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The Interpretation of Neo Vernacular Architecture in Designing Aek Natonang Arboretum Museum and Resort

B O Y Marpaung[1*], Frigga M M Purba[1]

[1]*Architecture Department Faculty of Engingeering, Universitas Sumatera Utara, Medan, Indonesia*

*Corresponding Author: beny.marpaung@usu.ac.id

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ABSTRACT

The location of Aek Natonang Arboretum is at Tanjungan Village, Samosir Island, Indonesia. This tourism area is still in the developing stage. This place has the potential to grow as a destination for not only horticulture and agriculture tourism, but also educative recreational tourism. However, this place is lack of facilities and infrastructure. Researcher identify the need of activities generator in Aek Natonang Arboretum in the form of Arboretum Museum and Resort design. Analysis and concepts of design using an interpretation of Neo Vernacular Architecture as the approach of the design. The results of this study are the design of Aek Natonang Arboretum Museum and Resort**.**

Keywords: Aek Natonang Arboretum, neo vernacular, Museum

1 Introduction

Tourism sector has a big impact in the development of economy and welfare of society in Indonesia. Trip and tour are essential part of service economy [1]. However, there are still many tourism potentials found in various places in Indonesia, which have not developed properly and strategically [2]. According to Tourism Minister Arief Yahya, several tourism issues are still the target of completion, including cleanliness, garbage, and first impression when in contact with tourism in Indonesia [3].

In order to improve and encourage the progress of the tourism sector, the Ministry of Tourism also set Lake Toba area to be one of 10 priority tourist destinations in Indonesia. This is due to the plan to get Lake Toba into GGN (Global Geopark Network) UNESCO [4]. It is also supported with the vision of Lake Toba Tourism and its surroundings, namely "Landscape Scenery and Geopark" [5].

One of the tourist destinations, which is still in the development stage in Toba is Aek Natonang Arboretum area located in Tanjungan Village, Simanindo District, Samosir [6]. Aek Natonang is a lake located in Samosir geo-site, which makes Aek Natonang becomes one of the additional values on Samosir geo-site. However, Aek Natonang Arboretum is lack of tourist acivities. Based on the field survey, the average number of tourists who come to this area are only approximately 20 tourists per day. It is unfortunate that there is no tourism activity that supports the development of agro-tourism in Aek Natonang Arboretum area. One of the biggest factor of this cause is the lack of facilities and infrastructure in the region. There are five types of infrastructure, which are tourism infrastructure, transport infrastructure, social infrastructure, environmental infrastructure, and collaborative infrastructure [7]. Social infrastructure and collaborative infrastructure are the most important aspects that have to be solved.

To develop and promote the potentials of this tourist destination, and to improve the welfare of the people of Tanjungan village, it is necessary to have a tourism activity generator that not only generates tourism activities, but also as a generator that can increase local plantation and agricultural production as the main livelihood of Tanjungan residents. How people walking and total physical activity are affected infrastructure and amenities, and mixed use or destinations [8]. The design of an arboretum and resort museum in Aek Natonang Arboretum area will be a generator for the region's resurgence**.**

2 Methodology

Neo-Vernacular architecture is a flow of architecture developed in the Post Modern era, in the mid-1960s. Post Modern era emerged when protests from the architects arose against the works of architecture in the Modern era that seem monotonous and forget the humanity aspects [9]. According to Higgott (2018), there are six streams that emerged in the era of Post Modern, namely Historiscism, Straight Revivalism, Neo Vernacular, Contextualism, Methapor and Post Modern Space [10]. There are criterias that affect the Neo Vernacular architecture. The first is the forms apply elements of culture, environment and climate local, which is expressed in physical architectural form (layout floor plan, detail, structure and ornament) [11]. The second is non-physical elements of the culture of thought, trust, and order location that refers to macrocosm and others [12]. The third is the products in this building are not purely applying the principles vernacular building, but do the transformation towards 18 so that the architecture becomes a new work (prioritize visual appearance) [13].

Geographically, the location of the project is in the land of Toba, where the majority of the people is a Toba Batakanese. Researchers focusing the local wisdom from the local community in designing Aek Natonang Arboretum Museum and resort. Researchers use Neo Vernacular architecture approach to the Toba Batak local wisdom. Through it, the local wisdom from Batak Toba can be lifted by adjusting to the context in the present era. In determining the location of design, researcher select it based on several considerations [14]. The first is the land use of the site, which is cultivation, agriculture, plantations, and arboretum area (RTRW of Samosir Regency 2016-2036). The second is how to reach the location of the site. People can reach the

site through several alternative roads and vehicles with relevant mileage. The last is the existing condition of the site, such as how good the soil and land, the contour, the vegetation of sorrounding environment, the local people, and also the natural potentials of the site.

To apply Neo Vernacular architecture in the design, researcher uses the method of implementing the layout of Toba Batak settlement in the laying the designed masses and also the space organisation in the designed mass [15]. Researcher also uses the method of interpreting the beliefs of Batak Toba towards Pusuk Buhit, which is believed as the first place of humanity descends to the world by Batakness people. Researcher apply the interpretation through a scenario and sequence of space in the building. In designing the siteplan, researcher apply the serial vision method on the vehicle access entrance area to the parking area and drop off from each building mass, through the circulation of vehicle and pedestrian design.

3 Result and Analysis

Based on the Spatial Planning and Territory map of Samosir Regency which is contained in the document of RTRW of Samosir Regency in 2016-2036, the site area located in Tanjungan Village, Simanindo District is designated as horticultural cultivation area, agriculture, plantation and community forest (Figure 1).

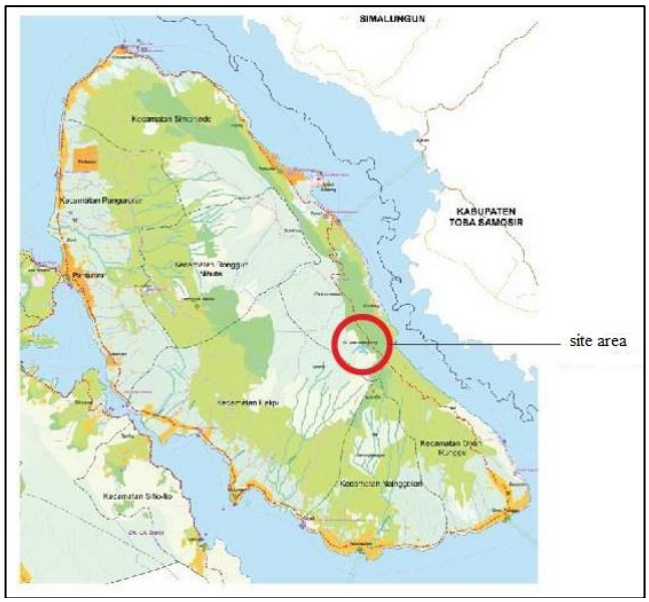

Figure 1 Spatial Pattern Map of Samosir Regency

Source: RTRW[*] of Samosir Regency 2016-2036

Specifically, the design of the land in the site location of the design site can be seen in the map of the land designation map in the location of the design site (Figure 2).

[*] RTRW (Rencana Tata Ruang dan Wilayah) is Spatial Planning and Territory

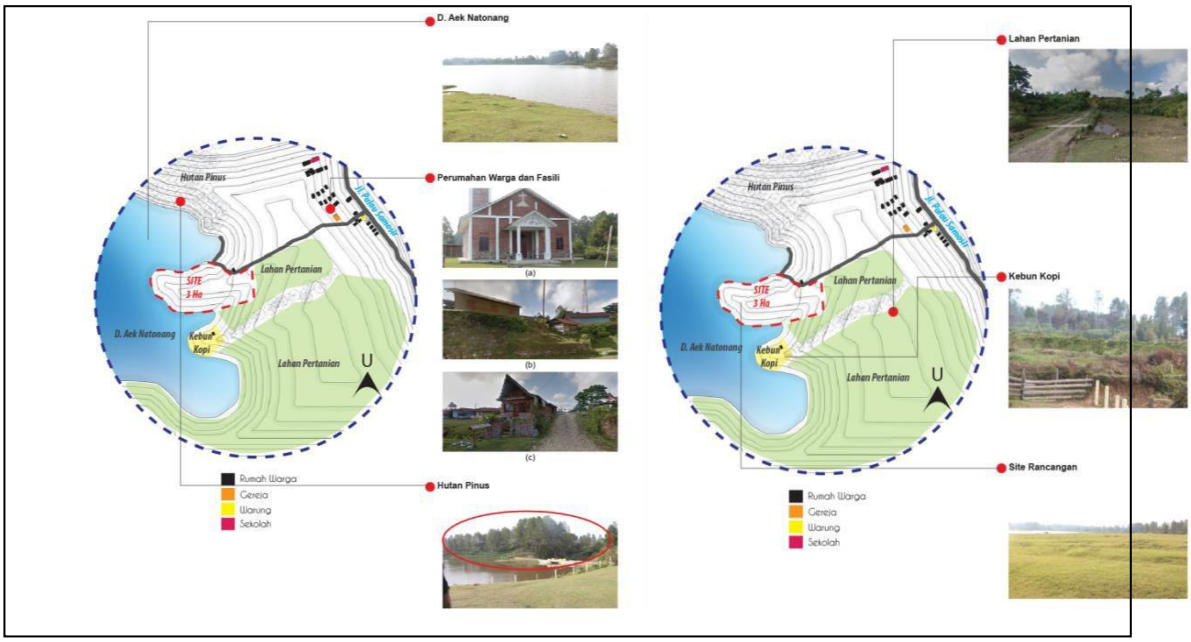

Figure 2 Land Use Map in the Site

Associated with the land allotment, this site has several potentials. The site orientation is to the natural environment, such as lake, pine forests, and also farmland. Through this site, people can see the natural view around. This site is directly adjacent to the lake, so the lake can be one of the main potential in the design of this site. It also has an organic form naturally. However, based on the analysis that has been done, there are also some major problems in this site. It is empty and does not have any facilities inside. Tourists are reluctant to come to Aek Natonang Arboretum, because there is no supporting facilities around. The area of cultivation is lack of facilities or activities, that can contribute to the economic development of the community and also the development of local cultivation activities. Access to site location is also inadequate in terms of road width, and efficiency.

Researchers analyze the Toba Batak Architecture in the past and current context. Cosmologically, the Toba Batak tribe divides the world into 3 parts, namely the upper world, the middle world and the lower world. The upper world is the place where Mulajadi Nabolon, the supreme deity, resides. The world is a place of human life while the underworld is a place of life for dead people, ghosts and evil spirits. According to Fitri (2004), the concept of cosmology which divides the world into 3 parts is considered influential in the division of levels in traditional houses [16] (Figure 3). However, at the present, beliefs about the underworld, middle and upper world are no longer valid for most of the Batak Toba community. This is due to the majority of Toba people who have embraced Christianity. Therefore, in the present Batak Toba architecture, the concept of cosmology is no longer a belief for the majority of the inhabitants of the Toba Batak home. Functionally, the bottom floor (under), is now rarely used as a place to store livestock, but left empty only. The body part (center) is still used for human activities, and at the top not only the storage of goods, but also for places to do. Sometimes people are also *margondang*[†] at the top of the house. Visually, the concept of the

[†] Margondang is a celebration using Batak traditional instruments

foot, body, and head of the building is still shown through the use of the stage structure (showing the foot of the building), the trapezoidal building wall (showing the body of the building), and the saddle roof which has a much larger proportion and the foot and body of the building, and looks majestic and sturdy (shows the head of the building) (Figure 4).In material use, many changes have occurred. Such as the use of zinc material for roof coverings, the use of paints containing chemicals, and also the use of different types of wood. This is also due to the reduced availability of materials in nature.

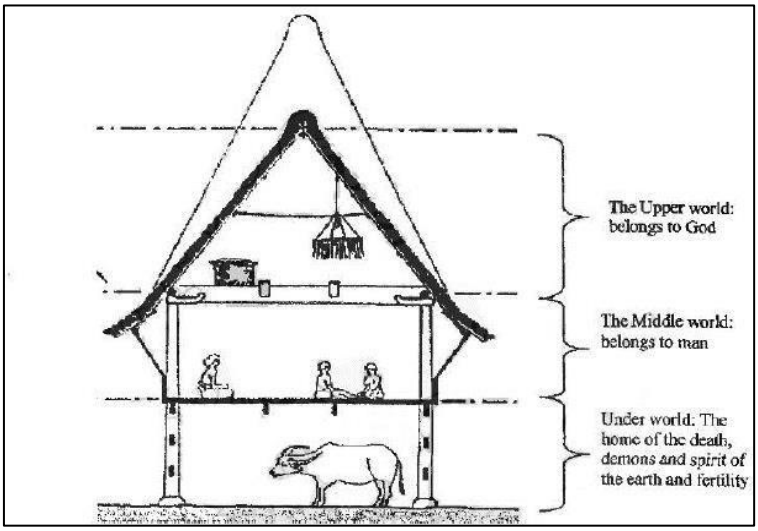

Figure 3 Cosmological Concept in Traditional Houses of Toba Batak Tribe

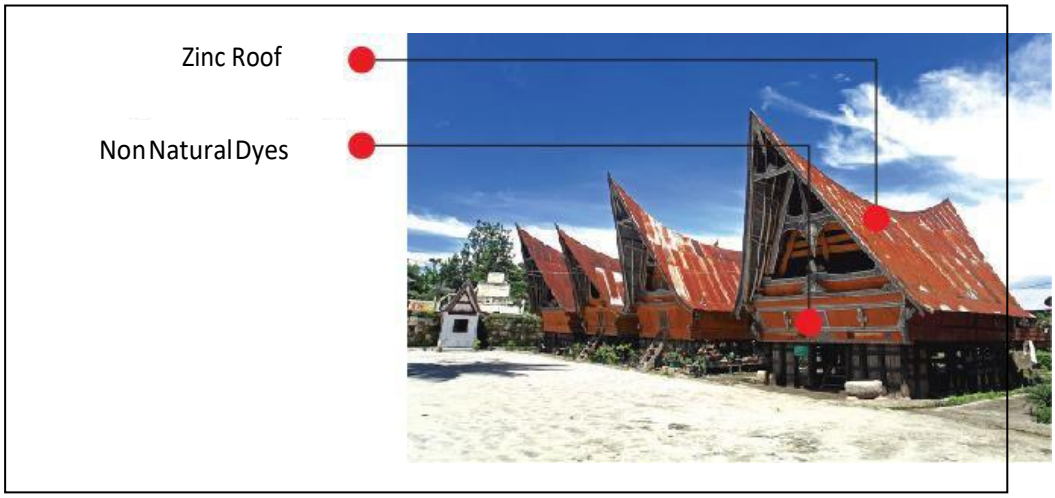

Figure 4 Common Mass of Toba Batak Building Today

At the present, the concept of mass and access that is linearly arranged remains valid. Similarly, the masses of buildings facing each other. However, in the present day,there are many Batak settlement, which set the building masses oriented to the north-south. There are also some which oriented to the East-West. Therefore, there is no absolute provision of the mass orientation of the building. However, the presence of the court becomes something important. If we visit the present-day Batak Villages, there will be a middle ground formed by the masses of buildings (Figure 5).

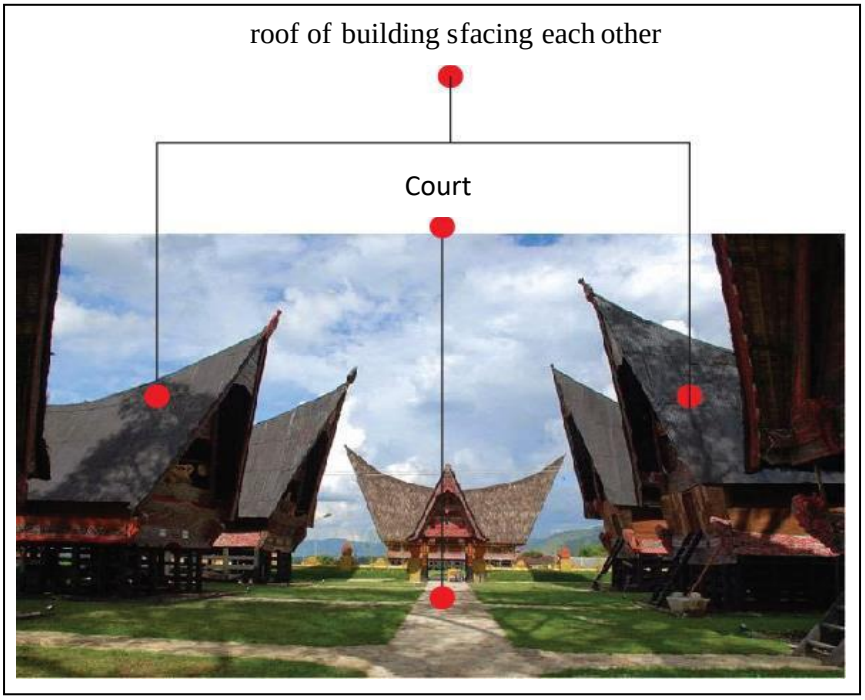

Figure 5 A Study on the Toba Batak Village Patterns in the Present

3.1 Concept

Based on the related analysis of land use, researcher concludes that in the design of the proper building function to be offered on Arboretum and Aek Natonang land, is the Aek Natonang Arboretum Museum and Resort. Arboretum museum design is needed in Samosir area, because until now there has been no function of the museum that refers to the cultivation of local plants in Samosir. In fact, in North Sumatra, it also does not exist. Through arboretum museum, the tourist destinations in Samosir will be increasingly diverse. Arboretum Museum is also very appropriate to be placed at this site location, because its function will give impact to various aspects in this area. The presence of the Arboretum Museum will contribute to liven up the Aek Natonang Arboretum. In addition, citizens' businesses such as food stalls will increase their selling value with arboretum museum facilities.

The design of resorts in the form of multi-mass cottages is needed as a support facility in this area. With the resort, tourists can stay and enjoy the natural beauty around while educating the museum arboretum (Figure 6).

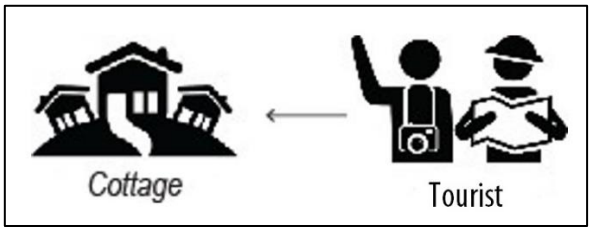

Figure 6 Related Studies of the Need of Resort in Area Design Site

In relation to land use analysis, the concept of macro zone laying on the design site is based on the orientation of the design site. Can be seen in the picture below (Figure 7), A-side oriented to the Lake and pine forest opposite. The sensation of scenic pine trees can be felt maximally on this side. While the site side B is oriented to Lake and coffee plantation and other agricultural land.

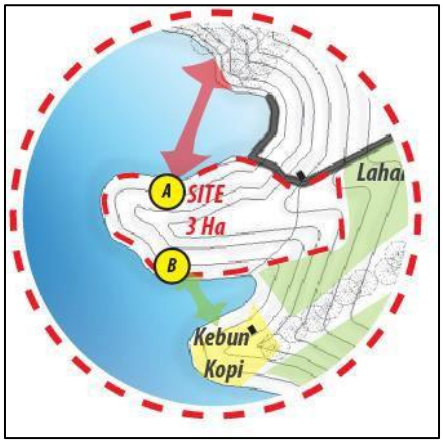

Figure 7 Related Studies of Site Orientation

With the consideration of the site orientation and the surrounding land function, the zoning concept offered is to put the arboretum museum zone at the south side, where it can be integrated directly with local farming and plantation areas. While suitable resort zone is placed on the north side, because in addition to integrated to the lake Aek Natonang tourism, this side is also integrated in the pine forest scenery (Figure 8).

Figure 8 Basic Concepts Related to Land Functions in Site Design

Specifically, the land functions offered at the design of the Aek Natonang Arboretum Museum and this Resort can be seen in the figure below (Figure 9).

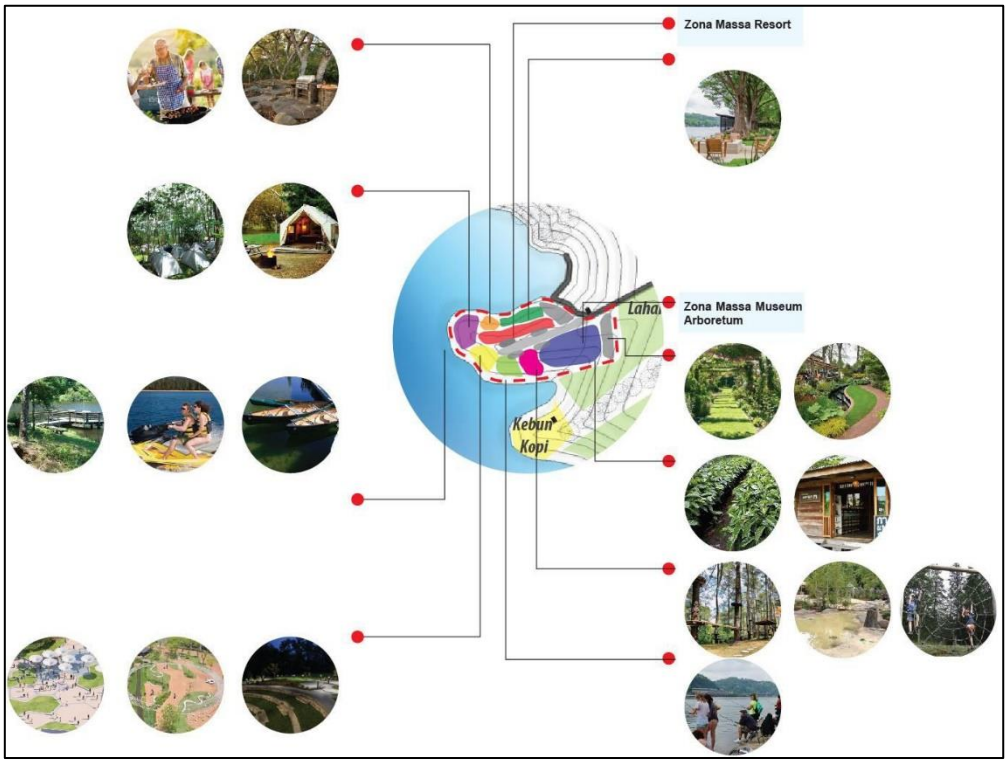

Figure 9 Study of Land Functions offered on Site Design

In designing the mass composition of the arboretum museum, visual and functional considerations are taken. Visually, the division of the building level of the feet, body, and head should be visible on the mass of the building to be designed. Functionally, the lowest floor is used for the operational and service areas (under this design underground), floors 2 and 3 are used for public areas and facilities (Figure 10). Similar to the concept of mass composition at the Arboretum Museum, the concept of mass composition of cottages also considers the visual and functional side of the masses. Visually, the division of the building level of the feet, body, and head should be visible on the mass of the building to be designed. Functionally, the lower floor is used for the operational and service areas (under, this design is underground), floors 2 and 3 are used for public areas and facilities (Figure 11).

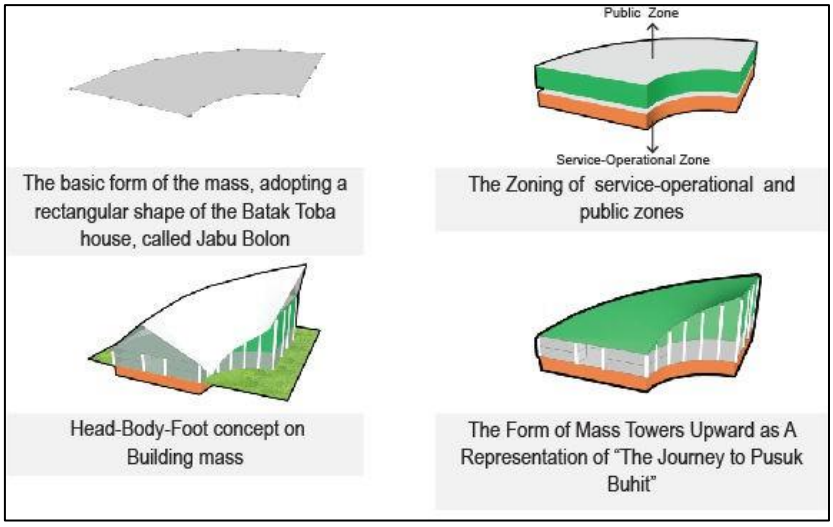

Figure 10 Mass Composition of Arboretum Museum

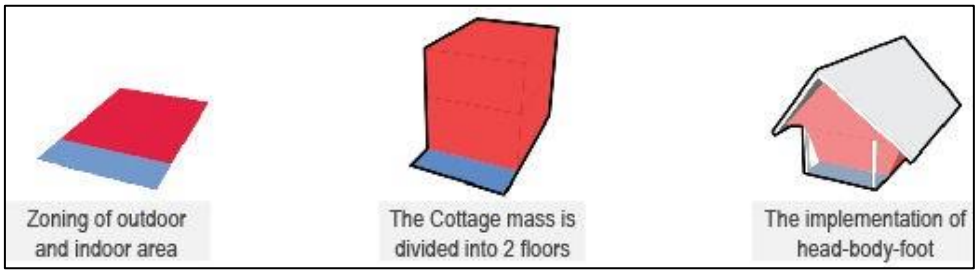

Figure 11 Mass Composition of Cottage

The scenario applied to the space design within the Arboretum Museum is a scenario of a travel or climbing to the highest peak in Samosir, which is Pusuk Buhit. Pusuk Buhit is one of the most crucial natural sites in the history of Batak civilization. To reach the Peak, one must climb 7 hills. This scenario, which will be applied in the Arboretum Museum design, illustrates the human journey to the summit of the Pusuk Buhit through seven hills, and once it reaches its peak, man can enjoy the magnificent natural scenery. This is similar to the reality in Pusuk Buhit, which is one of the best spot to enjoy the beauty of Toba Lake (Figure 12).

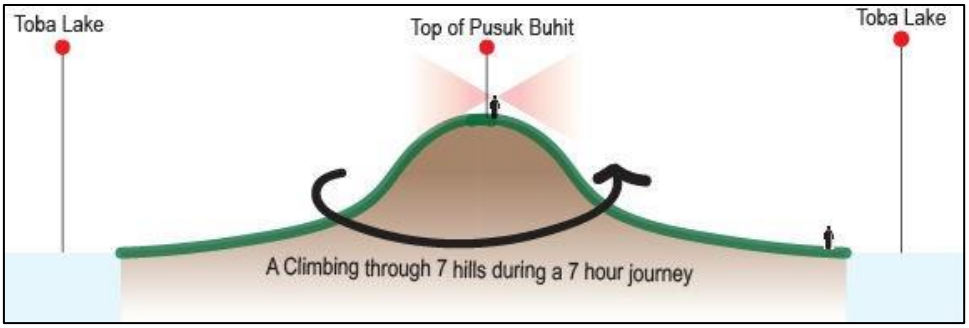

Figure 12 Scenario Illustration

The implementation of scenarios in the inner space is shown through the interpretation of the ascent to Pusuk Buhit through 7 hills. These hills are represented in the form of floor modules with different functions. These functions will be the sequence of space experiences that visitors pass while in the Arboretum Museum. Each floor is connected with the ramp, which is the interpretation of a climbing (Figure 13).

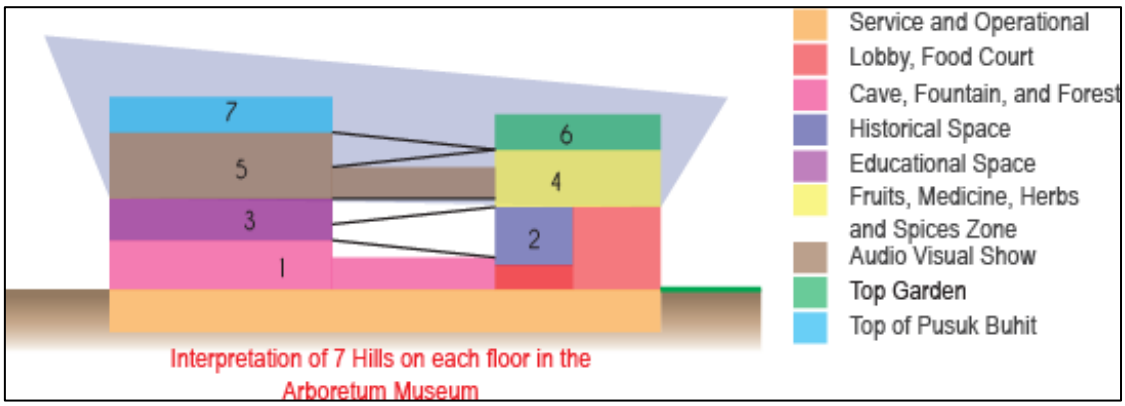

Figure 13 Scenario Implementation on Building

The entire floor will be the areas to exhibit types of plants in Samosir. All the plant comes from Samosir Botanical Garden, which is located not far from the design location. Based on Hartini & Sahromi (2016) [17], the types of plants that can be found in Samosir Botanical Garden are wood plants, ornamental plants, medicinal plants, spice plants, and fruit plants. Every floor represents the seven hills that lead to the Top of Pusuk Buhit. There are function differences on every floor. This aim to give space sequences, as well as various space experience (Figure 14). There are 3 elements that highlighted on the first floor, which are cave, water (lake), and forest. The aim is to generate a curiosity for visitors to walk to the next areas. The cave is functioned as a herbarium exhibition area. 1st Mezzanine Floor is historical space is an exhibition area about Batak history and culture. Through murals on the wall, visitors can walk past the ramp that will reach to the top floor, while enjoying the pictures that have stories. 2nd Floor is an exhibit of arboretum. This space becomes necessary as a media for visitors to learn about arboretum. This space is designed to resemble a labyrinth. On 2nd Mezzanine Floor, visitors can enjoy the exhibit of fruit, traditional medicine, and spices plants. The circulation is designed around the plant area. There is a void above the plant area, to provide a gap for incoming sunlight. 3rd Floor is designed without a partition, to maximize the use of walls, floors, and ceilings as a media for projecting light that will produce images and videos along with sounds that tell about nature. Visitors who enter this area can enjoy the show with different sensations, according to what visitors see. 3rd Mezzanine Floor is for ornamental plants. There are net straps designed on voids over the areas of Medicine, Fruits, and Herb. Visitors can climb the net while enjoying the ornamental plants that exist in the area. Resting area is an area of coffee shop, souvenir shop, and cable car station. Visitors can reach this area after enjoying the view from viewing area floor, through the elevator. The top floor is the interpretation of 'Puncak Pusuk Buhit'. It is designed to be a calm place, so visitors can enjoy the the beauty of surrounding nature.

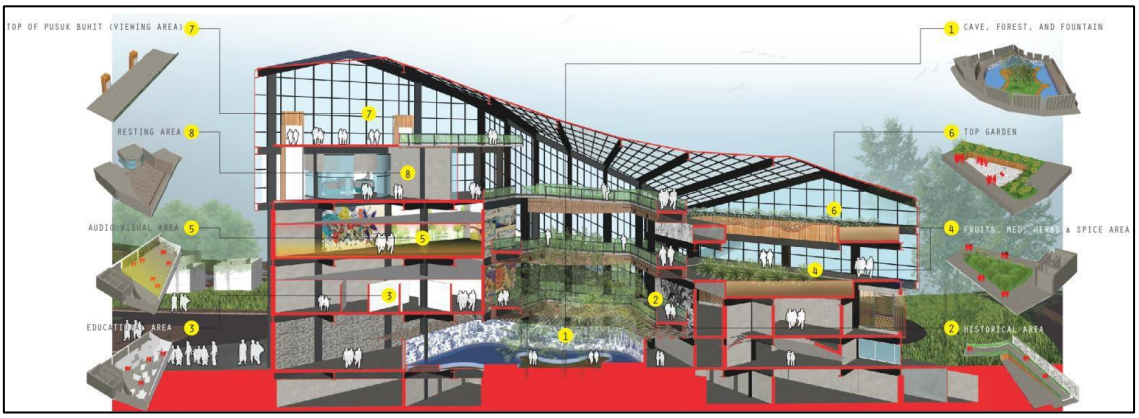

Figure 14 Scenario Implementation on every floor

Vertically, the bottom structure uses a borpile foundation with a 2x2 meter pile cap. Then on the basement wall used retaining wall structure. On the left and right sides of the longest side of the building, there is a core which also becomes the vertical transportation point in the building. In the body of the building, rigid

structure system used steel material I wf. Roof structure using semi active form structure system, and using steel material. The material which is used for the roof covering is laminated glass material (Figure 15).

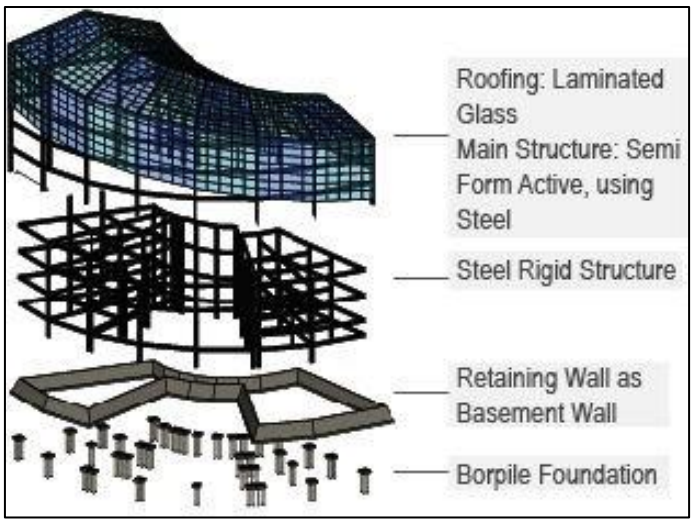

Figure 15 Exploded Structure

The distribution of water in the main mass is divided into the distribution of clean water, and waste water. Clean water in the main mass is used for toilet purposes as well as the need for the care of the plants within the Aek Natonang Arboretum Museum. For clean water, water source used is through PDAM[‡]. However, the existence of a design site surrounded by Lake Aek Natonang, makes it possible to use alternative water sources from the lake.

For wastewater distribution, it is divided into two distributions. For liquid waste, it is distributed first to the green belt promenade which will filter the waste before it is channeled into the lake. As for solid waste, will be channeled to bio septic tank which will be in if to be fertilizer for plant maintenance purposes (Figure 16).

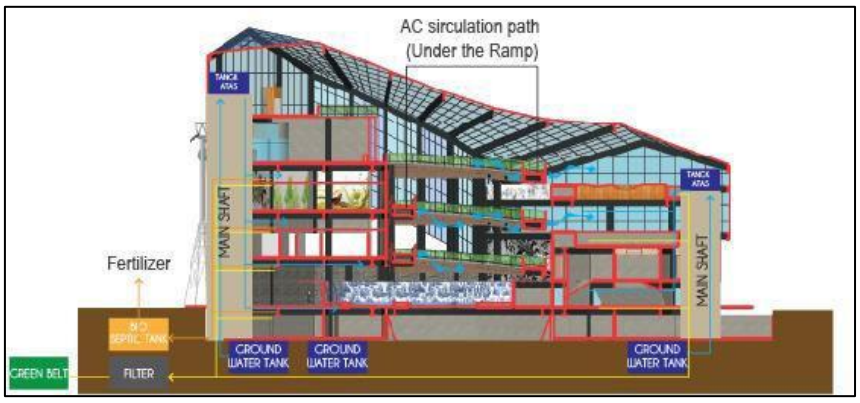

Figure 16 Water Distribution Schematic

[‡] PDAM is one of the regional-owned business units, which is engaged in the distribution of clean water for the community

3.2 Result

Based on analysis that have been done to all the aspects, the siteplan concept offered can be seen in the figure below (Figure 16).

Figure 17 Siteplan Design

4 Conclusion

Aek Natonang Arboretum area is a tourism space that need to be designed and added with facilities and infrastructure, to make the place alive. Arboretum Museum and resort design using neo vernacular architecture approch is approriate to this case. Through this design approach, the local wisdom and the contextual of the location of Aek Natonang Arboretum can be applied. Museum will act as not only a recretional space, but also an educative space for tourist. Resort will act as an additional facility that accomodates tourist activities.

Acknowledgements

This research is the result of a study of two authors, who work together in order to apply local wisdom in Aek Natonang Arboretum, Toba Samosir. Researchers hope this project will be an input to the Government, in order to increase tourism in Toba Samosir, North Sumatra.

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