Architectural Concept for Homestay in Rural Area- A Case Study of Homestay Design in Sumbersari Village - Malang

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Abstract. Sumbersari, a village with wonderful natural views has the potential for ecotourism development in Malang City. As a part of UB Forest area, Sumbersari will be completed with homestay among its existing residential area. This study aims to develop a design guideline of homestay construction. The guideline is essential to ensure buildings and environment will be developed neatly and designed appropriately. A Number of data were collected through site observation and interviews with the local community. Data were examined to seek appropriate components in the guidelines acceptable by residents. This study proposed the size, rooms, layout, typical materials, structural system and typical furnishings for homestay.

1. Introduction

1.1 Background

Along with Indonesian tourism programs, the central government through local government of Malang induces village tourism visit program in the last ten years. One of the village areas around Malang potentially supports the program is Sumbersari. The village has a moderate contoured landscape, surrounded by amazing pine forests and coffee plantations. Located on the slopes of Mount Arjuna, this village has cool air and beautiful natural scenery. Populated by only 28 households, most of the dwellers are farmers of coffee and vegetables. (figure 1).

Over the last 5 years, the village was one of villages organized and developed by Brawijaya University, known as UB Forest. Small plantation industries have been created in this area along with research activities of students and lecturers of Brawijaya University. Several educational institutions in East Java are reported to conduct agricultural research activities in this village. Therefore, Sumbersari should be relevant as a stopover area of the visitors of UB Forest.

Related to the concept of ecotourism, on January 6, 2017 to coincide with the 54th Anniversary of Universitas Brawijaya Arjuno Fest, a music and arts festival in Sumbersari was held. The event was located in a field around the residential area and attended by more than 300 audiences. With a vast and relatively flat land and a beautiful backdrop of forest scenery, this village has the potential to become a tourist attraction for implementing similar events in the future.

Currently, regular visitors of Sumbersari are mainly researchers and students from Brawijaya University. In the future, Sumbersari village is expected to be developed as a potential ecotourism village in Malang. The implemented concept of ecotourism village in the future should be able to improve income for the dwellers and provide added value in the management of UB Forest area.
In contrast with potential natural resources around the village, the dwellers in majority are the low-level income society. The poor infrastructure, such as electricity, streets and roads of the village reduce economic improvement of the local society. Residents of Sumbersari complained about many pine plants planted near each other, which prevented the coffee plantations from fruiting, resulting in decreased coffee yields. In addition, the absence of primary school and health clinic requires the residents to travel to the nearest 3 km facilities.

This study aims to seek a solution to improve income for people who live in Sumbersari village. A concept of homestay was proposed for Sumbersari residents in order to invite more people, such as: tourists, researchers and students to visit and stay in the village for longer period. The concept of homestay, however, should be designed as simple as possible for the local society point of views and as familiar as possible to avoid rejection by residents.

1.2 Literature reviews
Homestay is defined as an alternative place to stay for commuters, living with the homeowner's family in the same residential building area and involving their daily lives with the host families and local communities [1]. In this case, houses of residents (all or some parts) are rented for a certain period to visitors. It is a reasonable accommodation alternative, ideal for independent leisure travellers of all ages, interns, gap year students, students living abroad, researchers and anyone seeking a real and genuine travel experience. Homestay is chosen as a solution to improve economical prosperity among community as its advantages for both of hosts and guests. Homestay is chosen as an effort for empowering local communities to improve incomes. Living in a homestay for visitors will ave lodging costs. They will also benefit from quiet atmosphere, learning about local perspectives and the environment that are not easily found from a guidebook, a deeper understanding of culture and wisdom of locals as a new experience with a new atmosphere [3]. Meanwhile, the positive impacts for the hosts include: more job opportunities, cultural exchange, new knowledge, and maintain local traditions and wisdom.

Physically, a homestay should follow certain technical requirement. It should have good and safe structures, designed and constructed with materials that reflect localities [1]. To some extent, homestay should have separate guest room to keep the privacy of the visitors. Electricity is highly required, while water supply and cleanliness of the room as well as comfortable furnishing are extremely important.

The planning of homestay in Sumbersari in fact, is in line with government programs, in which buildings should be developed from villages to suburbs. The growth of village homestay today indicates the trend of tourists who prefer to stay at home sharing compared to hotels. In 2020, visitor interested in home sharing in major cities of the world will increase by 15% from 10% (in 2016). Meanwhile, in Southeast Asia it will increase by 5% from 2% [5].

2. Methods
To find suitable design concept of homestay in Sumbersari, several data have been collected covering slope mapping around the village, environment, existing layout and site plan of houses, preference and opinion of Sumbersari residents. The existence of building utilities and infrastructures were considered during architectural design process. Physical data were collected through site observation while opinion and preferences of residents were sought through interviews. Collected data were used to analyse potential massing and positioning of homestay in each site, typical building materials used as well as rooms and furnishings essential in the unit.

3. Results and Discussions
3.1 Architectural design concept
Architectural design concept for homestay in Sumbersari should cover the principle of eco friendly architecture covering light and semi permanent building construction technology which is easy for local workmanship. The design should be simple and efficient in space. In addition, the concept should
employ natural resources such as: carrying out natural ventilation system, optimizing natural lighting, capturing potential views and operating rainwater harvesting system.

3.2 Massing, slopes and distances subsection

The Sumbersari village consists of 28 families. Each house is commonly inhabited by one family. Houses are arranged linearly at the East and West sides of the road. All house faces toward main road. The buildings are located along the frontage of road while large farm is commonly located at the rear (figure 1).

The following table shows the possibility of homestay location in each site. Considering the land slopes are lower at South area (figure 1) and available distance from main buildings (Table 1), homestay was designed at the right side of the main building. Only several units are in the left and rear side.

| Site code | Front (m) | Right (m) | Left (m) | Possible homestay location of main building | Land size (m²) | Building size (m²) |
|-----------|-----------|-----------|----------|------------------------------------------|---------------|-------------------|
| UBF1      | 4         | 7.4       | 4        | Right                                    | 1583          | 130               |
| UBF2      | 13        | 4.2       | 3        | Right                                    | 1489          | 96                |
| UBF3      | 6.3       | 12.6      | 1.3      | Right                                    | 1588          | 111               |
| UBF4      | 6.7       | 7.1       | 0.7      | Right                                    | 1542          | 89                |
| UBF5      | 4.2       | 3.1       | 12.33    | Left                                     | 2695          | 123               |
| UBF6      | 3.2       | 6.8       | 1.8      | Right                                    | 1371          | 156               |
| UBF7      | 5.3       | 10.3      | 2.8      | Right                                    | 1387          | 165               |
| UBF8      | 4.5       | 12.5      | 3.3      | Right                                    | 1389          | 128               |
| UBF9      | 6.2       | 12.5      | 1.7      | Right                                    | 1291          | 94                |
| UBF10     | 12        | 1.3       | 13       | Left                                     | 1036          | 44                |
| UBF11     | 5         | 10.6      | 11.5     | Right                                    | 1655          | 152               |
| UBF12     | 3         | 5.5       | 9.2      | Left                                     | 1542          | 100               |
| UBF13     | 1.3       | 6         | 0        | Right                                    | 1522          | 132               |
| UBF14     | 3.1       | 4.4       | 0        | Rear                                     | 944           | 48                |
| UBF15     | 3.3       | 0.5       | 3.8      | Rear                                     | 489           | 149               |
| UBF16     | 3.8       | 3         | 22.5     | Left                                     | 1358          | 103               |
| UBF17     | 3.6       | 10.5      | 12.2     | Right                                    | 1497          | 139               |
| UBF18     | 0         | 1.5       | 9.1      | Left                                     | 1076          | 119               |
| UBF19     | 2.9       | 10        | 1        | Right                                    | 1369          | 177               |
| UBF20     | 2.9       | 1.5       | 0        | Rear                                     | 546           | 71                |
| UBF21     | 5.2       | 0.5       | 6.3      | Left                                     | 647           | 89                |
| UBF22     | 4         | 3.7       | 2.6      | Rear                                     | 866           | 119               |
| UBF23     | 3.2       | 5         | 18       | Left                                     | 1763          | 83                |
| UBF24     | 5         | 10.5      | 2.9      | Right                                    | 1537          | 88                |
| UBF25     | 3.5       | 11.9      | 8.2      | Right                                    | 1544          | 66                |
| UBF26     | 5         | 3.3       | 3        | Rear                                     | 1089          | 77                |
| UBF27     | 4.8       | 7.3       | 9.3      | Right                                    | 1272          | 81                |
| UBF28     | 5         | 11.8      | 6.8      | Right                                    | 1261          | 57                |

Figure 1. Existing slopes and building

Considering the existing conditions, a number of design concepts were proposed, including:

- The homestay unit is designed separately from the main building. The distance between two walls are as far as the height of the main building.
- The building is designed with a sleek shape along West to East, to avoid high solar radiation in tropical area.
- The design of the homestay should reflect the localities
- The homestay terrace is facing the road
- The homestay building can be seen as a whole from the road
- The parking area can be accessed directly and can be accessed easily from the site entrance
- Homestay should be completed with at least one carport heading toward terraces.
3.3 Building materials
Most buildings in Sumbersari use light weight wall construction either kalsiboard or woven bamboo, however, one house is made from brick wall. Tiles are not installed on the floors as in many houses’ floors are made from compacted soil. Roof construction is made from a variety of materials, such as: asbestos sheet, burnt clay tiles, or a combination (Figure 2). Typical small opening for air ventilation are found in the facade of buildings to avoid cold breezes flowing inside the room, and consequently houses have low light indoors.

![Figure 2. Typical building materials of existing buildings](image)

In accordance with local weather conditions and affordable cost of construction, homestay materials should be made from cheap local materials which can easily be found around village and strong and safe. Stage construction is used to increase evaporation from the soil and reduce dampness. The selection of building materials should consider the ease of installation so that it can be carried out by the residents themselves. Therefore, materials which are chosen includes:

- **Roof**: Onduline tile completed with solar panel 245 Watt
- **Bedroom walls**: combination of pine wood walls and bamboo webbing with varnish coating
- **Bathroom**: bottom of the brick wall, top of the woven bamboo with varnish coating
- **Column**: Columns and beams of coconut wood structure
- **Roof frame**: Coconut wood roof frame
- **Bedroom Floor**: Varnish pine wood flooring
- **Bathroom floor**: Stucco brick with coarse ceramics
- **Fondation**: Concrete footplate
- **Windows frame**: Wood
- **Bathroom**: Fiber and squat toilet
- **Pathways**: Paving stone

3.4 Rooms
It was decided that one family would only have one single unit homestay with two-person capacity. The unit should be an individual building separated from the existing one. The unit should be able to accommodate guests who stay or forstaying or office working activities. Therefore, one unit would only be designed for at least 20 m² comprising terraces, carport, bedroom and working space as well as individual bathroom. All rooms should be completely furnished, including: 2 working desks with chairs, small cupboard, bunk bed unit and electrical contact points.

Homestay unit should have rear terrace that is connected through pathways to kitchen room of the existing building. This access is important to maintain relationship between guests and host. In fact, most hosts traditionally receive guests in the kitchen instead of living room.
3.5 Prototype of homestay design

From the design concept discussed above, initial homestay design is proposed in the following figures. The concept of eco friendly energy is applied through the use of natural materials, such as: coconut wood, pine wood, bamboo webbing, lightweight construction, pedestal foundations, ease of installation, simple construction technology, efficient use of space with compact furniture arrangement, as well as utilizing the potential of the site with the use of natural air and lighting, view optimization, and the application of rainwater harvesting systems. In addition, the concept of eco-friendly energy is implemented using solar cells on the roofs.

![Proposed Plan for homestay](image)

**Figure 3. Proposed Plan for homestay**
Figure 4. Front views of homestay

Figure 5. Rear views of homestay

Figure 6. Side views of homestay

Figure 7. Side views of homestay

Figure 8. Section views of homestay

Figure 9. Image 3D of proposed homestay design
4 Conclusion
Sumbersari has the potential to be developed into an ecotourism village. Homestay is intended for both general tourists and researchers who will be active in UB Forest. The existence of homestay is intended by local residents to increase their income as well as to meet the needs of Universitas Brawijaya for researchers’ accommodation facilities at UB Forest. Based on site observation and interviews with residents, design criteria for homestay are found as guidelines for design, building orientation, accessibility / parking, building area and capacity, room requirements, and connectivity to the main houses inhabited by residents.

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