

# Pottery Museum Design Based on Sustainable Tourism in Melikan Village Central Java

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## ABSTRACT

Melikan Tourism Village, located in Klaten Regency, Central Java Province, is renowned as a center for pottery crafts utilizing a unique technique known as the inclined spinning technique. This method is believed to have been practiced for over 600 years, becoming an integral part of the village's cultural identity. Despite its reputation in pottery craftsmanship, Melikan Village continues to face various challenges in ensuring its sustainability and development. Based on its historical and cultural values, this study aims to design a pottery museum to optimize the village's potential while addressing its challenges. The research adopts a qualitative descriptive approach through precedent studies, literature reviews, and field surveys. Precedent studies and literature reviews are conducted to establish design criteria, while field surveys are used to gather data on the local environment and surrounding conditions as the basis for analysis. The proposed pottery museum design incorporates sustainable tourism principles into its concept. The final outcome of this study is a pottery museum design concept that supports sustainable tourism by harmonizing economic, socio-cultural, and environmental aspects, creating a sustainable balance within the village.

**Keywords:** Museum, pottery, sustainable tourism

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## 1. Introduction

The tourism sector significantly contributes to a nation's economy, serving as a primary source of national revenue. The connection between the economy and the tourism sector is very strong, creating mutually supportive and sustainable relationships [1]. Tourism is a labor-intensive industry as it has a multiplier effect by generating various benefits. The growth of the tourism sector in a region can generate numerous employment opportunities for local communities, as it demands various management and service roles to accommodate visitors [2]. According to data from the Central Statistics Agency, the tourism industry contributed 5.8% to the national GDP in 2023 and is projected to increase to 7.4% by 2027 [3].

One of the development steps in the tourism sector is pioneering tourist attractions in villages. The government is encouraging the development of rural tourism as it is considered a potential long-term investment due to the availability of natural and human resources. Additionally, the goal of developing tourism in rural areas is to empower local communities by utilizing existing resources and packaging them attractively to be presented as

tourist attractions [4]. A tourism village is one of the concepts in developing the tourism industry in a region. This concept includes the development of rural areas that maintain authenticity in terms of customs, socio-cultural aspects, traditional architecture, and village spatial planning. All these aspects are presented as part of an integrated tourism approach that encompasses attractions, accommodations, and other supporting facilities [5]. The creation of a tourism village allows local communities to actively participate in diverse tourism-related activities, including offering service, working as tour guides, crafting handmade products, or managing various businesses. This involvement can increase the income and welfare of village residents. The development of a tourism village can also become an alternative source of income for village communities that previously relied solely on agriculture or fisheries. Diversifying the economy is essential for strengthening the village's economic resilience. Furthermore, the establishment of a tourism village often enhances village infrastructure, including roads, public amenities, and healthcare services, providing benefits to both visitors and the local population [6].

Melikan Village is among the many tourist villages located in Indonesia, located in Klaten Regency, Central Java Province. Melikan Village is known as a center for pottery crafts with a unique technique called "slanted rotation". This method, handed down through generations, serves as a unique hallmark that sets Melikan pottery apart from those of other regions [7]. According to stories circulating among the locals, Melikan Village has a historical connection with Sunan Pandanaran, a 15th-century Islamic missionary in the Bayat area. Sunan Pandanaran is known to have taught the technique of making pottery with "slanted rotation" to the local residents. This technique has been around for approximately 600 years and has become a hallmark of Melikan pottery. It uses an inclined turntable, which allows artisans to create pottery with more diverse and precise shapes [8]. Melikan Village has long been known as a center for pottery crafts, especially in Pagerjurang Hamlet. Around 200 families in this village rely on pottery production, which has been done for generations. In 2020, Melikan Village was officially designated as a tourist village, and in 2022, the "slanted rotation" technique has been acknowledged as an Intangible Cultural Heritage by Indonesia's Ministry of Education and Culture emphasizing the importance of this technique in preserving local culture. Melikan Village is not only famous as a pottery production center but also as an example of how tradition and innovation can synergize to create economic and cultural sustainability [9].

Although renowned for its unique pottery crafts, Melikan Village still faces several challenges in ensuring its sustainability and development. These challenges include suboptimal marketing and product distribution, limited village infrastructure, and the urgent need to enhance environmental awareness. Given the village's rich historical and cultural potential, it is essential to implement development projects that effectively capitalize on these assets. One viable solution to address these challenges and maximize the village's potential is the development of infrastructure centered around a museum. The Melikan Village Pottery Museum is designed to integrate cultural, economic, and environmental aspects into a sustainable entity. The pottery-making tradition, deeply embedded in the daily lives of Melikan Village residents, serves as a critical asset in sustainable spatial planning and development [10]. The establishment of a pottery museum in Melikan Village holds the potential to become a hub of creative activities, preserving local cultural heritage while fostering the growth of competitive creative industries. This museum will showcase the history and artistry of pottery, while also serving as an educational and training center for local residents and tourists. The hypothesis of this research suggests that the presence of a Pottery Museum in Melikan Village is expected to address the challenges faced by the village and support its sustainable development.

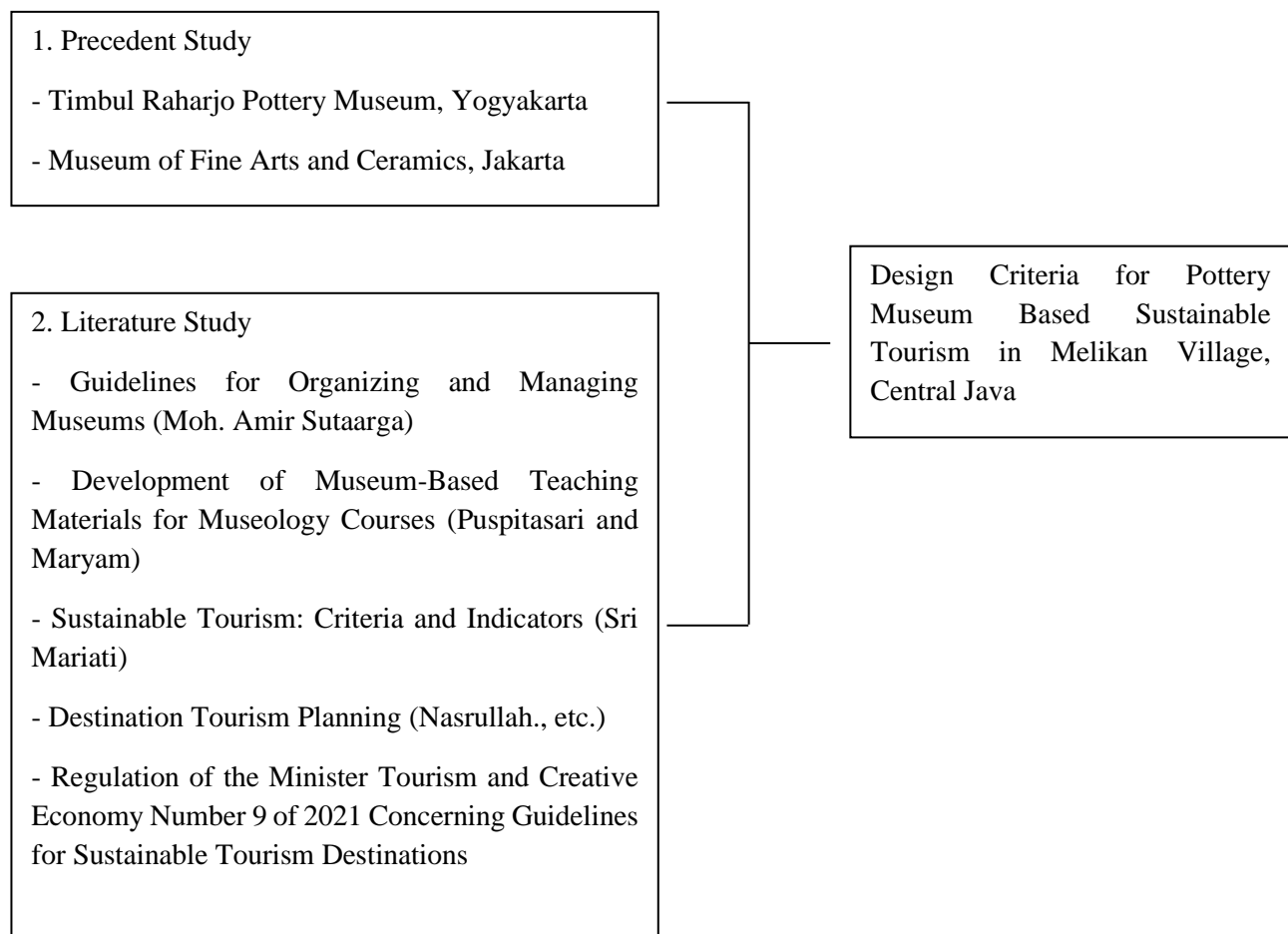
## **2. Method**

The method used in designing the Pottery Museum Based Sustainable Tourism in Melikan Village, Central Java, is a qualitative descriptive method. According to Cresswell, the qualitative descriptive approach is a research method that systematically describes facts and characteristics of the subject or phenomenon being studied [11]. In this study, the design criteria were obtained through several approaches, namely (1) Precedent

Study: Analyzing similar pottery museum buildings to understand the concepts, spatial needs, activities, and design implementations that have been applied. (2) Literature Study: Collecting data and insights from various written materials, including books and journals, on museum design principles, the integration of sustainable tourism elements, and the development of villages.

### *Design Flow*

The research design flow in this study is as follows (Diagram 1): (1) Precedent Study: The first step is to conduct a case study. This stage involves examining and analyzing similar building cases that have been previously established to understand the methods, approaches, space programs, and results achieved as input for the research; (2) Literature Study: The next step is the literature study. This stage involves various reading sources, including books, journals, and even legislation. Through the literature study, this research can collect theories, concepts, and parameters to support the research.



**Diagram 1** Design Flow

### *2.1 Precedent Study*

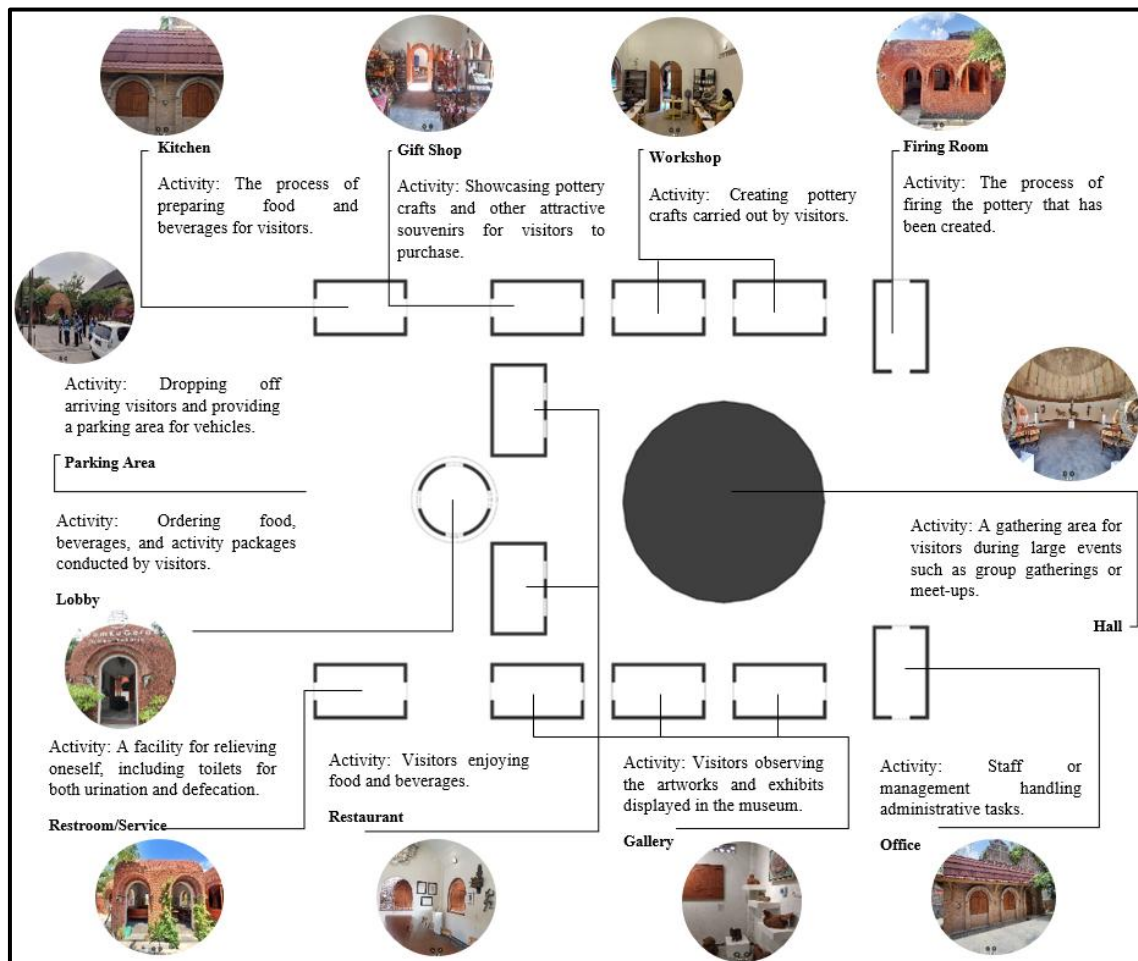
A precedent study is a research method that involves examining and analyzing previous cases, objects, or works that share similarities with the topic under investigation. The precedent studies in this research are the Timbul Raharjo Pottery Museum in Yogyakarta and the Museum of Fine Arts and Ceramics in Jakarta.

# Timbul Raharjo Pottery Museum, Yogyakarta



**Figure 1** Timbul Raharjo Pottery Museum.

Timbul Raharjo Pottery Museum (Figure 1) is situated in Kasongan Village, Yogyakarta. This museum was founded by an artist named Timbul Raharjo, who is also a former rector of ISI Yogyakarta. The Timbul Raharjo Pottery Museum has a unique building design with the entire structure shaped like a terracotta dome. This museum was inaugurated in November 2023, and it serves not only as a tourist spot but also as an educational place for visitors. In this museum, visitors can learn about the history of the pottery industry in Kasongan Village and participate in pottery-making workshop classes. The floor plan and space program of the museum are shown in Figure 2.



**Figure 2** Floor Plan of the Timbul Raharjo Pottery Museum.

The results of the activity analysis and space requirements for the Timbul Raharjo Pottery Museum are shown in Table 1.

**Table 1** Analysis of Activities and Space Requirements at the Timbul Raharjo Pottery Museum.

Activity Group	Activities	Space Requirements
Main	<ul style="list-style-type: none"> <li>- Viewing the museum collection</li> <li>- Pottery making / painting workshop</li> <li>- Preparing tools and materials for pottery making</li> <li>- Firing pottery process</li> </ul>	<ul style="list-style-type: none"> <li>- Museum gallery</li> <li>- Workshop</li> <li>- Firing room</li> </ul>
Support	<ul style="list-style-type: none"> <li>- Eating and drinking</li> <li>- Relaxing and chatting</li> <li>- Shopping for souvenirs</li> </ul>	<ul style="list-style-type: none"> <li>- Garden</li> <li>- Cafeteria</li> <li>- Hall</li> <li>- Gift Shop</li> </ul>
Service	<ul style="list-style-type: none"> <li>- Vehicle parking</li> <li>- Registration, ordering food and beverages</li> <li>- Preparing food and beverages</li> <li>- Security</li> <li>- Cleaning the café, hall, gallery, workshop</li> <li>- Administration</li> <li>- Worship, restroom facilities, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Parking area</li> <li>- Lobby</li> <li>- Security post</li> <li>- Restroom</li> <li>- Janitor</li> <li>- Prayer room</li> <li>- Kitchen</li> <li>- Office</li> <li>- Storage</li> </ul>

*Museum of Fine Arts and Ceramics, Jakarta*



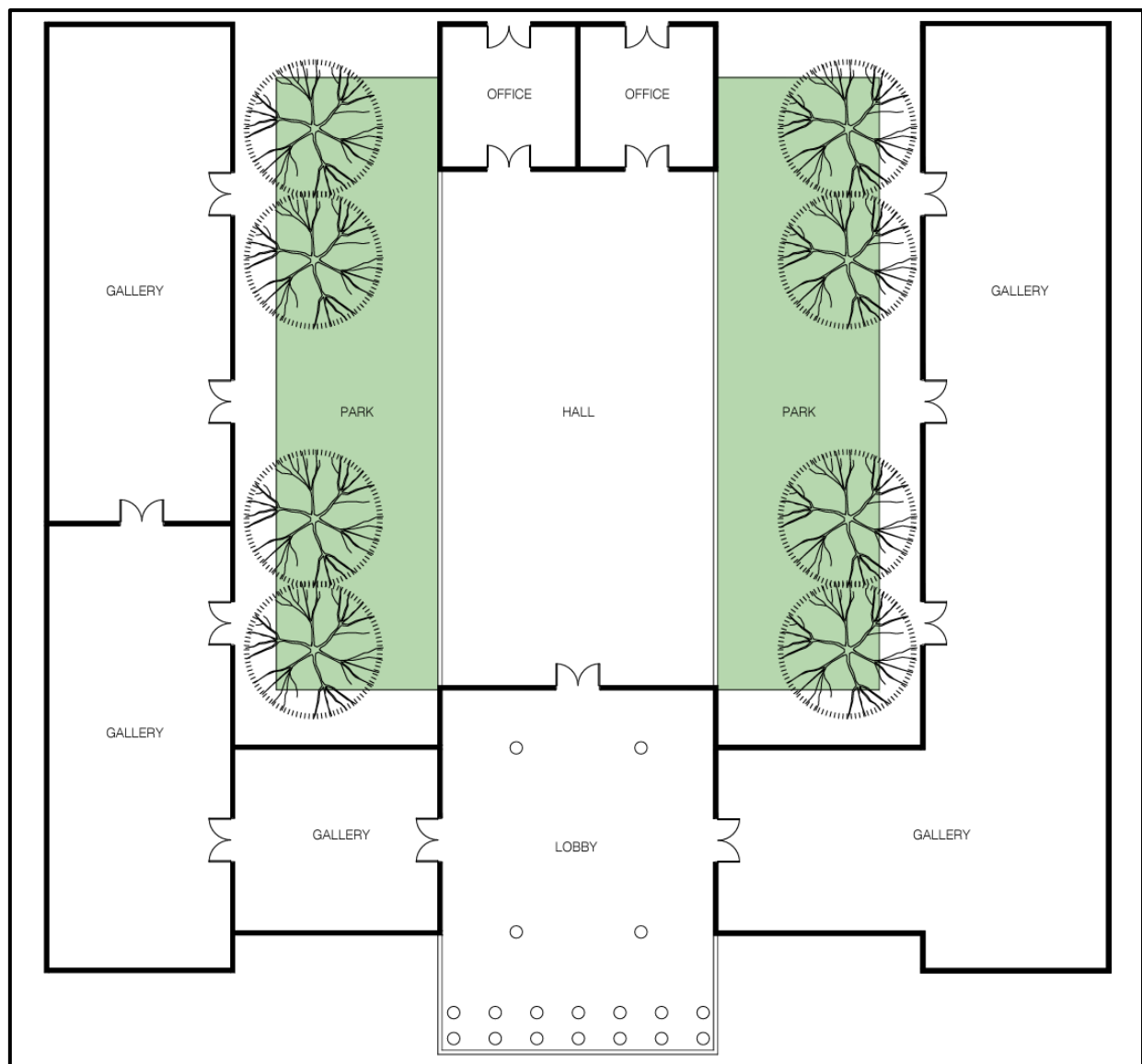
**Figure 3** Museum of Fine Arts and Ceramics, Jakarta.

The Museum of Fine Arts and Ceramics (Figure 3) is located in the Old Town area of Jakarta, precisely at Pos Kota Street No. 2, Pinangisia, Taman Sari, West Jakarta. The Museum of Fine Arts and Ceramics has a building area of 2,430 m<sup>2</sup> and is built on land covering 9,320 m<sup>2</sup>. The museum building was constructed between 1866 and 1870 by an architect named Jhe W.H.F.H. Van Raders in the European Empire architectural style, also known as Neo Classic. The distinctive feature of buildings in this style is the triangular front upper part, while the front terrace features pillars or doric columns [12]. Initially, the Museum of Fine Arts and Ceramics building served as the Raad van Justitie Binnen Het Casteel Batavia or the Batavia Council of Justice Office, which was inaugurated by Governor-General Jan Pieter Miyer on



January 21, 1870. During the Japanese occupation until the Physical Revolution (1945-1949), the building was used by the Royal Netherlands East Indies Army (KNIL) as a barracks for members of the Netherlands Military Mission (NMM). During the sovereignty of the Republic of Indonesia, the building was handed over to the Indonesian National Army (TNI) and used as a logistics warehouse.

From 1970 to 1973, the building that now houses the Museum served as the office of the Mayor of West Jakarta. Then in 1974, it was renovated and repurposed as the Office of Museums and History of DKI Jakarta. Based on the idea of Vice President Adam Malik, the building was inaugurated by President Soeharto as the Hall of Fine Arts on August 20, 1976. On June 10, 1977, the front wing of the building was inaugurated by the Governor of DKI Jakarta, Ali Sadikin, as the Ceramics Museum. In early 1990, the Hall of Fine Arts was merged with the Ceramics Museum to become the Museum of Fine Arts and Ceramics [13]. The floor plan of the Museum is shown in Figure 4.



**Figure 4** Floor Plan of the Museum Fine Arts and Ceramics, Jakarta.

The results of the activity analysis and space requirements for the Museum Fine Arts and Ceramics Jakarta are shown in Table 2.

**Table 2** Analysis of Activities and Space Requirements at Museum Fine Arts and Ceramics, Jakarta.

Activity Group	Activities	Space Requirements
Main	<ul style="list-style-type: none"> <li>- Viewing the museum collection</li> <li>- Pottery making / painting workshop</li> <li>- Preparing tools and materials for pottery making</li> <li>- Firing pottery process</li> </ul>	<ul style="list-style-type: none"> <li>- Exhibition room</li> <li>- Gallery</li> <li>- Workshop</li> </ul>
Support	<ul style="list-style-type: none"> <li>- Reading books</li> <li>- Relaxing and chatting</li> <li>- Shopping for souvenirs</li> </ul>	<ul style="list-style-type: none"> <li>- Garden</li> <li>- Library</li> <li>- Multipurpose room</li> <li>- Gift shop</li> </ul>
Service	<ul style="list-style-type: none"> <li>- Vehicle parking</li> <li>- Registration</li> <li>- Security</li> <li>- Cleaning the multipurpose room, exhibition</li> <li>- Maintaining collection items</li> <li>- Administration</li> <li>- Worship, restroom facilities, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Parking area</li> <li>- Lobby</li> <li>- Restroom</li> <li>- Janitor</li> <li>- Prayer room</li> <li>- Office</li> <li>- Storage</li> </ul>

Below is the summary table (Table 3) of the space requirements analysis from the case study :

**Table 3** Summary of Space Requirements Analysis based on Precedent Study.

Activity Group	Precedent Study	
	Timbul Raharjo Pottery Museum, Yogyakarta	Museum of Fine Arts and Ceramics, Jakarta
Main	<ul style="list-style-type: none"> <li>- Gallery</li> <li>- Workshop</li> <li>- Firing room</li> </ul>	<ul style="list-style-type: none"> <li>- Exhibition room</li> <li>- Gallery</li> <li>- Workshop</li> </ul>
Support	<ul style="list-style-type: none"> <li>- Garden</li> <li>- Cafeteria</li> <li>- Hall</li> <li>- Gift Shop</li> </ul>	<ul style="list-style-type: none"> <li>- Garden</li> <li>- Library</li> <li>- Multipurpose room</li> <li>- Gift shop</li> </ul>
Service	<ul style="list-style-type: none"> <li>- Parking area</li> <li>- Security post</li> <li>- Restroom</li> <li>- Janitor</li> <li>- Prayer room</li> <li>- Kitchen</li> <li>- Office</li> <li>- Storage</li> </ul>	<ul style="list-style-type: none"> <li>- Parking area</li> <li>- Lobby</li> <li>- Restroom</li> <li>- Janitor</li> <li>- Prayer room</li> <li>- Office</li> <li>- Storage</li> </ul>

## 2.2 Literature Study

The literature review used in this research encompasses various reading sources. Specifically, it consists of books and regulations that discuss sustainable tourism in depth.

### Museum

According to International Council of Museums (ICOM), as quoted in book titled "Guidelines for Organizing and Managing Museums" by Moh. Amir Sutaarga, a museum is a lasting, non-profit establishment dedicated to serving society and its advancement, accessible to the public, and tasked with preserving, linking, and showcasing items associated with humanity and its surroundings serving the objectives of knowledge [14]. Museum buildings also play a vital role as facilities for the preservation, maintenance, and dissemination of cultural heritage [15]. Museums can be managed by private entities or governments with the aims of preservation, education, social, and economic purposes [16]. In the context of designing a museum building, it is necessary to analyze the literature to produce design criteria. This step is important to ensure that the resulting design adheres to the principles of museum design. The sources used as literature are the book by Moh. Amir Sutaarga titled "Guidelines for Organizing and Managing Museums" and the book by Puspitasari and Maryam titled "Development of Museum-Based Teaching Materials for Museology Courses". The results of the discussion from literature studies are shown in Table 4.

**Table 4** Analysis of Museum Design Criteria Based on Literature Study.

Source	Criteria
Guidelines for Organizing and Managing Museums	<ul style="list-style-type: none"> <li>- The museum's location should be in the appropriate part of the city (in this case, the village center).</li> <li>- The museum building must ensure the security of the collections, the arrangement of collections, the circulation of collections, personnel, and visitors.</li> <li>- Room division should be appropriate to the functions of the museum.</li> <li>- Planning for the acquisition of collections.</li> <li>- Planning for the acquisition of facilities and amenities for collections, offices, personnel, and museum visitors.</li> <li>- Planning for the acquisition and training of personnel roles in accordance with the functions of the museum.</li> </ul>
Development of Museum-Based Teaching Materials for Museology Courses [17]	<div>Location</div> <ul style="list-style-type: none"> <li>- Strategically located</li> <li>- Easy accessibility to and from the museum for both employees and visitors</li> <li>- The location is easy to reach, find, and has clearly visible directional signs</li> <li>- Free from pollution, including smoke pollution from nearby industrial areas and motion pollution from being close to main truck and bus routes</li> <li>- The location is free from danger or disaster-prone areas; if situated in a disaster-prone area, adequate disaster mitigation measures must be prepared</li> </ul>



Source	Criteria
Building	<ul style="list-style-type: none"> <li>- The building used as a museum should not only consider aesthetic value but also ensure the safety of employees, visitors, and the museum's collections.</li> <li>- Ideally, the museum building should have only one main entrance.</li> <li>- The main entrance should be easily visible to museum visitors.</li> <li>- The building utilized as a museum should have several rooms, including a permanent exhibition room, a temporary exhibition room, an auditorium, office rooms, a library, a conservation laboratory, and a collection storage room as the main museum rooms.</li> <li>- The next group comprises supporting rooms, which include a security post, souvenir shop, canteen, kitchen, restroom, parking area, storage, and others.</li> </ul>
Facilities	<ul style="list-style-type: none"> <li>- Main : Parking area, Lobby, Garden, Auditorium, Permanent exhibition room, Temporary exhibition room, Office rooms, Library, Conservation laboratory, Gallery room, Storage</li> <li>- Supporting : Security post, Gift shop, Cafeteria, Kitchen, Restroom, Nursing room, Disabled facilities, Storage for belongings, Ticket counter, Museum information room, Audio-visual room</li> </ul>

### *Sustainable Tourism*

Sustainable tourism is a type of travel that positively impacts the local environment, society, and economy. Adopting sustainable tourism practices is essential not only for preserving an area's distinctive attractions but also as a means to promote business expansion and economic progress. Sustainable tourism involves initiatives aimed at safeguarding the environment while fostering the development of responsible travel. Its planning seeks to harmonize the requirements of people, including both locals and tourists, with the needs of the location, encompassing both its natural and social environments [18]. To achieve sustainable tourism development, a proper balance between economic growth, community welfare, and environmental preservation is required [19]. This approach was chosen to align with the context of the village location. The design of this pottery museum is expected to become a barometer for village growth in accordance with the principles of sustainable tourism, namely enhancing the welfare and economy of the local community, encouraging community participation to actively engage in tourism activities, and ensuring that tourism activities do not harm the local ecosystem and environment.

The following (Table 5) is a summary of the criteria based on the literature "Sustainable Tourism : Criteria and Indicators".

**Table 5** Analysis of Pottery Museum Design Based on Sustainable Tourism Criteria on Literature Study 1.

Source	Aspect	Criteria
Sustainable Tourism : Criteria and Indicators [20]	Economy	<ul style="list-style-type: none"> <li>- Diversifying the local economy, especially in rural areas</li> <li>- Ensuring the creation of long-term and sustainable economic activities</li> <li>- Providing socio-economic benefits to all stakeholders fairly</li> <li>- Creating fair employment opportunities</li> <li>- Contributing to poverty alleviation</li> </ul>
	Social and cultural	<ul style="list-style-type: none"> <li>- Able to create local job opportunities</li> <li>- Encourage decision-making that involves all segments of society, including local communities</li> <li>- Respect the social and cultural authenticity of the host community</li> <li>- Safeguard cultural heritage and uphold traditional values</li> <li>- Promote mutual understanding and cultural tolerance</li> </ul>
	Environment	<ul style="list-style-type: none"> <li>- Creating environmentally friendly tourism activities and helping to preserve them</li> <li>- Utilizing environmental resources optimally</li> <li>- Sustaining ecological processes</li> <li>- Supporting the preservation of natural heritage and biodiversity</li> </ul>

The following (Table 6) is a summary of the criteria based on the literature “Tourism Destination Planning”.

**Table 6** Analysis of Pottery Museum Design Based on Sustainable Tourism Criteria on Literature Study 2.

Source	Aspect	Criteria
Tourism Destination Planning [21]	Economy	<ul style="list-style-type: none"> <li>- Encourage the development of local businesses, small entrepreneurs, and handicrafts that support the local economy</li> <li>- Develop effective marketing strategies to promote the destination</li> <li>- Minimize issues of poverty and unemployment</li> <li>- Foster the creativity of local communities in entrepreneurship through crafts, culinary arts, and skills</li> </ul>
	Social and cultural	<ul style="list-style-type: none"> <li>- Strive to preserve and promote cultural heritage and local culture, including the protection of historical sites and traditions</li> <li>- Involve the local community in the planning process and ensure that economic benefits are distributed fairly to the community</li> <li>- Ensure a positive experience for tourists by providing high-quality services and safety</li> <li>- Foster collaboration among stakeholders</li> <li>- Guarantee that tourism development improves the living standards for local people, including better access to education and healthcare</li> </ul>

Environment	- Managing the environmental impact of tourism activities, including waste management, conservation of natural resources, and maintenance of ecosystems
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The following (Table 7) is a summary of the criteria based on the Regulation of the Minister Tourism and Creative Economy Concerning Guidelines for Sustainable Tourism Destinations.

**Table 7** Analysis of Pottery Museum Design Based on Sustainable Tourism Criteria on Literature Study 3.

Source	Aspect	Criteria
Regulation of the Minister Tourism and Creative Economy Number 9 of 2021 Concerning Guidelines for Sustainable Tourism Destinations [22]	Economy	<ul style="list-style-type: none"> <li>- Provide fair employment opportunities and training for all</li> <li>- Organize programs or skill training relevant to the local tourism sector</li> <li>- Support local entrepreneurship</li> </ul>
	Social and cultural	<ul style="list-style-type: none"> <li>- Conserving cultural assets</li> <li>- Safeguarding intangible cultural heritage</li> <li>- Informing visitors about the importance of cultural aspects</li> <li>- Providing security and health services that meet standards</li> </ul>
	Environment	<ul style="list-style-type: none"> <li>- Measure and monitor the environmental impact of tourism activities</li> <li>- Optimize visitor movement and minimize its negative impact</li> <li>- Reduce energy consumption</li> <li>- Ensure proper waste management</li> <li>- Reduce greenhouse gas emissions</li> <li>- Minimize light and noise pollution</li> </ul>

### 3. Results and Discussion

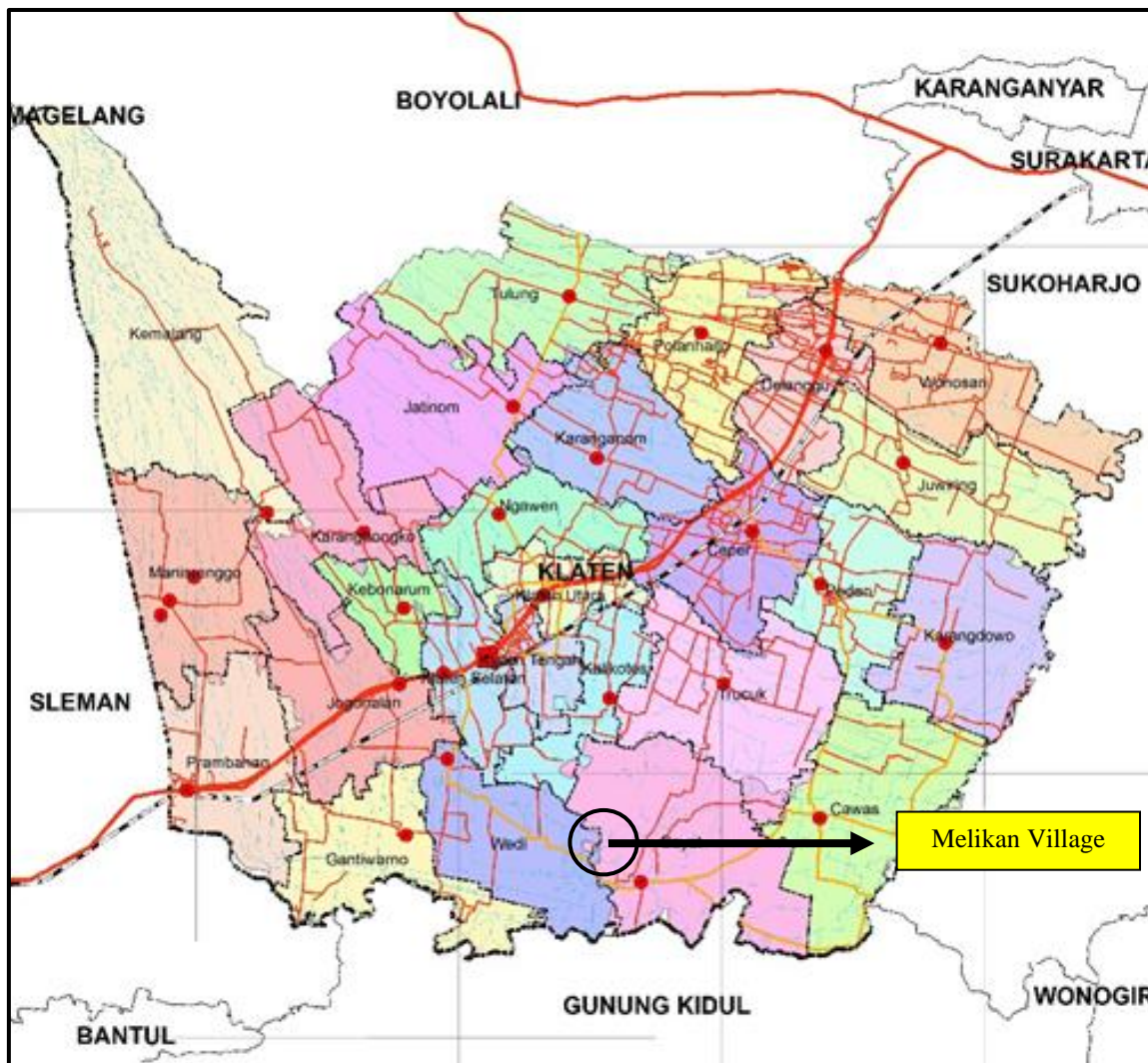
#### 3.1 General Overview of the Area



**Figure 5** Melikan Village.

The design is located in the center of Melikan Village, Wedi District, Klaten Regency, Central Java Province. Melikan Village (Figure 5) is known as a tourist village with the superior products of pottery and ceramics that have existed since ancient times and have survived to this day. With the concept of sustainable tourism development, it is hoped that this village can grow and develop in terms of economic, social, and cultural aspects while maintaining the environmental sustainability of the village. The site selection process is linked to the criteria found in several books as literature sources.

The administrative boundaries of Melikan Village are as follows : The northern boundary of the area is Paseban Village, located in Bayat District, Klaten Regency, while the southern boundary is Kaligayam Village, situated in Wedi District, Klaten Regency. Additionally, the eastern boundary is Paseban Village in Bayat District, Klaten Regency, and the western boundary is Brangkal Village in Wedi District, Klaten Regency. The following is the map of Klaten Regency (Figure 6).



**Figure 6** Map of Klaten Regency.

### 3.2 Potential and Challenges

The main potential of Melikan Village lies in its rich cultural and historical heritage, which can serve as a tourist attraction. The tradition of pottery making with the slanting wheel technique (Figure 7) dates back to ancient times and continues to be preserved by the local community today. Meanwhile, the challenge faced is the lack of village infrastructure to accommodate and preserve this historical and cultural wealth. This causes

people outside the village to be unable to know, understand, and learn about Melikan Village's pottery.



**Figure 7** Slanting Wheel Technique.

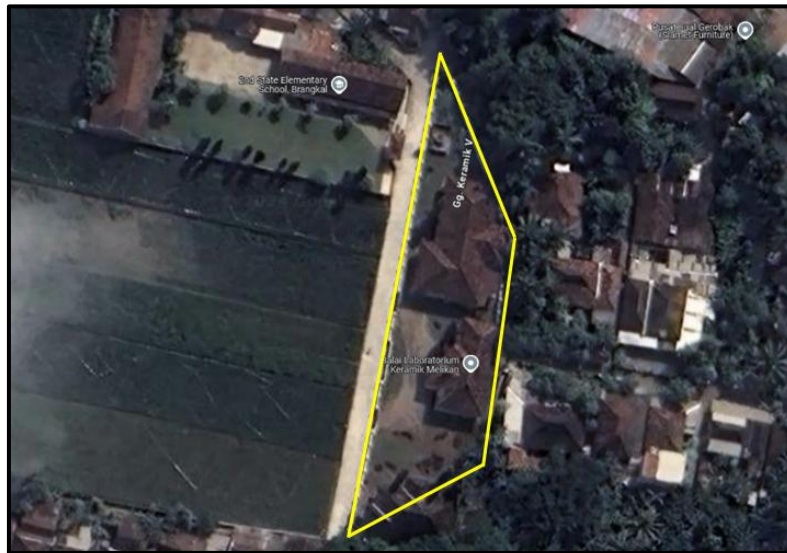
### 3.3 Selected Site

The site chosen to become the Melikan Village Pottery Museum is the location of a former pottery laboratory that has been abandoned. This site was selected based on several considerations from the aforementioned literature studies, as shown in the Table 8.

**Table 8** Analysis of Site Selection Based in Literature Study.

Source	Criteria
Guidelines for Organizing and Managing Museums	<ul style="list-style-type: none"> <li>- The museum's location should be in the appropriate part of the city (in this case, the village center).</li> </ul>
Development of Museum-Based Teaching Materials for Museology Courses	<ul style="list-style-type: none"> <li>- Strategically located</li> <li>- Easy accessibility to and from the museum for both employees and visitors</li> <li>- The location is easy to reach, find, and has visible signage</li> <li>- Free from pollution, both smoke pollution from industrial areas and motion pollution from being near main roads used by trucks and buses</li> <li>- The location is free from hazards or disaster-prone areas; if it is in a disaster-prone area, proper disaster management measures should be prepared</li> </ul>





**Figure 8** Selected Site.

The chosen location is situated on Keramik V Street in Melikan Village (Figure 8). The site is not far from the gate of Melikan Village. The site area reaches 2,195 m<sup>2</sup> with the following boundaries : The area is bordered to the north by Sunan Pandanaran Street, which serves as the main village road. To the south and east, it is surrounded by residential areas, while the western boundary is marked by Keramik V Street and rice fields.

### 3.4 Analysis of User Activities and Space Requirements

Below is the table of user activity analysis and space requirements for the museum (Table 9), which will be applied in the design. This analysis was conducted by delving into case studies and literature related to sustainable tourism aspects. From the precedent studies, we obtained an analysis of activities and space requirements, and from the literature study, we collected theories and concepts that support the sustainable tourism approach. These two sources are combined to produce a comprehensive and relevant analysis for the museum's objectives.

**Table 9** Analysis of User Activities and Space Requirements.

Users	Activities	Space Requirements
Local Community (Staff)	- Arrive and park vehicles	- Parking area
	- Go to the staff room and coordinate	- Lobby
	- Handle administration	- Meeting room
	- Serve visitors	- / staff room
	- Prepare cooking ingredients for visitors	- Kitchen
	- Cook food and make drinks for visitors	- Storage
	- Prepare tools and materials for making pottery and the firing process	- Workshop area
	- Maintain the museum area and museum collections	- Toilet
	- Maintain the gift shop area and receive stock items to be sold	- Prayer room
Visitors	- Clean the restaurant, toilets, and other rooms	
	- Arrive and park vehicles	- Parking area
	- Register, order tour packages, food, and drinks	- Lobby
	- Visit the museum	- Gallery room
	- Participate in pottery-making workshops	- Workshop area
	- Eat and drink at the restaurant	- Restaurant
	- Service activities (prayer, restroom)	



- |                       |               |
|-----------------------|---------------|
| - Relax and chat      | - Toilet      |
| - Visit the gift shop | - Prayer room |
| - Depart              | - Garden      |
|                       | - Gift shop   |

### 3.5 Design Criteria

Below is a table of design criteria derived from the literature analysis on sustainable tourism (Table 10). These criteria were obtained through a thorough and systematic process to ensure that every aspect of the design can support sustainable tourism principles. The implementation of these criteria ensures that the resulting design aligns with goals that support sustainable tourism.

**Table 10** Analysis of Design Criteria for the Pottery Museum Based on Sustainable Tourism in Melikan Village.

Sustainable Tourism Aspect	Design Criteria
Economy	<ul style="list-style-type: none"> <li>- The museum should be able to diversify the local economy, allowing former farmers or ranchers to become part of the museum's management.</li> <li>- The museum should create fair employment opportunities for the local community, enabling them to participate as managers or staff.</li> <li>- The presence of a souvenir shop in the museum will help market local pottery crafts, ensuring the creation of long-term economic activities.</li> <li>- The museum should be designed uniquely and distinctively to attract tourist visits, serving as a marketing strategy for the museum.</li> <li>- The presence of a restaurant in the museum can create significant economic activities and foster the culinary potential of the local community.</li> </ul>
Social and cultural	<ul style="list-style-type: none"> <li>- The museum serves as a platform to harness the historical and cultural potential of Melikan Village, which can be achieved through a gallery showcasing the history of pottery craftsmanship and pottery artworks.</li> <li>- The museum also acts as a cultural preservation site, with pottery-making workshops that can help preserve the local culture.</li> <li>- The museum continuously promotes and preserves the unique cultural heritage of Melikan Village.</li> <li>- The museum should provide a positive experience for visiting tourists.</li> <li>- The establishment of this museum is expected to foster coordination among all stakeholders, including the government and the local community.</li> </ul>

## Environment

- The tourism activities in this museum are environmentally friendly and aim to reduce negative impacts on nature.
- The museum is also required to manage environmental impacts such as waste, trash, and so on.
- The materials used for constructing the museum should prioritize local and environmentally friendly materials.
- The museum building must prioritize energy efficiency, which can be achieved by utilizing renewable energy sources.
- It must also focus on lowering greenhouse gas emissions, minimizing light pollution, and reducing noise levels.

### 3.6 Design Results

The design results below reflect various stages in the comprehensive design creation process. This process begins with site analysis, which involves examining physical conditions, climate, circulation, and context (Figure 9). Next, zoning is carried out to determine the division of areas based on function and needs. Following this, massing is performed to arrange the form and composition of the buildings. The final stage culminates in the creation of a plan that depicts the layout of spaces in detail and specifically.

#### Site Analysis

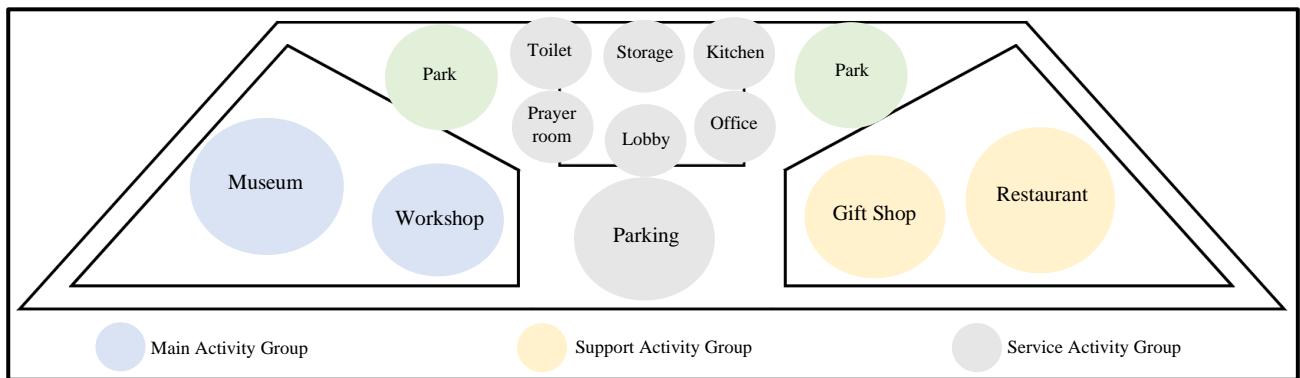


**Figure 9** Redraw Selected Site.

#### Site Zoning

The site zoning (Figure 10) arrangement is divided based on the results of precedent studies and literature studies. In the precedent studies, activity groups are divided into three categories : main activities, supporting

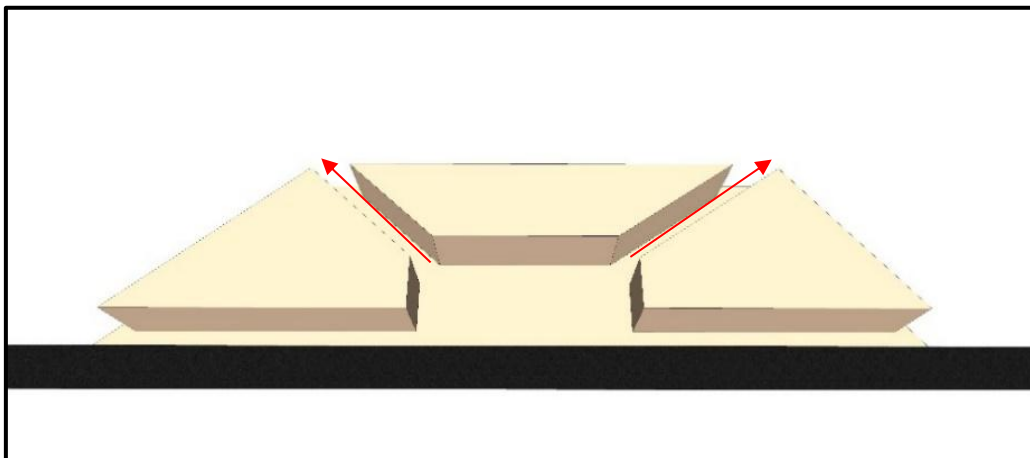
activities, and service activities. Each of these divisions encompasses activities based on economic, socio-cultural, and environmental factors.



**Figure 10** Zoning Division on The Site.

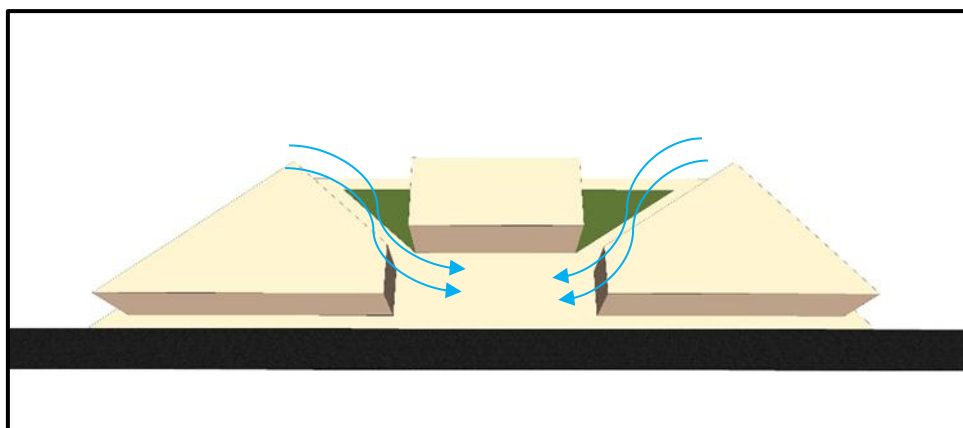
### *Building Mass*

The mass is formed by responding to the site and then segmented for circulation access (Figure 11), creating three areas with different but interrelated activity group functions. The building's facade faces west not only because it borders the main road and serves as the entrance but also to maximize the potential view of the surrounding rice fields.



**Figure 11** Mass Composition Analysis 1.

The reduction in the mass composition in the middle aims to maximize the environmental aspect (Figure 12), which is one of the aspects of sustainable tourism. To achieve this, green open spaces are provided on the land.



**Figure 12** Mass Composition Analysis 2.

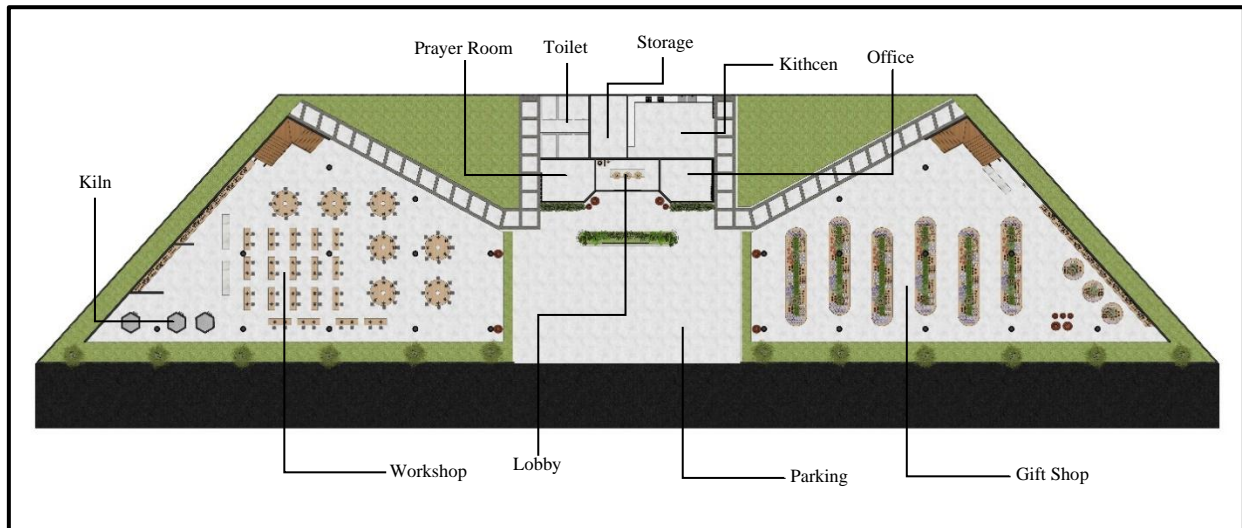


**Figure 13** Final Mass Composition.

The final building mass consists of three sections designed to accommodate a range of visitor activities (Figure 13), including main activities, supporting activities, and services. The building is designed with a terracotta color scheme to match the distinctive color of pottery. The orientation of the building faces west to maximize the potential view of the rice fields directly in front of the site. Inside the building, wide openings with various vegetation are emphasized to create a harmonious rural environment.

#### *Plan*

The floor plan of this museum building consists of two floors for two parallel building masses. On the first floor (Figure 14), there is a workshop area for pottery-making classes and a souvenir area for selling pottery crafts. Meanwhile, on the second floor (Figure 15), there is a museum to exhibit collections of objects and a restaurant for relaxation.



**Figure 14** First Floor Plan.



**Figure 15** Second Floor Plan.

### *3.7 Implementation of Sustainable Tourism Principles*

At this stage, various experiments are undertaken to incorporate sustainable tourism principles into the design of the pottery museum. These steps include the implementation of socio-cultural, economic, and environmental aspects. The experiments are not only aesthetic and functional but also contribute to the local community and surrounding environment.

#### *Social and Cultural Aspects*

##### *Lobby*



**Figure 16** Lobby Museum.

Based on the book "Development of Museum-Based Teaching Materials in Museology Courses," it is explained that the buildings used as museums, in addition to considering aesthetic value, must also consider the safety of employees, visitors, and the museum collections themselves. Ideally, a museum building should have only one main entrance, which should be easily visible to museum visitors. Based on this literature study,



the lobby of the Melikan Village Pottery Museum is placed in the center of the site to be easily visible to visitors (Figure 16).

#### *Museum*



**Figure 17** Museum Gallery.

Based on the book "Guidelines for Museum Organization and Management," it is stated that a museum building can ensure the safety of collections, arrangement of collections, circulation of collections, personnel, and visitors. Therefore, in this museum, the visitor circulation is made one-way so that visitors can enjoy the history and artworks sequentially. Additionally, the corridors of the museum are made 2 meters wide to prevent visitors from crowding each other (Figure 17).

#### *Workshop*



**Figure 18** Workshop Area.

The workshop room is designed to be open without partitions, intended to accommodate a large number of visitors. In this area, visitors can participate in pottery-making workshops, which indirectly create social interactions among visitors. Additionally, this workshop aims to preserve the culture and tradition of pottery-making in Melikan Village (Figure 18).

#### *Economy Aspect*

#### *Restaurant*



**Figure 19** Restaurant.



This museum not only offers collections of art and the history of pottery crafts but also features a restaurant that serves various delicious local dishes (Figure 19). This aims to develop the local culinary potential. Additionally, the presence of the restaurant can create job opportunities, thereby helping to reduce unemployment in the village and contributing to economic diversification in Melikan Village.

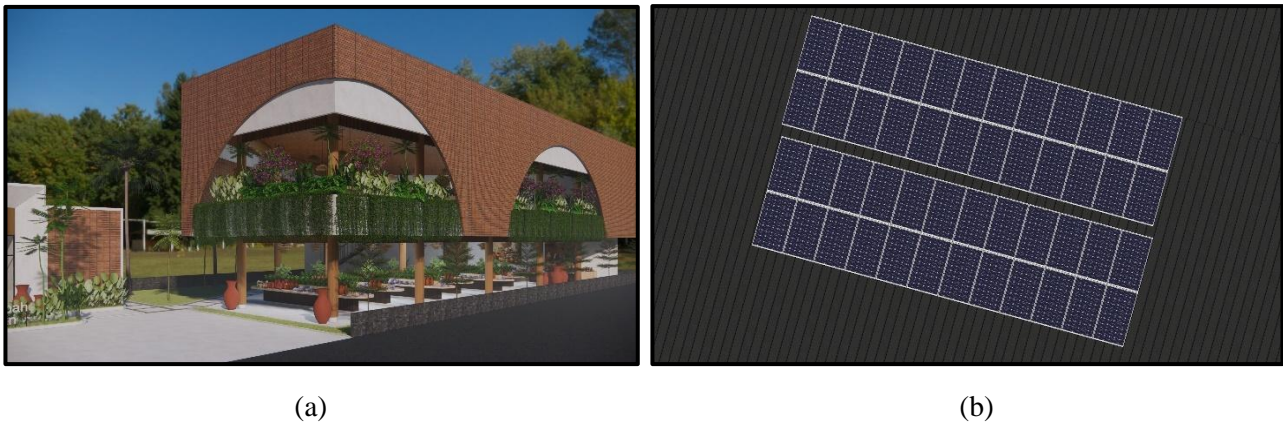
#### *Gift Shop*



**Figure 20** Gift Shop.

In addition to the restaurant, there is also a souvenir shop in the museum (Figure 20). This souvenir shop plays a crucial role in supporting local micro-enterprises. It serves as a platform for pottery artisans to sell their handcrafted products to visiting museum guests. With the presence of this souvenir shop, local communities can expand their market reach and increase their income. Furthermore, the products sold in the souvenir shop reflect the culture and richness of local products, thereby helping to preserve the traditions and cultural heritage of Melikan Village.

#### *Environmental Aspect*



**Figure 21** (a) Museum Facade; (b) Solar Panel.

The Melikan Village Pottery Museum is designed with wide openings to maximize the entry of natural light and airflow, thereby achieving higher energy efficiency (Figure 21a). Additionally, the use of solar panels is a smart and sustainable solution to help further enhance energy efficiency (Figure 21b).

## **4. Conclusion**

Melikan Tourism Village offers a variety of intriguing potentials for development, ranging from its history and traditions to its cultural richness. Situated in Wedi Sub-district, Klaten Regency, Central Java Province, this village has the capacity to develop into a prominent tourist attraction for people of Klaten and its neighboring areas. Renowned for its pottery craftsmanship, the village can be further developed through the establishment of a pottery museum, which could later serve as a benchmark for the village's economic growth.

The pottery museum in Melikan Village supports sustainable tourism by safeguarding the pottery-making tradition as an integral part of cultural heritage, promoting active participation of the local community in economic activities, and fostering greater appreciation for their cultural values. Moreover, its concept ensures environmentally friendly development by utilizing local materials and sustainable practices, while also serving as an educational hub that teaches environmental conservation values to the younger generation and visitors. This makes the museum not only a cultural attraction but also an inspirational model for other villages.

The design of the pottery museum in Melikan Village integrates local wisdom with modern architecture, creating a harmonious relationship between the local culture and the building's structure. Its concept emphasizes sustainability principles through energy efficiency, waste management, and the use of local resources, supporting both the environment and the community. The museum is also designed as a multifunctional space, accommodating various needs such as training, exhibitions, and community events, while bridging the cultural identity of the past with future innovations. This makes the museum a holistic architectural model relevant to the concept of sustainability.

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## **6. Conflict of Interest**

The author states that there are no personal, financial, or professional conflicts of interest associated with this research.

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