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## Development of Modern Settlement Kekalik Jaya Mataram City

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### Abstract

The number of residents of Kekalik Jaya urban village is 1.16% per year, so housing demand is increasing as well as basic service needs. This research is about how the existing condition of settlement development and how the availability of modern settlement infrastructure in Kekalik Jaya urban village. The objectives of this study illustrate spatially the development of settlements for the years (2010-2015) and to analysis the availability of modern settlement infrastructure of Kekalik Jaya urban village in Mataram. This is research done by spatial-based digital map approach by conducting observation of field survey, photography to know the existing condition with quantitative descriptive strategy and exploiting Geographic Information System program. The development of settlements is illustrated by the land use map of the year (2010-2015) found that for settlement land use a change in the area of 69,413 m<sup>2</sup> and the value of availability of modern settlement infrastructure obtained 94% value based on the Indonesian National Standard, so that the availability of infrastructure is feasible for the planning of a settlement. The results of this study can be used for directing the growth of in Kekalik Jaya urban village.

Keywords: development, modern settlement, existing, infrastructure, Geografic Information System

### Introduction

Kekalik Jaya urban village is located in Sekarbela Subdistrict, with an area of 1,352 km<sup>2</sup>. Kekalik Jaya urban village consists of 5 (five) environments, in 1916 Kekalik Jaya experienced the expansion of the region into 6 (six) environments namely is the environment Gerisak area of 279,322 m<sup>2</sup> consists of 9 (nine) neighborhoods, the environment West Kekalik area of 179,685 m<sup>2</sup> consists of 5 (five) neighborhoods, the environment Kijang Kekalik area of 131,636 m<sup>2</sup> consists of 5 (five) neighborhoods, the environment East Kekalik area of 252,205 m<sup>2</sup> consists of 10 (ten) neighborhoods, the environment Beatiful Kekalik area 363,807 m<sup>2</sup> consists of 11 (eleven) and the environment Safe Kekalik of 130,049 m<sup>2</sup> consists of 5 (five) neighborhoods.

Kekalik Jaya urban village experienced population growth caused by population growth and

urbanization. The number of residents of Kekalik Jaya urban village is 1.16% per year. With the growth of the population the need for housing increases in Kelalik Jaya urban village as well as the needs of basic services and management of settlements. Housing is a collection of houses as part of settlements, urban and rural areas equipped with infrastructure, facilities and general utilitas and as a result of efforts to fulfill a decent home. [1] While the settlement area is part of the environment outside the protected area in the form of urban and rural areas, which function as residential or residential environment and place of activities that support livelihood and livelihoods<sup>[1]</sup>. The development of settlements can be caused by the increase in the number of residents so that required infrastructure support facilities that can support activities in the environment.

In the National Development Plan of the National Medium-Term 2015-2019 several indicators of infrastructure development with efforts to improve basic services in residential areas are the realization of universal access for 100% of drinking water services and 100% of decent sanitation services into central government work programs for settlement (Panduan, KEMEN PU, 2015).

The objectives of this study illustrate spatially the development of settlements for the years (2010-2015) and to analysis the availability of traditional settlement infrastructure and modern settlements in Kekalik Jaya urban village.

### The Method of the Study

The research was conducted in the modern settlement of Kekalik Jaya urban village with spatial based digital map approach by conducting field survey observation, photographing to know the existing condition with quantitative descriptive strategy and exploiting Geographic Information System program using ArcMap 10.1 (Komputer, 2014). Geographic Information System is a computer-based processing system used for processing, storage, analysis, and recall data that has spatial reference for various purposes related to mapping<sup>[2]</sup>.

Spatial analysis method is done to describe the development of settlements Kekalik Jaya urban village year (2010-2015) using overlay process (Prahasta, 2004).

Spatial overlay analysis is done by placing / overlapping one map image over another map image with its attributes and displaying the combined results of both maps. Where the land use map of Mataram City 2010 along with its attributes will be overlay or overlapping with land use map of Mataram City 2015 along with its attributes that will produce new land use map (existing).

In spatial mapping of existing settlement condition in Kekalik Jaya urban village, two kinds of data are spatial data such as land use map of Mataram city (RTRW) and land use map 2015 of Mataram City (Pemantauan dan evaluasi pemanfaatan ruang kota) and attribute data is data giving explanation or

describe spatial data, including data on the number of buildings, land use of Kekalik Jaya urban village. Analysis methods Availability of infrastructure is based on scoring of the availability of modern settlement infrastructure in Kekalik Jaya urban village to the Indonesian National Standard for the availability of infrastructure in the settlement conducted by collecting data from the survey and interviews conducted to community and community leaders, by observing the field survey, shooting to know the condition of the existing. Conformity assessment:

5 = very suitable

4 = appropriate

3 = quite appropriate

2 = less appropriate

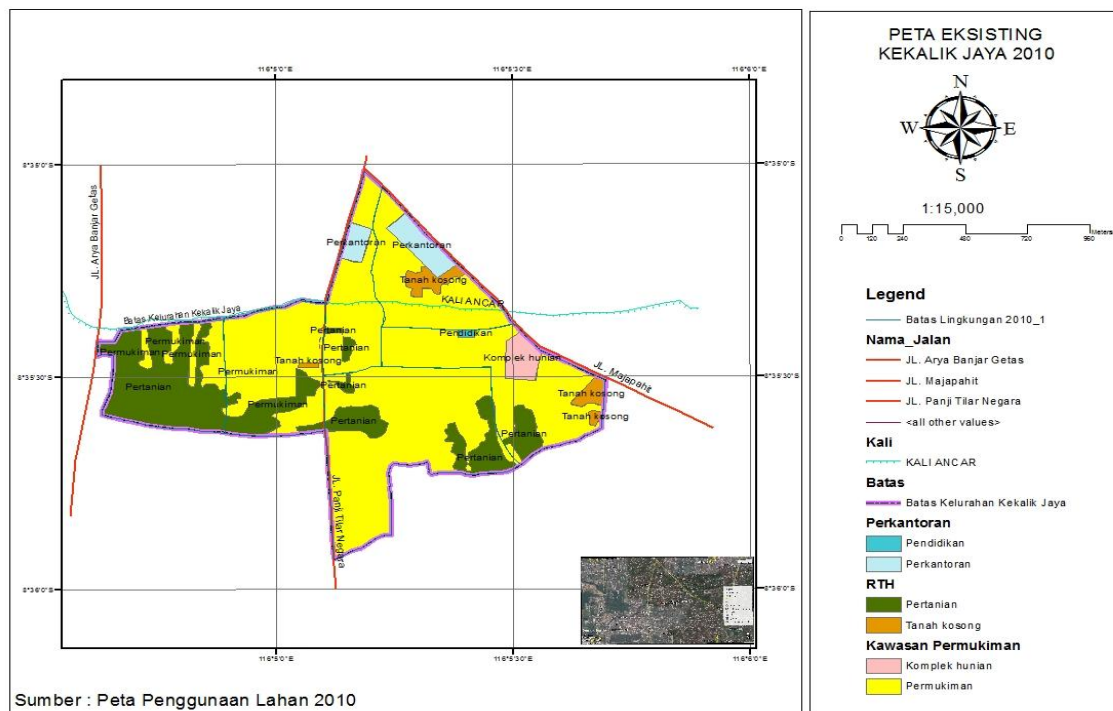
1 = very less appropriate

The provision of infrastructure is an activity that includes construction work to build or improve infrastructure and / or infrastructure management and / or infrastructure maintenance activities in improving the utilization of infrastructure <sup>[3]</sup>

### The Result and Analysis

With the use of GIS and apply one way to know land use and generate an information on the distribution of land use (Computers, 2014). Data generated from the Land Use Map 2010 (RTRW) can be found Land use Kekalik Jaya urban village built in 2010 for settlements of 921,315 m<sup>2</sup>, facilities of 44.061 m<sup>2</sup>, and RTH 386,626 m<sup>2</sup> can be seen in Figure 1. Land Use Map 2010.

Data generated from the 2015 Land Use Map (Monitoring and evaluation of urban space utilization) can be found using the land of Kekalik Jaya urban Village in 2015 for settlements of 990,728 m<sup>2</sup>, 35,892 m<sup>2</sup> and RTH of 325,380 m<sup>2</sup> can be seen in Figure 2. Land Use Map 2015.



**Figure 1.** Land Use Map 2010

Overlay analysis requires two spatial data inputs to generate new spatial data<sup>[4]</sup>. From the results of the 2010 land use overlay and 2015 land use map it is found that for settlement land use it is changing broadly or increasing / increasing by 69,414 m<sup>2</sup> in 2010-2015. On average, the increasing use of settlement land of Kekalik Jaya Urban Village is 13,883 m<sup>2</sup> or 1.03% per year, can be seen in Figure 3. Map of Overlay Results.

The direction of shifting the development of settlements Kekalik Jaya Urban Village to the west where there is a shift / change of agricultural land use into a settlement this occurs in the Environment Beautiful Gerisak Environment, and Environment Gerisak Aman. So that in Kekalik Jaya Urban Village happened the development / growth of new settlement. The objective of settlement arrangement is to fulfill the needs of the house as one of the basic

human needs in order to increase and equitable the people's welfare and to realize the proper housing and settlements in a healthy, safe, harmonious and organized environment<sup>[5]</sup>. To deal with the growth of settlements, it is necessary to have a firmness of spatial regulations in the implementation of housing and settlement development plans either by the government or private parties. So the policy required determination of the green space at least 30% of the area<sup>[6]</sup>.

From the observation of field survey, the shooting can know the condition of existing modern settlement is located in 6 environments in Kekalik Jaya Urban Village, see table 1. Modern Settlement Kekalik Jaya Urban Village.

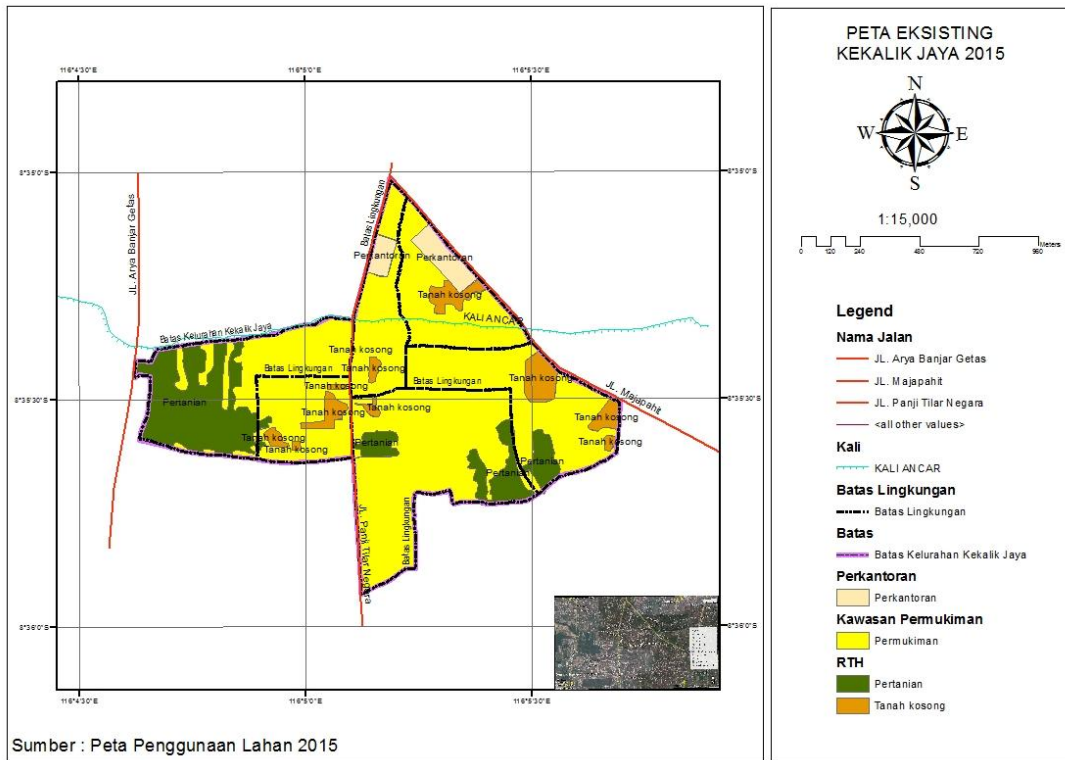


Figure 2. Land Use Map 2015

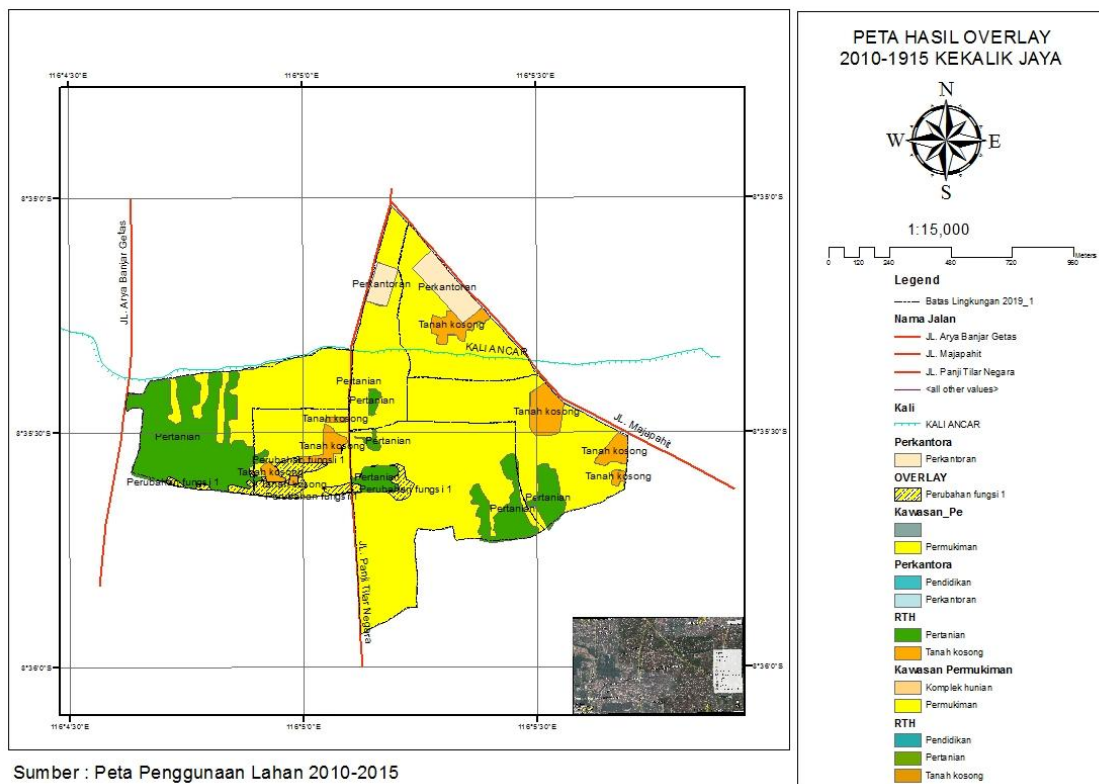


Figure 3. Map Overlay Results



**Table 1.** Modern Settlement Kekalik Jaya Urban Village

No	Settlement	Number of Buildings	Modern Settlement	
			Number of neighborhoods	Availability of infrastructure
1.	Gerisak	357	3	94
2	Kekalik Kijang	276	2	94
3	Kekalik Barat	320	2	94
4	Kekalik Timur	550	6	94
5	Kekalik Indah	597	11	94
6	Gerisak Aman	237	5	94
	<b>Total</b>	<b>2,337</b>	<b>29</b>	<b>94</b>

The availability of the infrastructure of modern settlements in Kekalik Jaya Urban Village.

1. The availability of road network, road pavement pavement using asphalt and vaping with pavement width of 3 m<sup>2</sup> on road road can be passed by 4 wheel and good road surface condition. While the road environment there is a shoulder of the road with a width of 0.5 m<sup>2</sup>, there is no road and drainage truck is located on the right- left of the road with a width of 0,5 m<sup>2</sup>.
2. The availability of drainage network, modern settlement drainage functions as rain water catchment and also where drainage form directly related to household in closed condition but can be opened so as not to cause odor with bigger size  $\pm$  0.5 m. The flow from the tertiary drainage will be channeled to the secondary drainage after which it is channeled into the city drainage(primary).
3. The availability of clean water network, clean water source used in modern settlement by using Local water company as safe water for consumption. The installation of the Regional Water Company network is carried out by the depelover for each house. But there is still a small part of society in modern settlements using boreholes as a source of clean water.
4. The availability of sanitary / wastewater networks, waste water management in the form of household runoff for bathing and washing uses impregnation channeled directly to sewerage networks connected to drainage channels. While solid waste management using septictank.
5. The availability of solid waste networks, waste management in modern settlements, household

garbage collected on every house that has been available garbage in each house. Then collected on the environmental waste collection, the fear is done every day using the operational vehicle in the form of a three-wheeled vehicle emperor provided by the government. The trash is brought to the final dump.

6. The availability of electricity grids, people in 100% modern settlements use the State Electricity Company as a source of electricity, the need for electric power capacity of people in modern settlements has been met optimally. Ownership of the electric meter is owned by each house and the power capacity is at least 1200 watts.
7. The availability of telephone network, modern society still seen 80% use Telecommunication network as home phone and internet / wifi, But the use of home phone is very minimal because for long distance communication, people prefer to use mobile phone as a means of communication.



**Figure 4.** Modern Settlement Conditions Urban housing planning (SNI)

**Table 2.** Analysis of Infrastructure Availability of Modern Settlements Kekalik Jaya Urban Village

SNI				Modern Settlements		Value
				Assessment criteria	Assessment analysis	
Street The hierarchy of residential street Dimensions of road elements Pavement (m)    Shoulder (m)    Sidewalk (m) Environment I    1.5-2.0 (pedestrian, thrust seller)    0.5    0.5 Environment II    1.2 (pedestrian, thrust seller)    0,5    0,5				Pavement	2.5-3 m <sup>2</sup> wide	5
				Roadside	Width of 0.5 m <sup>2</sup>	5
				Sidewalk	There is no	1
				Drainage	There is on the left-hand side of the road, Width 0.5 m <sup>2</sup>	5
				Condition	Maintained, 5% not maintained	4
				Form	Closed not permanent, 5% open	4
				Clean water	60 liters / person / day household water supply needs are met	5
Clean water The types of planning elements on water supply networks that should be provided in urban housing are: a. Needs clean water b. Water supply network c. Public faucet d. Fire burner				Water supply network	90% of the people use the Regional Water Company	4
				Public faucet	There is no	1
				Fire burner	There is no	1
				Septic tanks	100% of the people already have	5
Waste Water The types of planning elements on water supply networks that should be provided in urban housing are : a. Septic tanks b. Immaturation field c. Wastewater piping network				Immaturation field	100% of the community owns	5
				Wastewater network	100% available wastewater network	5
				Garbage	There is	5
Garbage The types of elements in the waste processing that must be provided are a. Garbage cart b. Trash bin c. Temporary landfill d. Landfills				Garbage cart	There is, in the form of an emperor motor	5
				Small trash can	There is	5
				Big trash can	There is no	1
				Electricity	Fulfilled State Electricity	5
Electricity The type of planning element in the power grid that should be provided in the urban housing environment is a. Power requirements b. Electric network				Electric network	Company as a source of lighting	5
				Phone	90% fulfilled	4
Phone The types of telephone network infrastructure and utilities that should be provided in urban housing are: a. need of telephone connection; b. phone network				Phone network	Telecommunication	4
				<b>Total</b>		<b>94</b>

From the analysis of the availability of infrastructure (roads, drainage, clean water, sanitation / waste water, garbage, electricity and telephones) existing modern settlements as basic services obtained 94% of compliance to SNI settled as proper settlement planning. Modern settlements (real estate), is a government-planned settlement and working with private parties (Aangunaivi, dkk,2015).

In order for the housing to be maintained as a proper settlement, maintenance and availability of infrastructure is needed.

**Conclusion**

From the overlay process can be seen an increase in land use settlements where agricultural land and vacant land into settlements resulting in the growth of new settlement growth in the region. To face the growth of settlements in the future, it is necessary to set public green space at least 20%

and private space at least 10%. In the realization of proper housing and settlements in a healthy, safe, harmonious, and orderly environment, policy is needed in the environmental arrangement of a settlement plan for the enhancement of the availability of environmental infrastructure.

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