

# Rearrangement of Tulungagung Sidem Beach Area Based on Sustainable Coastal Tourism

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## ABSTRACT

*Nowadays developments are things that will occur in an area, such as in the Sidem Beach of Tulungagung. This development has caused population growth to increase, increasing community needs will increase as it is bent on land use and also a mismatch between land use and its designation plan. This phenomenon caused changes in land use such as the seashore used for fishing settlement and that design area is not in accordance with the function. This problem has an impact on the narrowing of tourist areas on the coast, irregular parking locations and lack of clarity of access to coastal areas and surrounding areas. The study begins with an understanding relating to research that is about the urban design especially those located in coastal areas. This study uses description and triangulation analysis. This function is to obtain the truth of information and a complete picture of certain information. The researcher will use a semi-structured interview method with stakeholders and observation in actual data collection to improve the process of formulating specific criteria. The results of this study are designs with 10 aspects which are divided into two subjects, that is connectivity and land use with zoning, regional circulation, landscape arrangement, materials, and building integration. This is to solve the problem and to protect the environment from the destruction of assets that become the foundation of coastal tourism.*

**Key Words:** Sidem Beach, Sustainable Coastal Tourism, Stakeholders, Triangulation

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## 1. INTRODUCTION

Tulungagung Regency is one of the districts in the South of East Java Province. Geographically Tulungagung bordering with the Indian Ocean which has many potential attractive beaches as a tourist destination. One of the beaches owned by Tulungagung Regency is Sidem Beach with the characteristic of a white sand beach located on the south coast of Besole Village, Tulungagung Regency. This beach is categorized as a tourist beach that has beautiful scenery as an attraction for tourists. As well as coastal fishermen who have local specialty products such as fish catches with dragnets. The current condition of the Sidem Beach area is developing, namely the increasing development of the local community settlements. This problem has an impact on land use change in the region. The next problem is the inadequate access to Sidem Beach. This problem makes the region not have good connections with the surrounding area and has a negative impact on the environment and tourism of the region.

Whereas one of the prioritized growth and development of Tulungagung is the tourism sector. That target of tourism development for the growth of tourism institutions and governance systems is capable of synergizing the development of the tourism industry, tourism areas and tourism marketing.[1]

In structuring a city, connectivity is one integrated strategy to provide more understanding the pattern of urban areas and how the mass and room are organized texturally.[2] Moreover that land use is also one of the elements of city design that needs attention. So that an area will have clear characteristics to plan land use in an area. There are three tools for implementing the plan, that is the provision of public facilities, development regulations, appeals, leadership and coordination.[3]

Seeing these conditions, this research was conducted to provide the right design for the rearrangement of the Tulungagung Sidem Beach area. The design can solve problems regarding connectivity, land use by balancing the tourism industry and local communities to protect the environment from the destruction of assets that are the foundation of coastal tourism. With the concept

of sustainable coastal tourism, coastal sidem will be a sustainable coastal tourism that can contribute to environmental protection, restoration of biodiversity and ecosystems through the use of sustainable natural resources.[4]

## 2. LITERATURE REVIEW

In this literature review chapter, we will discuss theories relating to this research. Theories that will be explain include the theory of Sustainable Coastal Tourism, Linkage, Land Use and Policies Relating to Coastal Zone Arrangement.

### 2.1 Sustainable Coastal Tourism

Sustainable Coastal Tourism is a process to realize coastal development optimally and sustainably.[5] Sustainable Coastal Tourism can also be interpreted as a balance between the tourism industry and local communities to protect the environment from the destruction of assets that are the foundation of coastal tourism. Sustainable coastal tourism can contribute to environmental protection, restoration of biodiversity and ecosystems through the use of sustainable natural resources. The following is a diagram of sustainable coastal tourism.[6]



Figure 1 Sustainable Coastal Tourism Diagram

### 2.2 Urban Design

In the urban design there are three theories that have the potential as a urban design strategy that emphasizes an integrated city including Figure Ground, Linkage and Place.[7] In the discussion of this study focuses on the Linkage theory. The following is an explanation of the linkage.

#### 2.2.1 Linkage

Linkage theory provides more understanding of the pattern of urban areas as well as how the mass and space are organized texturally (urban spatial planning). Linkage is a pseudo line that connects one element to another, nodes one with other nodes or district one with another district. Linkage is divided into three types, that is visual linkage, structural linkage and collective linkage. Here's the explanation:

##### 1. Visual Linkage

In a visual linkage there are two or more city fragments connected into a single unit that is visually capable of uniting urban areas in various scales. Visual linkage has five elements that have a particular atmosphere characteristic that is capable of producing visual relationships, including:

- a. Line : connects directly two places with mass (building or tree).
- b. Corridor : formed by two rows of mass (buildings or trees) that make up space.
- c. Side : connects two regions with one mass. Similar to line elements but sides are indirect.
- d. Axes : similar to the corridor element, but in connecting the two regions prioritize one area only.
- e. Rhythm : connecting two places with variations in mass and space.

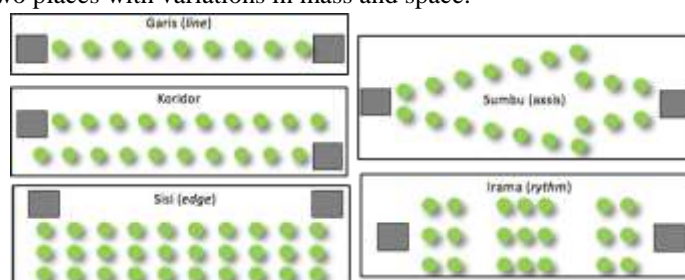


Figure 2 Visual Linkage

2. Structural Linkage

The function of linkage structural in the city is as a stabilizer and coordinator in the environment. Because each collage needs to be given a certain stability and stabilized environment with a structure, shape, form or function that gives a certain arrangement in the priority of regional arrangement. There are three elements of structural linkage that achieve architectural relationships including:

- a. Addition : continuing the pattern of pre-existing development.
- b. Connection : introduces new patterns in the regional environment.
- c. Effulent : there are two or more patterns that are already around it and will be united as patterns that also penetrate within an area.

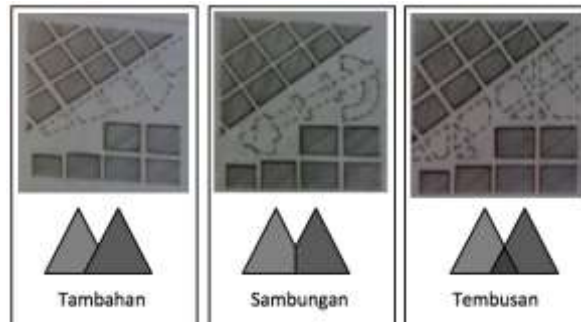


Figure 3 Structural Linkage

3. Collective Linkage

Linkage theory explains the arrangement of relationships between parts of the city with each other. Linkage will pay attention to and emphasize the relationships and movements (dynamics) of an urban spatial structure (Urban Fabric). This Linkage Theory is divided into 3 types of linkage urban space, that is:

- a. Compositional Form : this form is created from a stand-alone building in 2 dimensions. In this type of space relations are clear even if not directly.
- b. Mega Form : arrangements that are connected to a frame in the form of a straight line and hierarchy.
- c. Group Form : this form is an additional accumulation of structures along open space. Old and historic cities and rural areas apply this pattern.

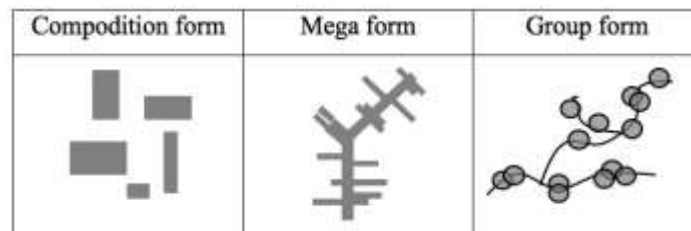


Figure 4 Collective Linkage

2.2.2 Land Use

In the urban design there are 8 elements that need to be considered so that an area will have clear characteristics.[8] But in this research only focused on land use. These elements include:

1. Land Use

First in terms of physical geography, land is a place where a dwelling has physical qualities that are important in its use. Secondly in terms of economics, land is a natural resource that has an important role in production. [9]

Generally, there are 3 (three) categories of land use planning tools, to implement the plan, including [10]:

- a. Provision of public facilities: Public facilities are held mainly through capital improvement programs by preserving early control of public land and road-owned areas (damija).
- b. Development regulations: Ordinances governing zoning, regulations on sailing, and other legal provisions regarding development. this provision is a guarantee that development activities by the private sector comply with the standards and will not deviate from the land use plan.

- c. Appeal, leadership and coordination: Even though it is more informal than a capital improvement program or development regulations. this process can be more effective to ensure that ideas, data, information and research regarding the growth and development of the community when entering into decision making among private developers and also government agencies that serve the public interest.
2. Building form and massing
3. Open Space
4. Parking and Circulation
5. Signage
6. Pedestrian Ways
7. Activity Support
8. Preservation

### 2.3 Arrangement of Water Edge Areas

To achieve success in developing coastal areas, it can be determined by how planning responds to the characteristics or uniqueness that exists in the waterfront area. These characteristics are divided into two parts, there are physical and non-physical. Non-physical characteristics include themes, community activities, social, cultural and economic conditions.[11]The characteristics that need to be considered in achieving success in structuring waterfront areas include:

- a. Natural and environmental conditions (geographical)
- b. Visual area
- c. Accessibility
- d. Building
- e. Landscape arrangement
- f. Infrastructure and facilities
- g. Structure
- h. Theme
- i. Utilization of water
- j. Community activities
- k. Social and culture
- l. Rules

For structuring coastal areas there are several components to support structuring coastal areas.[11] These components include:

- a. Pedestrian way
- b. Bicycle path
- c. Parking and Circulation
- d. Building
- e. Signage
- f. Street furniture
- g. Green open space

### 2.4 Policies Relating to Coastal Zone Arrangement

The law serves to regulate the policies that will be determined for a region. Below are policies that are applicable and relevant to the Coastal region:

1. RI Presidential Decree No. 32 of 1990 concerning Management of Protected Areas [12]

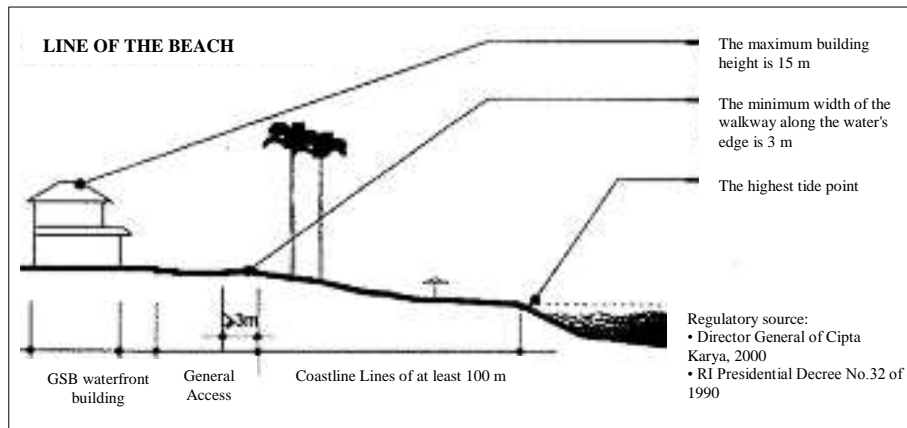


Figure 5 Coastline

2. Law No. 26 of 2007 concerning Spatial Planning [13]

Spatial planning which includes land space, sea space and air space including space inside the earth. The entire surface of the earth both on land and on the seabed essentially has a capacity limit that needs to be regulated. Likewise, in the airspace and sea space and below it, which is inside the earth as a unit with the surface of the earth, its utilization needs to be regulated.

The law emphasizes the need for spatial planning that can harmonize the natural environment and the artificial environment that is able to realize the integrated use of natural resources and artificial resources. As well as structuring that can provide protection against space functions and prevention of negative impacts on the environment due to the use of space. This spatial planning rule must be applied and realized in every regional spatial planning process. Matters that need to be considered with regard to spatial planning in coastal areas prone to disasters include:

- a. Identify areas of vulnerability to various disasters.
- b. Mapping areas that are vulnerable and safe from disasters.
- c. Build tourism facilities in a disaster safe zone.
- d. Socialize disaster-prone locations and buildings that are resistant to earthquakes and tsunamis.
- e. Arrangement of access that can cut the coastline for evacuation and escape routes for various disaster-prone areas. So that there will not be concentration of population in one lane or point in the event of a disaster.

3. METHODS

3.1 Research methods

This research is a qualitative descriptive study. Descriptive research is a research that serves to provide an overview of problem solving that will be investigated by describing a condition, problems based on facts that appear on the location. [14] Data collection can be done by observation, semi-structured interviews, documentation, literature studies and agency surveys. To obtain more detailed data about the research area, this study uses selected community participation through stakeholder analysis. [15]

In this study the analysis techniques used descriptive and triangulation. The following is an explanation of the analysis techniques used in this study.

1. Descriptive Analysis

This analysis begins with describing the condition of the area by focusing on identifying potential and problems. This process is carried out by walking through the area and recording pictures of conditions from the area using a tool in the form of a camera. This is done to get a visual picture of the condition of the area under study. [14]

2. Triangulation Analysis

Triangulation is a data analysis approach that synthesizes from various sources. The method is done by comparing information or data in different ways. Triangulation can answer questions about risk groups, effectiveness, policies and planning in an environment. [16]

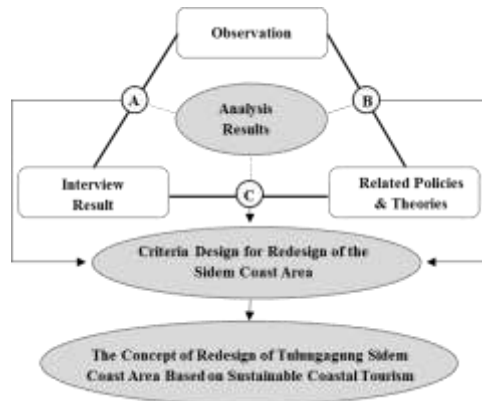


Figure 6 Triangulation Analysis Process

3.2 Design Method

In urban design, there needs to be a design method that includes several stages that can be used to meet design goals. The following are clear sequences or stages regarding the design method [17]



Figure 7 Urban Design Method and Process

4. ANALYSIS

4.1 Stakeholder

Stakeholders are anyone or organization, who can have a positive or negative influence by intervention, or will influence the actions of a project or organization. Can be in the form of people, groups, institutions or things with an interest in a project or program that aims to identify influential people or groups or organizations involved in interventions for program design, projects and policies. the following are influential stakeholders in this study.

Table 4.1 Stakeholder Contribution

No	Status	Contributions to the project
1	Tourism Awareness Group	Can explain the Sidem Coast area about natural conditions, the environment, desired changes, the economy, potential and obstacles faced in making changes.
2	Bappedda Tulungagung	Can explain the natural conditions, the environment, the status of the Sidem Coast area, development plans and obstacles faced in conducting arrangements in the area.
3	Public Works Service	Can explain the development plan, the prior arrangement process, the condition of the Sidem Coast area, the government's opinion about the development of the area.
4	Environmental Care Group	Can explain about the process of development that wants to be done, desired changes, community complaints, potential possessions and obstacles faced in making changes.
5	Seller in Pantai Coast area	Can explain about history of the region, condition of the natural and environmental conditions, desired changes, complaints about the local area and the economy of the people in that area.
6	Local community	Can explain the natural conditions and environment of the local area, the process of development, the level of crowds of visitors, the desired changes. Can explain the process formed and the development of the region, natural conditions and environment of Sidem Beach, the economy and desired changes.

4.2 Analysis Result

The following are the results of descriptive analysis and triangulation of 10 aspects of rearrangement and reordering criteria that are useful for solving problems and achieving sustainable coastal tourism concepts. This is the explanation

1. Accessibility



Description Analysis	Triangulation Analysis
<ul style="list-style-type: none"> <li>- There are no security facilities in the form of signage direction, signage of the condition of the area, guardrail</li> <li>- Distance of street lighting is too far away</li> </ul>	Need to add lighting facilities with the appropriate distance to provide lighting to the surrounding area and accessibility settings by providing material differences for pedestrian and vehicle users

2. Signage



Description Analysis	Triangulation Analysis
<ul style="list-style-type: none"> <li>- The location of the signage cannot be known to the user.</li> <li>- Signage dimensions that are too small.</li> <li>- Does not have a signage from the opposite direction.</li> <li>- Signage are not clearly visible to the user</li> <li>- Placement of signage that damage coastal ecosystems.</li> </ul>	It is necessary to add signage settings with material that can be known at day and night with placements that can be read from several directions. In addition, it is necessary to add a signage in the form of the identity of the Sidem Beach location so that it is known to the user that they have arrived at the destination.

3. Parking And Circulation



Description Analysis	Triangulation Analysis
<ul style="list-style-type: none"> <li>- Parking area that cannot accommodate many tourist vehicles</li> <li>- Access to parking locations that are difficult to pass because there is only one road to enter and exit the location.</li> <li>- Parking location is on the beach which must be free from vehicle circulation activities</li> </ul>	Need to re-establish centralized parking locations in accordance with policies in the pesisir area and to differentiate circulation for pedestrians and vehicle users to facilitate circulation in coastal areas.

4. Landscape Arrangement



Description Analysis	Triangulation Analysis
<ul style="list-style-type: none"> <li>- Vegetation is mixed with garbage disposal</li> <li>- Arrangement of vegetation that does not pay attention to safety and security in user activities.</li> </ul>	It is necessary to plant and arrange vegetation by homogenizing vegetation in coastal areas both on the seaboard and outside the coastline. this application to reduce negative impacts on the environment and minimize the occurrence of erosion, abrasion and sedimentation.

5. Natural And Environmental Conditions



Description Analysis	Triangulation Analysis
<ul style="list-style-type: none"> <li>- Tidal waves that are high enough to cause the surrounding environment to be damaged because there is no structure or vegetation that serves to reduce tidal waves</li> <li>- The location of the construction of settlements in the coastal border will threaten the sustainability of the coastal environment.</li> </ul>	Need to move the location of fishing settlements outside the coastal border and add a coastal protection structure in the form of coastal boundary vegetation that serves to preserve and protect the coastal environment.

6. Buildings



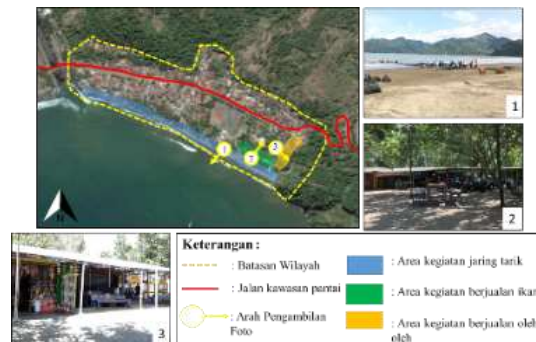
Description Analysis	Triangulation Analysis
<ul style="list-style-type: none"> <li>- Settlements and kiosks built on the seaboard will disrupt the sustainability of the coastal area</li> <li>- Orientation of the building with back facing the beach</li> <li>- The height of buildings that exceed the limits of provisions in coastal areas</li> </ul>	It needs to be balanced between tourism and local environmental preservation. So it is necessary to arrange buildings by moving settlements outside the shoreline with buildings that have height according to policy

7. Visuals



Description Analysis	Triangulation Analysis
<ul style="list-style-type: none"> <li>- Doesn't have a visual character that is a local characteristic of the area</li> <li>- No harmony between the visual and the potential of the surrounding environment.</li> </ul>	Need to consider the preservation of the environment, economy, beauty and comfort so that users have an attractive and comfortable impression of doing activities in the area. Because it will add tourists visiting Sidem beach

8. Community Activities




Description Analysis	Triangulation Analysis
<ul style="list-style-type: none"> <li>- The location of selling activities is on the seaboard.</li> <li>- Locations gathered at a stall or seating facilities on the shoreline will endanger the safety, security and comfort of the user.</li> </ul>	Need to pay attention the location of selling and gathering activities, so that environmental sustainability and safety of tourists will be maintained

9. Infrastructure and Facilities





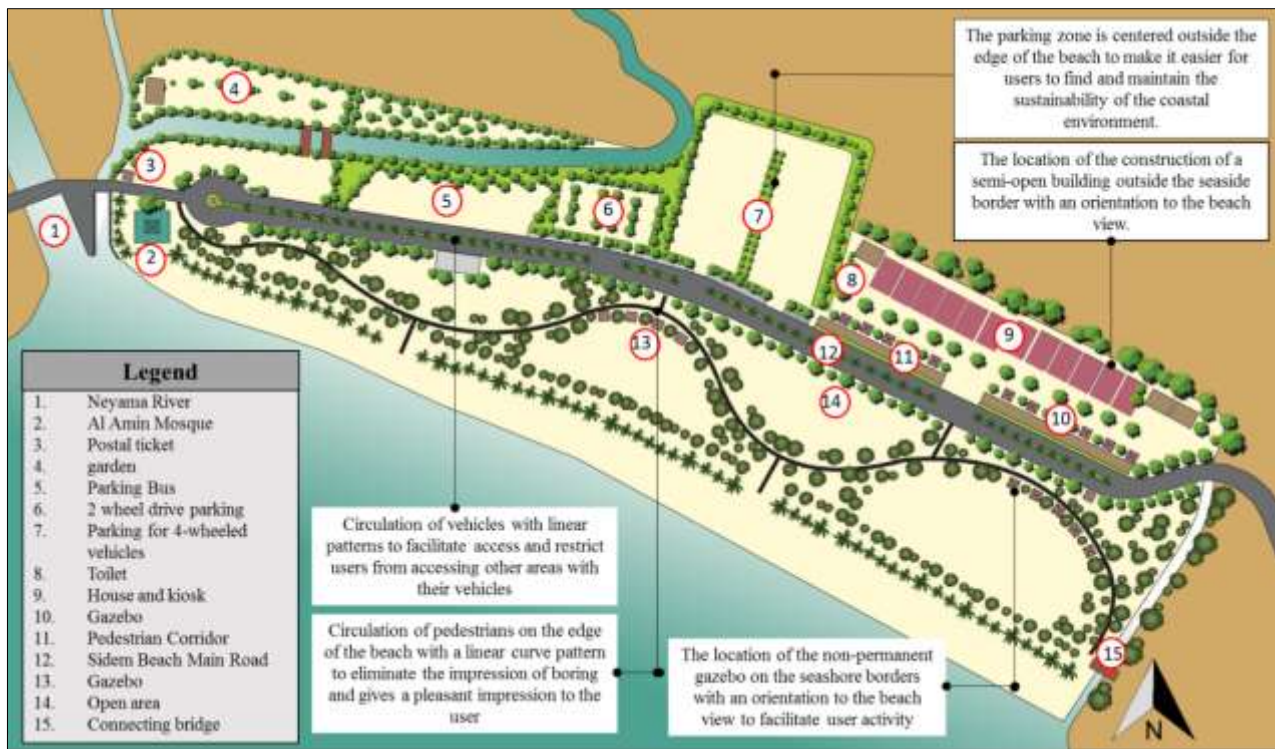
Description Analysis	Triangulation Analysis
<ul style="list-style-type: none"> <li>- Toilets whose location is only centered in 1 location and the condition is not maintained</li> <li>- Street lighting conditions that are not well organized</li> </ul>	the need for additional and arrangement of toilet facilities, trash that are spread out and easily accessible by users
10. Structures <div style="text-align: center;">  </div>	
Description Analysis	Triangulation Analysis
<ul style="list-style-type: none"> <li>- The riverbank structure of Neyama was damaged due to erosion of river water flow</li> <li>- Bridge structure that has been damaged and cannot be used by the user.</li> </ul>	There is a need to restructure the bridges and banks of the Neyama River to preserve the coastal environment of Sidem.

Therefore, the sidem area requires some redesign criteria as follows:

1. Must have public facilities along the road with the distance needed to provide comfort and clarity for users to pass the road and know the conditions around the area, must distinguish access for vehicles and pedestrians
2. Signage must be able to show important locations such as parking, kiosks, beach tourism, mosques, toilets and other important facilities to make it easier for users to reach the desired location
3. Parking locations must be easily found and can be easily understood by users.
4. Arrangement of vegetation must pay attention to user functions and activities and must be able to function optimally to minimize tidal waves so that environmental sustainability will be maintained.
5. Need to move the settlements of fishermen outside the coastal boundary and add vegetation or coastal structures that are in accordance with environmental conditions to protect coastal areas
6. Must place permanent and non-permanent buildings in accordance with the provisions of development in coastal areas so as not to damage the sustainability of the coastal environment, the building must have a height in accordance with the provisions of development in coastal areas.
7. Regional arrangement must use local materials and attractive designs that pay attention to environmental harmony
8. Need to move and add locations to sell and collect activities that pay attention to user safety and local environmental preservation
9. Need to add infrastructure and facilities whose locations are spread out and can be used by all ages
10. Must use material that is durable and efficient, the design must pay attention to the user's safety so as to minimize the possibility of accidents.

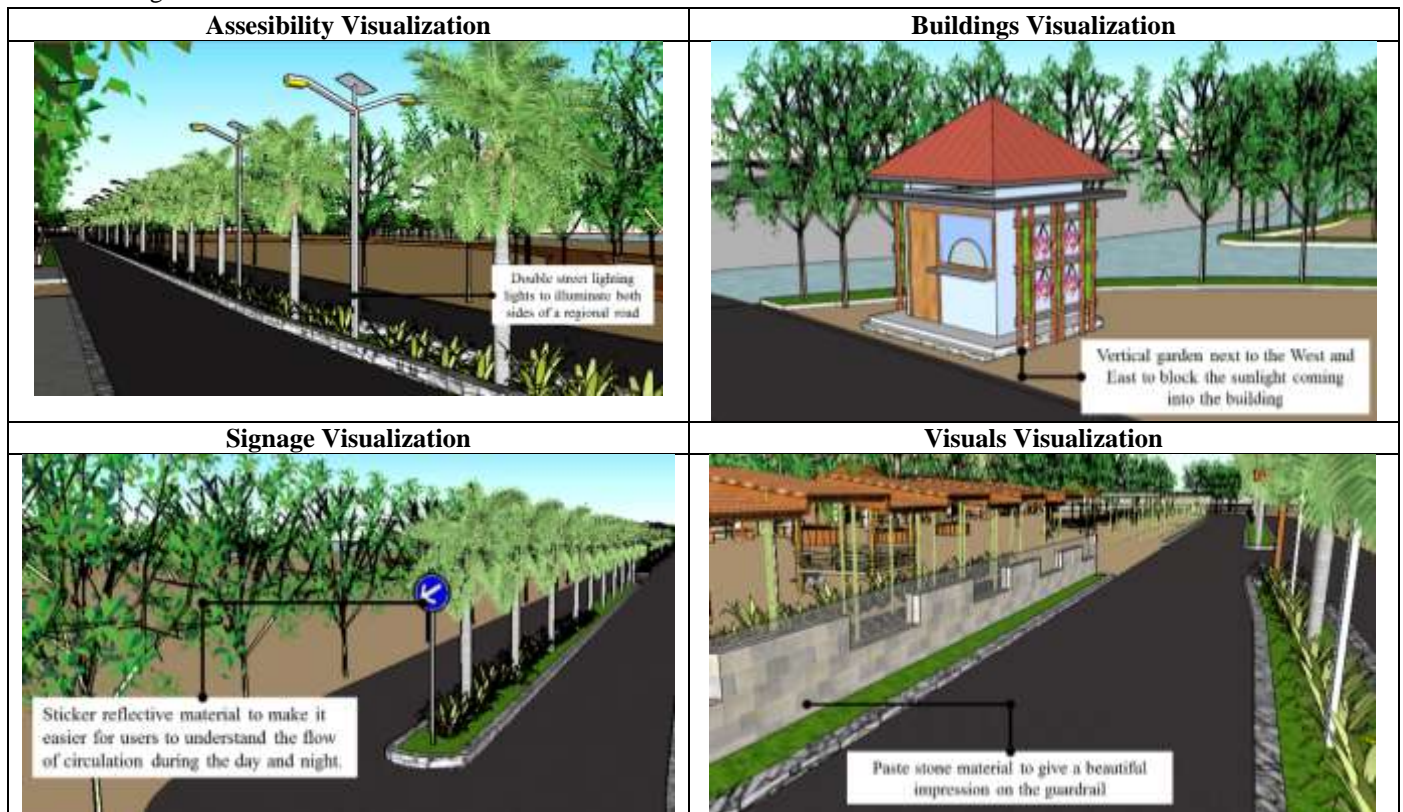
#### 4.4 Macro Concept

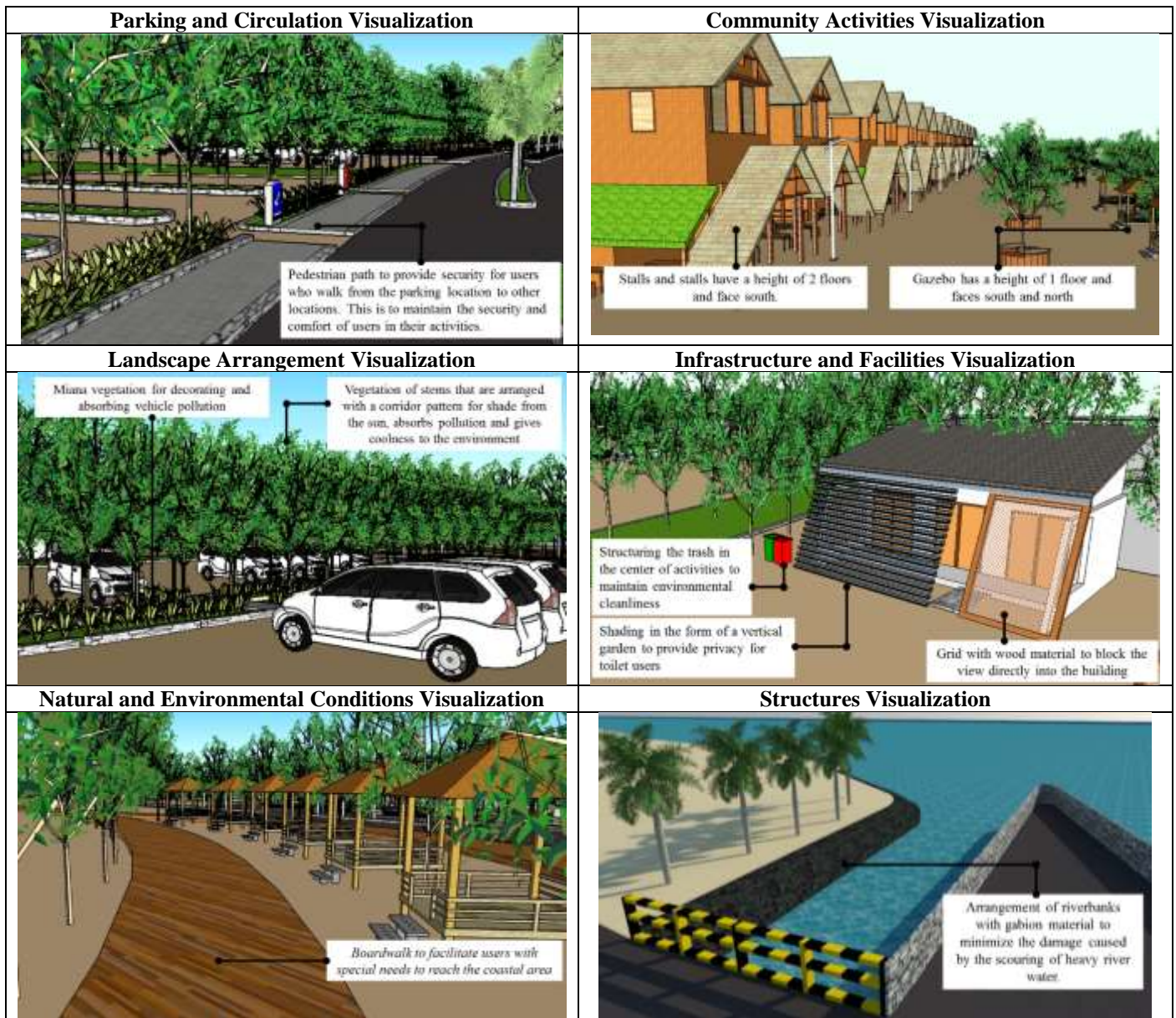
The macro concept is the basic concept of rearrangement the area that has a function to determine the outline of the rearrangement in the Sidem Beach of Tulungagung. The macro concept in this rearrangement, that the Sidem Beach area will be a coastal tourism area that is sustainable in terms of environment.



#### 4.5 Visualization

Visualization is the application of concepts from previous explanations about several aspects to achieve regional rearrangement accordance with the concept of Sustainable Coastal Tourism. The following is a visualization of every aspect used in the rearrangement of the Sidem Beach area.





## 5. CONCLUSION

In the restructuring of the Sidem Beach area, there are 10 aspects that affect the realignment with the concept of sustainable coastal tourism. This sustainable concept in the coastal area of Sidem focuses on the sustainability of the environment. There are five aspects that influence the achievement of a sustainable coastal environment including: accessibility aspects, parking and circulation aspects, landscape management aspects, aspects of natural and environmental conditions, structural aspects. These five aspects are the main aspects to achieving coastal tourism that is environmentally sustainable. Whereas the other five aspects are the supporting aspects that are used to support the achievement of the rearrangement of the Sidem Beach area based on Sustainable Coastal Tourism. To realize the proposed concept, it is necessary to arrange zoning fisherman's settlement and shop, pedestrian circulation, the design and location of construction permanent and non-permanent buildings. The unique design of this redesign is to maintain the fishermen's settlement by structuring into one with a shop. Settlement arrangement is applied with a stilt house that can be used as a place to live and sell tourist needs. This design is a characteristic redesign of the Sidem Beach area which can be used as an attraction for tourists.

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## REFERENCES

- [1] Tulungagung District Regulation No.2 Year 2017 concerning RIPPARKAB (Rencana Induk Pembangunan Kepariwisata Kabupaten Tulungagung) 2017-2023.
- [2] Trancik. R.(1986). *Finding Lost Space*. John Wiley & Sons, Inc. New York.
- [3] Shirvani, Hamid (1985). *The Urban Design Process*. Van Nostrand Reinhold:New York.
- [4] Drius, Mita et al.(2019).Tackling challenges for Mediterranean sustainable coastal tourism: An ecosystem service perspective. *Science of The Total Environment* Volume 652, 20 February, Pages 1302-1317
- [5] Dahuri, R. et al.(1996). *Integrated Management of Coastal and Ocean Resources*. Jakarta: PT. Pramadya Paramita.
- [6] Garood .B and Wilson J. (2003). *Marine ecotourism: issues and experiences*. Sydney, Australia: Channel View Publicatins.
- [7] Trancik. R.(1986). *Finding Lost Space*. John Wiley & Sons, Inc. New York.
- [8] Shirvani, Hamid (1985). *The Urban Design Process*. Van Nostrand Reinhold:New York.
- [9] Firmansvah. Aldrin Yusuf.(2013). *Land Use in Islamic Policy Review and Management Overview*. Journal of Architectural Engineering Uin Malang. DOI: 10.18860/ua.v0i0.2411
- [10] Anthony J. Catanese dan James C Snyder.(1988). *Perencanaan Kota*. Jakarta : Penerbit Erlangga
- [11] Sastrawati. Isva. (2003). *Water Edge Design Principles (Case: Tanjung Bunga Area)*. *Regional and City Planning Journal*. Institut of Technology Bandung.
- [12] Republik Indonesia.(1990). Presidential Decree No.32 of 1990 concerning Management of Protected Areas.Republik Indonesia.
- [13] Law No. 26 of 2007 concerning Spatial Planning
- [13] Darjosanjoto.(2012). *Architectural Research in the Field of Housing and Settlements*. 2<sup>nd</sup> edition. ITS Press. Surabaya.
- [14] Sugiyono.(2006). *Qualitative Quantitative Research Methods and R & D*. Bandung: Alfabeta.
- [15] Lisa M. Given.(2008). *Qualitative research methods*. United States of America. SAGE Publication, Inc.
- [17] Moughtin, Cliff.(2003). *Urban Design: Methods and Techniques*. Architectural Press