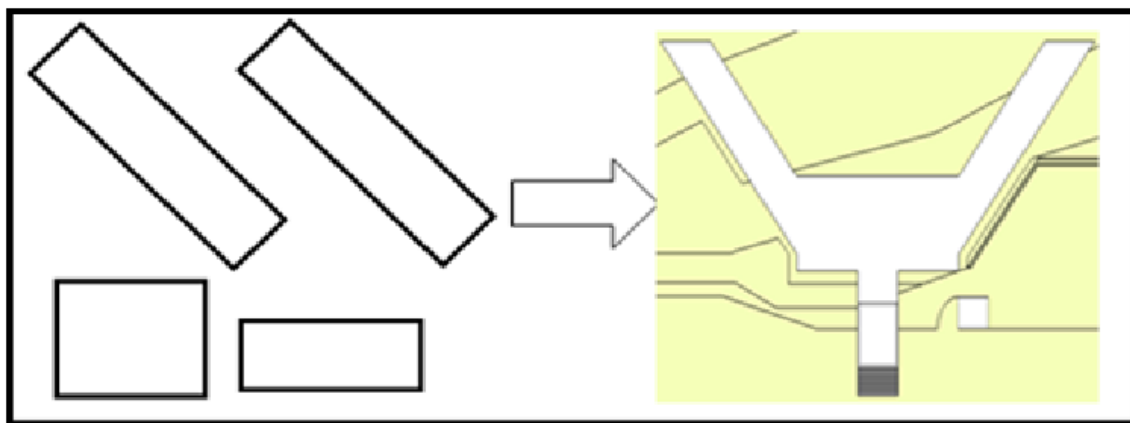
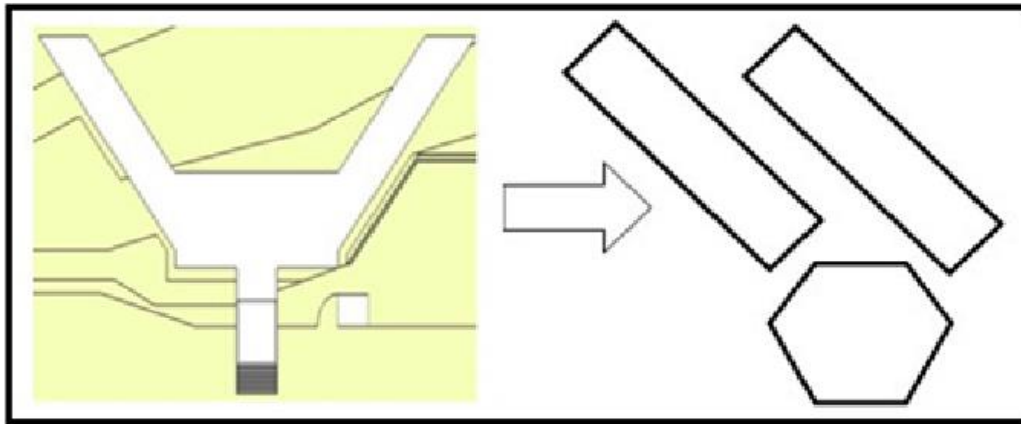
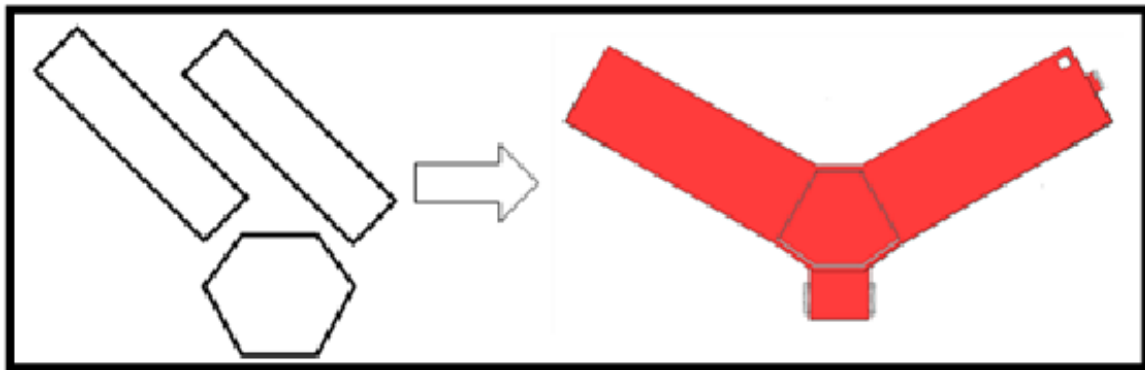


Figure 4. Basic Concepts of Design



**Figure 5.** Basic Concepts of Design.



**Figure 6.** Basic Concepts of Design.

### Outdoor

The primary access for visitors to the site there is one, to access out of place, there are two exits, and incoming and outgoing access for servicing the hotel and resort there is one. Drop off location is a short walk from the main entrance leading to the lobby. Vehicle parking locations are on the right-hand side of the building. The swimming pool is located in the hotel and cottage, the cottage is located in the rear of the hotel, and the cabins can also immediately see the view of Lake Toba. Waterfront, Amphitheater, garden, and Labyrinth is located on the edge of Lake Toba (Figure 7-8).





**Figure 7.** The Concept Of Circulation Footprint

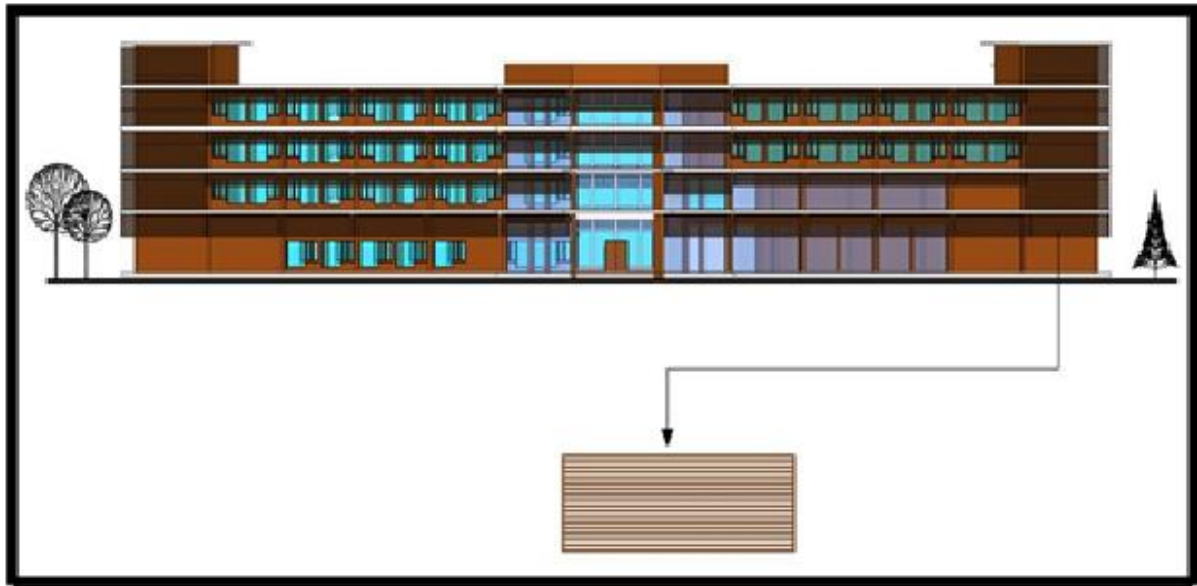


**Figure 8.** Amphitheater and Waterfront

According to Ann Breen and Dick Rigby (1994), the waterfront is a dynamic area of the city, where water and land meet. Where a body of water can be an ocean, River, Lake, Bay, creek, or the Canal. The dynamic area in question here is a city or region which is always moving, although, in some instances, as in the swamp, the movement is very minimal [6]. The area of the water's edge (waterfront) is an area or region that borders on the water who have visual and physical contact with the seawater, lakes, rivers, or other bodies of water [7].

The front of the building using a secondary skin. Secondary skin used to embellish the look of the front or front view of the structure. Secondary skin is also used on the back. Secondary skin is also used on the front of the building to reduce the light that goes into the building of them

and explain the form of the hotel's many looks ahead to use secondary skin, secondary skin uses the raw material wood and in stacking like ventilation of the room (Figure 9).



**Figure 9.** Front View

### Noises Buffer Concept

Green architecture is the design of settlement solutions against existing problems. As to the question of handling noise designed the land use and building mass order is effectively to be able to reduce the level of noise produced[8].

For the noise of the main street of Tuk-Tuk Siadong given vegetation. The vegetation is placed on the side of the road, serves to stifle the sound from a passing vehicle in the main street of Tuk-Tuk Siadong. The building is laid out a bit far into this function, also so that the sound is not too into the building. For part of the building, there is also a secondary skin, secondary skin in pairs in the front part of the building serves to inhibit the noise and light from the Sun to the West, this is because of the front view of the structure facing West (Figure 10).



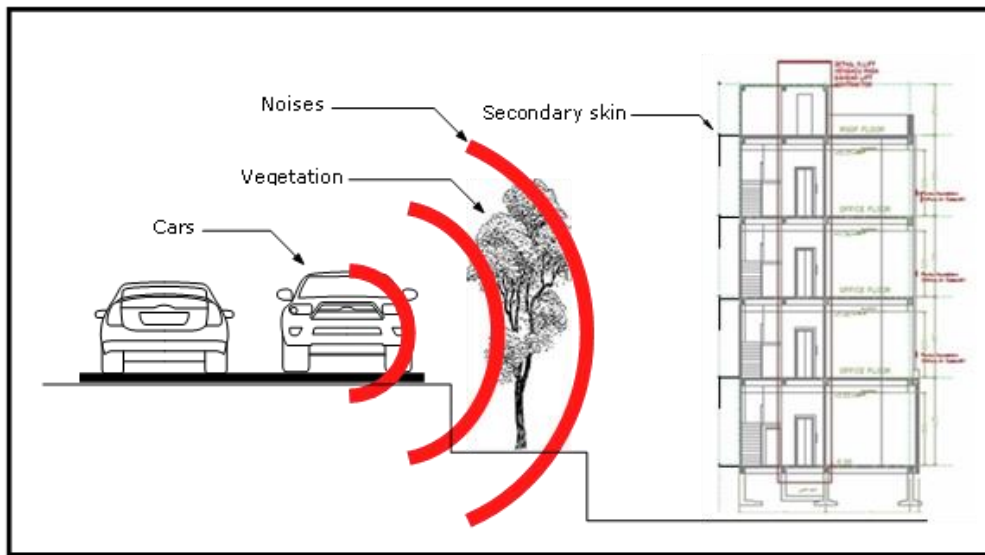


Figure 10. Analysis Of Noise

### Indoor

The arrangement of the room first arranged through the concept of horizontal and vertical zoning. The idea of a plan helped to organize a place that is in the design of hotels and resorts. By determining the existing areas on the map of the hotel, such as the privacy area, reception area, supporting area, or service area (Figure 11-12).

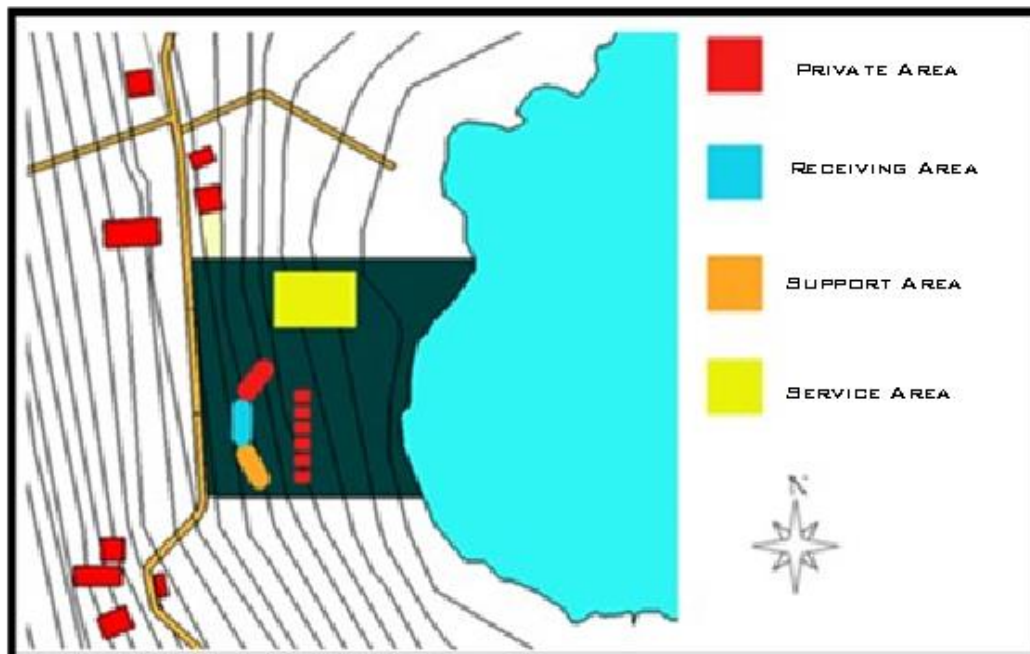
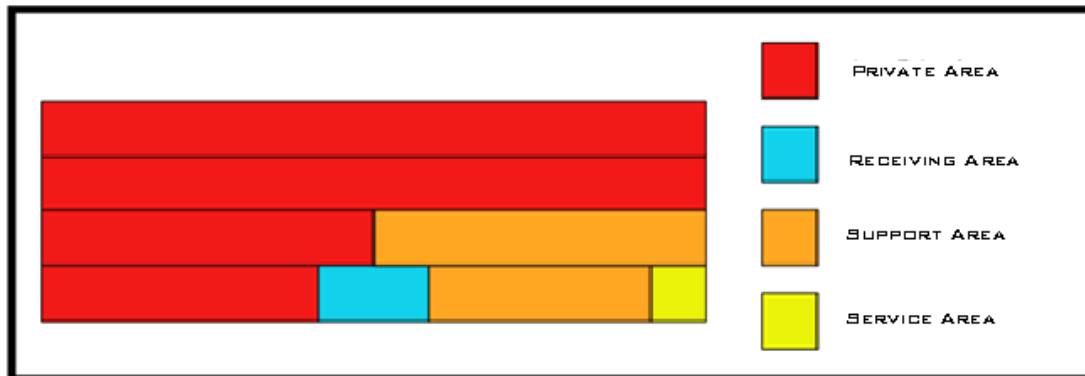


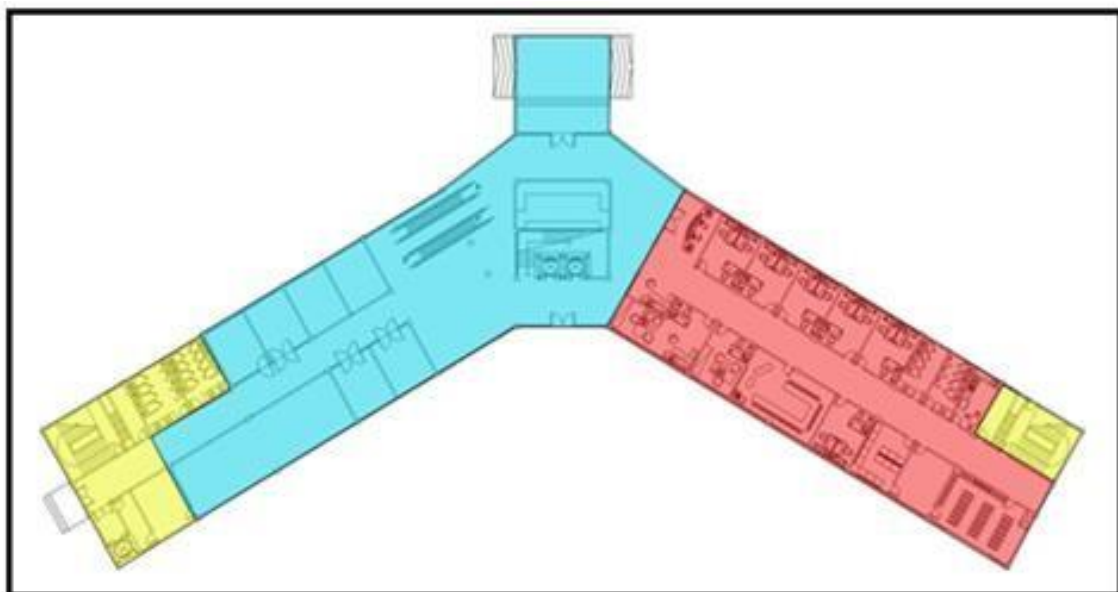
Figure 11. The Horizontal Zoning Concepts



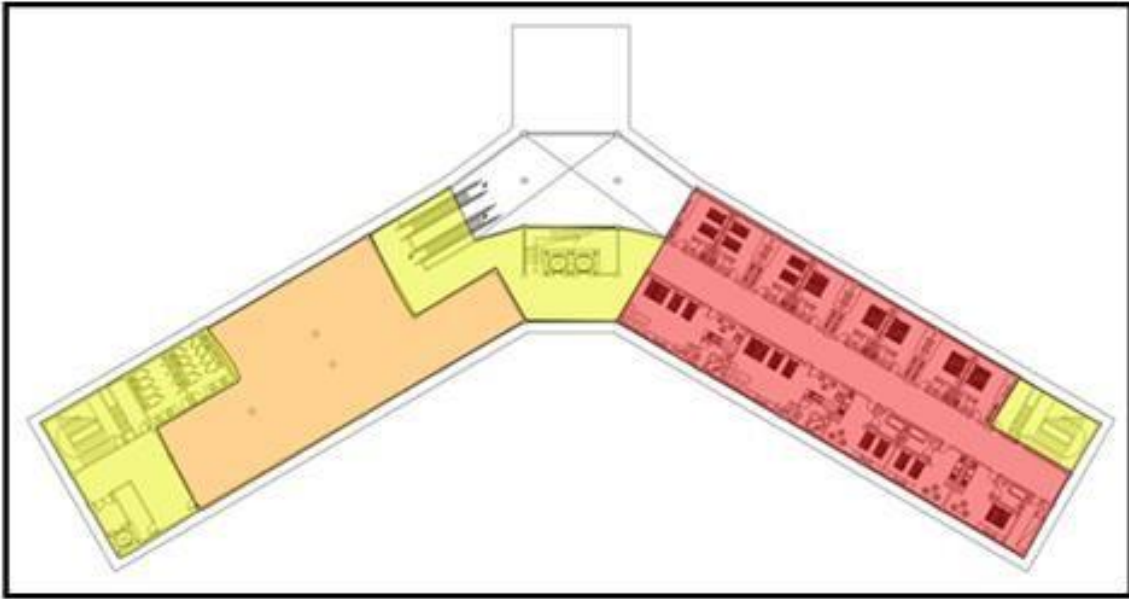
**Figure 12.** The Concept Of Vertical Zoning

Compiled pattern and organization of space inside the room is giving priority to relations with outdoor space for designing the lighting system. Later, in addition to having a good functional relationship, the relationship also has synergy with the environment[9].

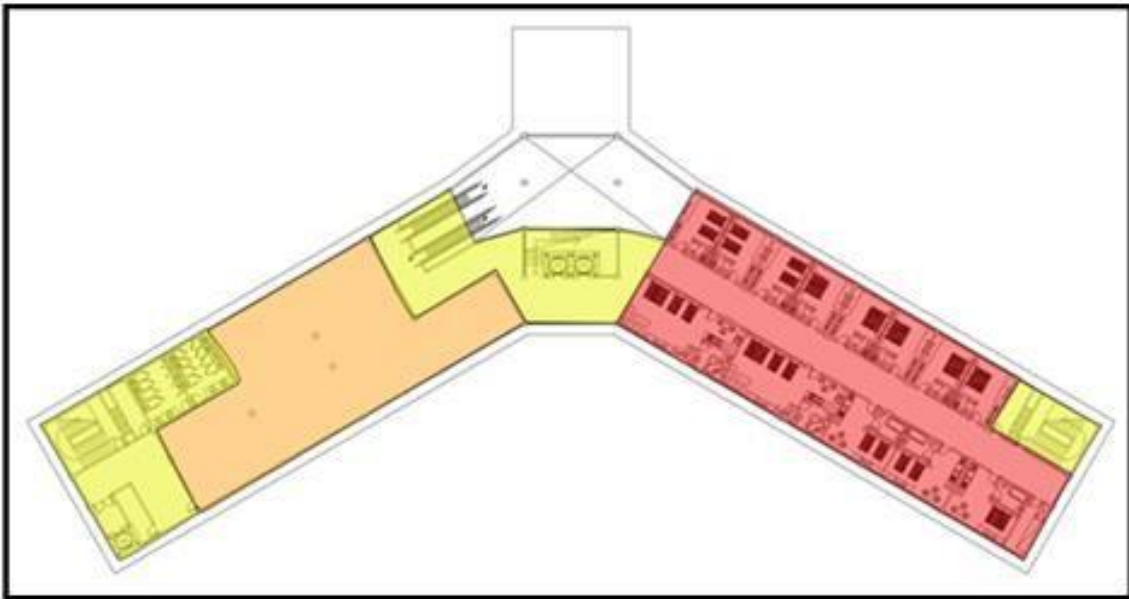
For the 1st floor or the base of the building, there are several zones, i.e., the public zones, zone, and zone of privacy service. The open region is present on the front and center of the building, which is a part of the entrance to the hotel. This area consists of a Lobby, and Retail, r. Wait, and Coffee Shop. This area is reserved for public access so that access is not limited by the other zones. For the service, that is the area of the bathroom, Stairs, Elevator for access can anyone access it, For the privacy, the zone is located to the left of the building, i.e., Office Manager. Zoning the 2nd floor is a semi-public zona-namely, Restaurant. For the privacy zone, there are hotel rooms, and there is room service zone for control, kitchen, and bathroom in the restaurant. For zoning on the 3rd and 4th floor, there are the zone of the servicing, namely emergency stairs, Lift and control, and to the area of privacy, there are hotel rooms (Figure13-15).



**Figure 13.** Zoning Ground Plan.



**Figure 14.** Zoning 2<sup>nd</sup> Floor.



**Figure 15.** Zoning 3<sup>rd</sup> and 4<sup>th</sup> Floor.

These goals can be achieved by applying several ways as the selection of materials and elements of space in accordance with their functions, setting the harmony in the preparation of the furniture, the dimensions of the piece of furniture against a proportional quantity of space, create an atmosphere of area and function in accordance with the will of the user, setting the furniture in accordance with the purpose and tasks by not ignoring users circulation space, and the last influence of the color and pattern room décor is significant in creating the psychological impression and optical on the user space[10].

## 5. Conclusion

The design of the Tuk-Tuk of Lake Toba Lakeside Resort located on the ring road, the village of Tuk-Tuk Tuk-Tuk Siadong, district Simanindo is well, Samosir is a lodging accommodation for local and international tourists for a more extended tour to the area of Lake Toba. This resort offers spectacular views of Lake Toba. The location of the design is the lowliest that would be proclaimed for tourism by the Government. The atmosphere is still thick with adat Batak Toba, and near other tourist attractions, it became one of the charms of this resort in search of tourists coming.

The concept is applied to the design of the Tuk-Tuk Lakeside Lake Toba resort wear a Green architecture concept. The application of this concept can be seen in the form of the air that does not have air conditioning in every room, the use of secondary skin on the building, using the concept of home staging to keep the soil conditions that exist within the site. The method of a window that can be opened and closed so that air can exit and entry of air occurrence of the turn. The process of secondary skin also makes it one of reducing the Sun's light.

## Acknowledgment

This article was written by researchers funded privately, as a graduation requirement and given as a contribution to the government to preserve and enhance the value of design, local wisdom, art, and ethnicity.

## REFERENCES

- [1] Kusumawardani, Lia, etc, "Analisa Dan Perancangan Sistem Informasi Hotel Graha Prima Pacitan, 2014.
- [2] SK. Menteri perhubungan No. PM.10/ Pw. 301/ Phb.77;
- [3] V. Brenda and Vale. Robert. (1991). *Green Architecture: Design for a Sustainable Future*. Thames & Hudson. London.
- [4] Ming, Cheah Kok, 2008, *FuturArc Magazine*, Edisi Green, hal 99.
- [5] Sampani, Yona Novita, etc, "Apartemen Di Banda Aceh Dengan Pendekatan Arsitektur HIjau, 2017.
- [6] Breen, Ann & Dick Rigby. 1994. *Waterfront-Cities Reclaim Their Edge*. New York: Mc.Graw-Hill.
- [7] Supriyadi, Bambang. "Kajian Waterfrot Di Semarang (Studi Kasus: Sungai Banjir Kanal Barat)", 2008.
- [8] Fauzan. etc. " Sekolah Tinggi Penerbangan Riau Dengan Pendekatan Arsitektur Hijau", 2014.

- [9] Aidil, Fitriansyah, "Perencanaan Dan Perancangan Hotel Bintang 5 Penekanan Pada Arsitektur Hijau", 2013.
- [10] Sahid, Indraswara, M. "Kajian Penempatan Furniture dan Pemakaian Warna (Studi Kasus Pada Kamar Tidur Hotel Nugraha Wisata Bandungan-Ambarawa)", 2007.