Structuring of Slum

by Heni Fitriani

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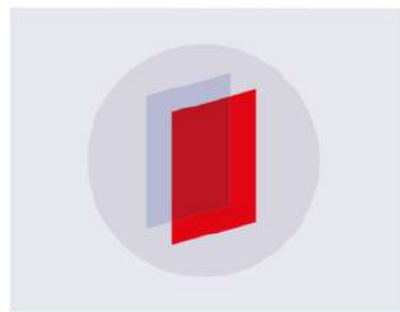
Structuring of Slum Settlement Infrastructure Kertapati Village, Palembang City, South Sumatra

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Abstract. Slum settlements in Kertapati District have been formed for a long time, and have not been resolved. In the plan of urban space, Kertapati subdistrict is designated as an Industrial area. Strategic location with complete urban infrastructure is the reason for people to work and live in the vicinity of Kertapati Village. Based on the calculation of the level of slums, Kertapati is included in the very slum category with a total value of 306. Land ownership conflict between the community and PT. KAI is one of the factors causing slums. The research objective is to identify land ownership status, causes of slums and spatial planning solutions. Quantitative descriptive research methods, data processing with slum weighting, likert analysis, map analysis, space requirements analysis, are carried out to determine the residential needs and infrastructure of Kertapati Village. The results of the study are, among others, land ownership status is still disputed, the main factors causing slums are waste (100%), regional function factor (68%) and waste facilities service factor (64%), the conclusion of the study is the extensive relocation program in Kelas Rindo subsdistrict are 25 hectares of land, through the construction of site houses and flats equipped with infrastructure facilities in the residential area, the implementation of the collaboration program between the Government, PT. KAI and the private sector as well as the community, is a suitable solution to solve the problems of slums in Kertapati Village.

1. Introduction

Kertapati is included in the category of urban slums with typology of low-lying settlement slums [1]. Kertapati Village is located in Kertapati District, which is a buffer for Palembang City with the growth of population more than 1.01% every years, compared from 2017 [2] The location of Kertapati Urban Village is very strategic, there is a railway terminal type A and Karyajaya type C . Kertapati District has an economic center, trade, and services, among others, the central traditional market, Sungki market. A strategic location with complete infrastructure means that people who residents do not want to move from the current settlement location.

In the spatial plan of the South Sumatra region, Kertapati Village is designated as an Industrial Zone. Kertapati village administratively has an area of 51 ha, with a population of 11,259, 4,221 households with a population density of 220.8 people / ha. consists of 36 RT, 7 RW. The condition of permanent houses is 581 units, semi-permanent 731 units, 506 units of wood [2], based on the Mayor's Decree number 488 of 2014 in Kertapati Village there are 41 slum areas [3]. There are three points of the slum settlement in Kertapati village, namely on the edge of the Ogan River and around the train terminal area, as well as in the residential areas of employees of PT. BA . Conflict of land ownership status, with illegal

status, is still be a problem and there is no solution. PT. KAI recognizes the legal ownership of land through the Dutch Groone Kaart map, while the majority of the community also recognizes the legal ownership of the land with a certificate of land with the status of ownership, and the stay of several descendants. But there are some people who occupy land to build houses with a land rental system to PT. KAI Management with the amount of the price according to the agreement.

The research objectives of this work are identifying land ownership status, condition of residential buildings and infrastructure facilities for residential infrastructure, analyzing the factors causing slums of settlement in Kertapati Village and analyze residential needs and facilities for public infrastructure in the relocation area.

2. Literature Review

According to [4] slum is a legal settlement with a reduced physical quality environment. Squatters are illegal settlements with illegal land that is not arranged with the condition of building structures that are not in accordance with construction and health standards and with infrastructure facilities that do not support. According to [5] slum areas are residential areas with occupancy and infrastructure facilities that are incomplete, deteriorating in quality or not in accordance with standards of need and health. whereas according to ministerial regulation PUPR No. 02 / PRT / M / 2016 about the criteria of slum areas are divided into natural physical criteria, namely low land carrying capacity with dangerrous of land conditions [6].

The built physical criteria are divided into four parts, namely:

a. Unregulated layout structures and patterns and inadequate quality infrastructure facilities.
b. Building Density / Ha, Java island > 300 buildings / Ha and outside Java island > 200 buildings / Ha
c. Population density, calculated from the number of people / ha, and distinguished on the island of Java> 750 people / ha, outside Java island > 500 people / ha.
d. Not habitable, which is characterized to be an average of <7.2 M^2 with <28.8 M^2. And with the structure of sub-standard building materials> 50% of the total house.
e. Stages of determining slum area according to (Regulation of the Minister of Public Works of Public Housing No.02 / PRT / M / 2016).

Through initial selection in general, with regional characteristics namely:

a. Location suitability with space planning (RTRW, RTBL, RTRWD, RDTR).
b. Suitability of physical conditions and the quality of infrastructure and utilities.
c. Population density and buildings
d. The physical condition of the building.
e. Social, economic and disease conditions due to unhealthy environmental conditions.

2.1. Previous Studies (previous research)

Based on a study by [7] in slum rejuvenation journals in DKI Jakarta, the purpose of writing was to obtain an effective implementation strategy for rejuvenation in angke, kemayoran and Pulo Gadung. The parameters analyzed were economic, social, cultural, technical and planological dimensions. Descriptive quantitative analysis method, the results of the analysis stated that the rejuvenation of the slum environment involved the readiness of the social environment and community institutions, solving the problem in this study by using the construction of flats in the existing location with a compensation system for long-term residents, to pay for housing loan.

According to [8] where the research location in the Tunjungan quarter area, the purpose of the research is to identify the characteristics of settlements, to know the factors that influence the direction of settlement arrangement and to arrange settlement arrangement directions. This research method is to describe the characteristics of the settlement area of Tunjungan quarter and the potential problem. Determination of factors that influence settlement arrangement direction by using factor analysis. Subsequently, the settlement arrangement was arranged through the SWOT (IFAS / EFAS) method. The

results of the research were in the form of settlement arrangement direction such as improvement of settlement infrastructure facilities.

Nurdin also study of re-planning of infrastructure in slums in the city, a case study of the Timor road area of Lorok Pakjo Village [9]. This study aims to find alternative efforts to restructure infrastructure in slums, to improve roads, drainage, and houses. So that it meets the planning of the city, better, healthier and in accordance with community expectations. The method used is the descriptive method by distributing questionnaires at the study location. Analysis of the data using SWOT, the results of the research through the PRP2K project alternative infrastructure rearrangement can be carried out in the area of Jalan Timor Kelurahan Lorok Pakjo independently owned by residents with rolling costs and involving BKM in the implementation.

3. Material and Method

This study uses descriptive quantitative methods. Identification of the status of the land, residential buildings, infrastructure facilities are carried out to obtain data on causes of slums and levels of slums. The results of processing the respondents' answer data, calculated the weight of slums, analysis of the new land relocation through map analysis and calculation of occupancy space is done to plan the housing needs and infrastructure facilities in the new land relocation Kemas Rindo Village with a land area of 25 Ha.

3.1 Data Collection Method

In conducting this research, data sources were obtained through primary and secondary data. Primary data is obtained by distributing questionnaires, interviews, and observations with the public and expert respondents. Determination of the number from sample questionnaires using the Solvin formula [10], a random sampling technique, so obtained 100 respondents from the community and 20 respondents from experts. The distribution of questionnaires to the community is divided into 2 places, namely in the slums of Kertapati Village and Kemas Rindo Village. Distribution of questionnaires and interviews with expert respondents is carried out to the relevant agencies. Secondary data collection is obtained through literature, books, internet.

3.2. The location of Research

This research was carried out in the slums of Kertapati Village and in the relocation area of the new area of 25 Ha, namely Kemas Rindo Village. Population conditions in Kertapati Village can be seen in Fig.1.

Figure 1. Location of Population Settlement in Kertapati Village Pointed with Arrow

3.3. Analysis of the level of slums

To find out how much the level of the slum in an area, can use the formula that has been determined by the Director General of Cipta Karya 2006 [11], namely in formula 1

$$\text{Range Value (NR)} = (\Sigma \ [\text{Highest Value - Lowest Value}]) \tag{1}$$

3

After knowing the level of slum area, then we identify the slum status by using the following categories are low Slum (KR) = 1-2 or 50-100, medium slum (KS) = 2-3 or at a value of 100-150 High Slum (KT) = 3-4 or at a value of 150-200. Based on the results subdistrict residents can be seen in table 1.

Table 1. Results of Community Respondents' Answers

	Duration	Duration Score	Information	NR Answers Society
Score 50	22	1100	∑highest	
Score 30	3	90	∑ moderate	340
Score 20	4	80	∑ lowest	

The value of the community answer range with a weight of 50 as many as 22 durations and with a total value of 1100 duration divided by three, then obtained a total value of the level of slums of 340. While the results of the answers of expert respondents can be seen in table 2.

Table 2. Expert Respondent Answers Results

Ahli	Durasi	Duration Score	Information	NR Answer expert
Score 50	18	900	∑ highest	
Score 30	7	210	∑ moderate	273
Score 20	4	80	∑ lowest	

The value of the community answer range with a weight of 50 as many as 18 durations and with a total value of 900 duration divided by three, then obtained a total value of the level of slums of 273 The results of the range value to the level of slums based on the results of the answers of the community and experts then divided into two, then obtained the average level of slums as (340+273)/2 equal to 306.
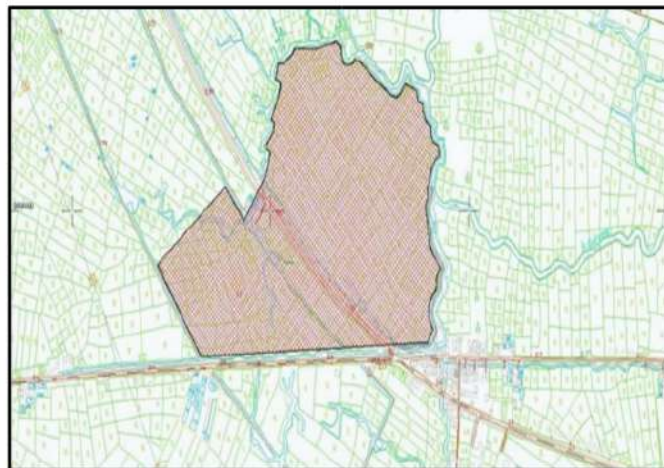

Figure 2. Land relocation of Kemas Rindo Village Area of 25 Ha

Based on the calculation of the level of slums in the settlements of the Kertapati subdistrict residents, it is known that the condition of the area is very slums, with a total value of 306. To solve the problem of slums in the Kertapati Village residential area, several surveys and interviews were conducted in with the community, PT. KAI, and the Government. Based on information, the management of PT. KAI has

prepared 25 hectares of land in Kemas Rindo Village to be used as a relocation area for the Kertapati Village residents who were affected by land acquisition. But the discourse has not been established and has not been socialized to the Government and the community, this is due to lack of knowledge of the financing system and development. Therefore, we need negotiators who can unite the opinions between PT. KAI, the Government, the community. So that it can provide solutions to land grant systems and relocation systems as well as development and management systems. After obtaining a decision on the land grant plan, then some analysis was carried out on the land and residential needs along with the infrastructure in the relocation area with an area of ± 25 Ha, consisting of 2 parts of land, a land area of ± 18 Ha, and an area of ± 7 Ha. It is expected that the relocation land can accommodate residents of Kertapati Village who have not been affected by as many as ± 2000 - 2500 families. The relocation area can b seen in Fig. 2 and 3.

Figure 3. Land relocation of Kemas Rindo Village Area of 25 Ha

3.4. Slum Settlement Management Program Analysis

Analysis of the suitability of the relocation program in Kemas Rindo Village using scala likert, questionnaires and interviews were conducted with among community respondents in Kertapati and Kemas Rindo Villages as well as to expert respondents. The following is the result of data analysis on people's desires and expectations about the relocation program as follows:

a. The system of payment Category with payment period of 10 to 15 years, the amount of credit is Rp. 500,000 up to Rp. 1,500,000 every month. Providing attraction for the community, and it is expected to be given ease in managing the file system and administration to own the house (banking process).

b. For the category of economic function of the region, the location of the relocation is located near the city center (score 90%) and can be used as a settlement (score 90%) gives confidence to the community that the location of relocation can be used as a new place of residence and close to sources of livelihood.

c. Results of community answers to the category of economic functions of the area along with the infrastructure that will be built with a total value variation of 86% - 89%.

d. As for the category of land and house ownership with a total value of 71% - 78% (high), the community strongly agrees with the land ownership status that will be owned by the community (SHM), but is still worried about the promise given by the government and the private sector cannot fulfilled, the community is very interested in this relocation program

e. The results of the community's response to the condition of the land in the form of swamp land on a heap with a score of 61% (high), the community hopes that the landfill will not cause the surrounding area to become flooded and the structure of the house constricted purchased is not damaged crack/ decline).

3.5. Space and residential needs analysis

Planning for residential and infrastructure arrangement refers to the housing procedures and environment of the Indonesian National Standard (SNI number 03.1733, the year 2004) [12], the procedure for the construction of flats (SNI 03.2845 the year 1992) [13]. (SNI 03.2846 the year 1992) [14]. and Kasiba Lisiba technical guidelines (Ministerial Regulation number 32 of 2006) [15]. In planning the building in the 18 Ha land that will be built a site with two types of area, as follows:

A. Shelter Needs Plan

1. Type 36/72 m2

With the calculation of the need for one family head consisting of 3-4 people (father + mother + 1 child) in the house, the minimum floor area requirement can be seen in table 3.

Table 3. Wide House Calculation Plan type 36/72 m2

Spacious Destination	Estimated for Space needs	Large	
Wide floor service	$(2 \times 9{,}6) + (1 \times 4{,}8)$	24	m2
total floor service area	70%	17	m2
Type 36/72	Total for area	41	m2

2. Type 48/90 m2

With the calculation of the need for one family head consisting of 3-4 people (father + mother + 2 children) in the house, it can be seen in table 4.

Table 4. House-wide calculation plan on 18 H land

Spacious Destination	Estimated for Space needs	Large m2
Wide floor service	$(2 \times 9{,}6) + (2 \times 4{,}8)$	28,8
total flor service area	70%	20,16

The calculation of residential units that can be built in relocation sites can be seen in table 5. Planned land 18 he will be built house type tread type 36/72 m^2 and type 48/90 m^2 which will be equipped with infrastructure and supporting infrastructure of a settlement area, and based on calculation will be obtained as many as 981 units of residential home tread While on 7 ha land is planned built rusunawa and rusunami, with the assumption that 1 tower can accommodate 58 units of 36 M^2 type of residence with the building area of 12,751 m^2 61,250 m towers with a height of four floors. Total residential units in clusters large and small are 2777 units in the hope that the provision can accommodate the existing needs of people who relocating ± 50% - 60% of 4,221 families or 2,000 - 3000 heads of families who want. The calculation of residential units that can be built in relocation sites can be seen in table 5.

Table 5. Residential needs

Ha	M2	Large land area M2	M2	M2	Description
		54.000			Embung 30% x land
		33.012			Tots for Road Network (26.2%) of non-embank land area
		7.686			TOT of fasos land (6.1%)
					Building & RTNH land Building land 90%
18	180.000			640	houses 36/72 (60%) from land
		85.302	76.772	341	houses 48/90 (40%) from land
				981	Landed house units
			8.530		RTNH (10%) for parking units dll

Small land area				
	21.000			Embung (30% x lands
	12.838			Tots for Road Network (26.2%) of non-embank land area
	2.989			Totals land for fasos (6,1%)
				land for building & RTNH
7 70.000				lands for buildings 90 %
	33.173	29.856	1.102	Rusunawa T.36 (14,750 x 63,250) x 58 unit
			696	Rusunami T.36 (14,750 x 63,250) x 58 unit
		1.798		Tot.sarusun units
	3.317			RTNH (10%) for parking, etc
Total residential units		981		landed house unit
		1.798		58 unit x 17 block tower
		2.779		

B. Social Infrastructure Plan

Plans on the relocation land to be built home treads and flats will be equipped with environmental facilities with the function of organizing economic development, social, culture, worship facilities, health, trade, public service (seen in fig. 3).
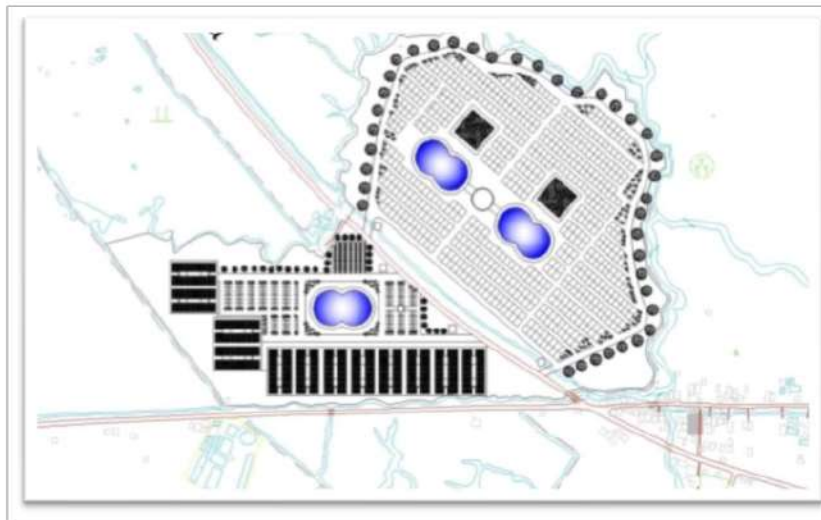

Figure 4. Site Plan of Relocation Area

Social needs for the relocation community is planned to be built several types of facilities, with an estimated land area for 7,500 people, can be seen in table 6.

Table 6. Land Requirement Plan for Social Facilities

No	Type of means	Population Prediction	Needs Per Unit Means		Standard (m2/ soul)	Needs floor area for 7500 inhabitants	Needs the land area for 7500 people	Criteria
			Minimum Land Area (m2)	Minimum Land Area (m2)			(m2)	
1	Community meeting hall	2500	150	300	300	450	900	Can be located in the Central area and residential groups of residents
2	Hansip post	2500	6	12	0,06	18	36	Being in and out access from the group building
3	Power house	2500	20	30	0.012	60	90	Keep it in a safe location and do not interfere with other access
4	Public telephones, mail buses, small trash cans	2500	-	30	0.012		90	Deployed at a staregic location at the center of environmental services
5	Public parking (standard parking area 25 m2)	2500	-	100	0,04		300	Put on public service location of citizens
	Total						1.416	

C. Needs Means of Worship

Based on the References taken from SNI 03-1733-1989, about the planning procedure of urban housing area. So the need for the means of worship that can be built The new land is a community mosque dedicated to the population of 7,500 of a soul (Table 7).

Table 7. Mosque Needs

ype of means	Total population	Needs of Unity means		Standard	Criteria	
		Floor Level Min (m2)	Land area of miniman (m2)	2(m/soul)	Radius achievement tandar	Location and completion
Total Mosque	7500	900	2700	0,24	1.000 m2	Amid the neighbors do not cross the highway
						Can join the location of community hall

C. Trade and Commerce Facilities.
According to SNI 03-1733-1989, on the planning of urban housing area, the need for trade and commerce facilities that can be built new land is shopping with service scale of 6000 - 7500 residents, can be a shop or shop that sells daily necessities and services such as telephone, photocopy, and so forth.

E.Green Open Space Facility.
Open space facilities on the relocation site can be parks and sports fields for estimated use for 7,500 people, and placed in residential centers on 18 Ha and 7 Ha land.

F. Health Facility
In the map of RDTR plan, Kertapati District can be seen around the relocation land has been found Puskesmas, Pustu and Poskesdes.

G. Health Facility
In the map of RDTR plan of Kertapati District can be seen around the relocation land has been found Puskesmas, Pustu, and Poskesdes.

H. Educational Facilities
There are three elementary schools, one junior high school and one senior high school in Kemas Rindo Village which of course can facilitate the need for education for the relocated population, but there is no kindergarten and early childhood facilities in Kemas rindo Village, it is necessary to plan the need for education of children aged early.

I. Recreation and Sports Facilities
The plan to build recreational and sports facilities on a new land relocation is a playground located in an RT neighborhood with a capacity to serve 250 residents and requires an area of 250 m^2 / unit. and a playground located in one RW neighborhood with a capacity to serve 2,500 residents and requires an area of 1,250 m^2 / unit.

J. Planning for construction of ponds
The relocation of land with an area of 25 Ha is tidal swamp land, it is necessary to calculate in the construction of housing with the ponds. The need to make the ponds in order to avoid flooding in the future. Calculation of land for relocation. The volume of embung is planned to accommodate 30.000 m3 water / ponds, while to accommodate the remaining water of relocation the land, will be done sideman in the outer area of the land (river hair), while the extension need of embung can be seen in table 8.

Table 8. Total needs of the ponds

Land area of relocation		Land area of relocation Water Capture Power			Information
Ha	M²	M²	M³ air	M³ air	
					large field ponds
			1,5		± Into the swamp
			270.000		M3 water to be accommodated
18	180.000	54.000	324.000		addition of water
				60.000	divided by 2 embungs (area 1 Hax 3m) x 2 point
					1 river flow irrigate the surroundings
				264.000	land 18 Ha
					small field ponds
			1,5		± Into the swamp
			210.000		M3 water to be accommodated
7	70.000	21.000	252.000		addition of water
				30.000	the river flows on a patch of land 18 Ha
				222.000	small field ponds

3.6 Planning infrastructure and utilities

1. Road

The roads to be constructed are the main roads and road connecting roads, the need for road networks in the new land relocation, planned by 26.2% of the reduced yard area, ie 33,012 m2 on large 18 Ha and 12,838 m2 clusters in small clusters 7 H. Plan the width of the road to be built in the new area with the condition of residential road Road per block width of road 4 meters with shoulder road 0.5 - 1

meter, the road consists of one lane (Fig. 5 -7). The main access road goes to the 8 meter wide housing with 1-1.5 meter road shoulder consisting of two lanes.
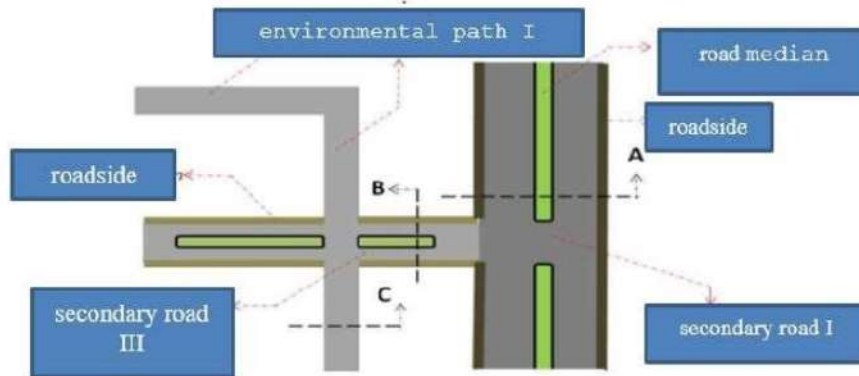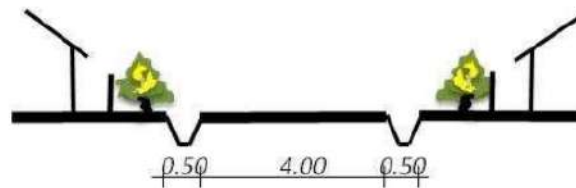

Figure 5. Layout of residential neighborhood road
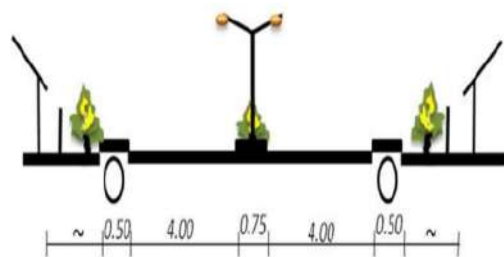

Figure 6. Act A-A

Figure 7. Act B-B

Based on the calculation of the size of the road for 18 hectares of land for the use of 579 housing units of type 36/75 m2 and houses of type 48/95 m2 (table 9).

Table 9. Analysis of Road Network Requirements

wide site	standard road network	wide road network
126.000	26,2%	33.012
49.000	26,2%	12.838
	Total	45.850

2. Drainage

The land condition of the relocation area is a swampland, 80% with a depth of 0.5 - 1 meter, therefore it is necessary to plan a drainage system and replacement water reservoir, it can be retention pond because the land is stockpiled. The construction of drainage facilities within the housing complex, using open and closed system drainage using concrete pairs with drainage standards, ie 18 Ha land housing complexes planned for the construction of nonterraced landed house, housing must meet the drainage standards of 0.40 to 0.60% small clusters devoted to sarusun development must comply with the standard drainage coefficient of 0.50 - 0.90% (Law No. 32 of 2006). The assumption of cross sectional drainage section width of 60 cm, cross-section 40 cm with 60 cm depth. The minimum slope of 2% with peil does not exceed peil flood, in closed drainage, then at each change direction must be equipped with control hole, straight control holes should be placed every 3 meters, it serves to accommodate waste-borne discharged water that can be checked periodically.

3. Cross Water or Water Waste

Calculation of the amount of waste with the assumption of one unit house maximum of five people, service coverage 85%, total water consumption 150 liters/soul/ day, 80% waterwaste percentage, the calculation waste services can be seen in table 10.

Population   = 7,500 inhabitants.

Population served   = population x service coverage

                     = 7.500 inhabitants x 85%

                     = 6,375 people

Waste Water Generation = percentage of water waste x number of soul / unit x water use

                     = 80% x 5 x150 ltr / soul / day = 600 ltr / day = 0.6 m^3 / day

Table.10 Calculation of Waste Services

No	Description	Units	Standards and Calculation
1	Total population	Soul	7500
2	Service coverage	%	85%
3	Population served	Soul	6375
4	Needs of Clean Water	ltr / soul / day	150
5	Percentage of waste water to clean water	%	80%
6	Waste water dump	m^2/day	0,6
7	Feces mud production	ltr / soul / day	30
		m^2/years	33

4. New Water Network

Around the new land area relocation has been installed a secondary network of clean water so that the community can be served by PDAM service unit Kertapati district. The assumption of clean water

requirement for 7,500 people with requirement of 120 liter / person / day. Estimated need for clean water on new land needs clean water at the site.

Individual needs   = 120 liters / person / day x 7,500 people

= 900,000 liters / day,

a. The need for an environmental activity center of 20% x individual needs

=   20%   x   900,000

= 180,000 liters / day

b. Reserve requirement = 20% x 900,000

= 180,000

Then the total water demand for land relocation is 900,000 + 180,000 = 1.080.000 liters/day 5. Waste Shelter

Number of residents served: 90% X population   = 90% X 7,500 people

= 6,750 people

% service number of underserved population / total population x 100

= 6,750 people / 7,500 people x 100%

= 90 % Calculation of

landfill at the housing location

Landfill = type of landfill x number of serviced residents

= 2 liters x 6,750 people

= 13,500/person every day

With the standard waste facilities in the new settlement based on the source of waste, volume can be seen in table 11 – 12.

Table 11. Waste Disposal Facility

No	Description	Units	Forecast Calculation
1	Total population	Soul	7.500
2	Service Coverage	%	90%
3	Population served	Soul	6.750
4	Average waste heap	ltr / soul / day	2,5
5	Domestic waste dump	M^3/day	1
6	Percentage of non Domestic waste dump	%	20%
7	Non Domestic waste dumps	M^3/day	0.63
8	Total piles of garbage	M^3/day	13.500
9	Number of garbage facilities	Unit	
a	Trash (16m3 capacity)		60
b	Carts (1m3 capacity)		121
c	Garbage truck (capacity 16 m3)		7
d	TPS (Capacity 4 M3)		30

Table 12. Estimated Waste Stockpiles

No	Location	Volume	Average volume
1	Housing	2 - 4 liters / person / day	13.500
2	Education	0.5 - 5 liters / person / day	3.375

3	Worship	0.2 - 2 liters / person / day	1.350
4	Other public facilities	0.5 - 1 liter / person / day	3.375
5	Sewers	0.2 - 0.5 liters / person / day	1.350
6	Open space	0.2 - 0.5 liter / person / day	1.350

With the standard waste facilities in the new settlement based on the source of waste, volume can be seen in table 13.

Table 13. Waste Disposal Facility

No	Description	Units	Forecast Calculation
1	Total population	Soul	7.500
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9	Number of garbage facilities	Unit	
a	Trash (16m3 capacity)		60
b	Carts (1m3 capacity)		121
c	Garbage truck (capacity 16 m^3)		7
d	TPS (Capacity 4 m^3)		30

4. Conclusion

Based on the results of the study, there were some conclusions about the infrastructure problem arrangement in the slum area of Kertapati subdistrict, Palembang, consists of several conclusions, there are:

1. The conclusions of the land status at Kertapati subdistrict, which Data and information are obtained through questionnaires and information about community respondents and experts
    a. A resident who residing in a Kertapati subdistrict, resides on the land with the stastus owned by PT. KAI. And based on information of the land status is still in dispute over ownership between the community, PT. KAI and PT. Semen Baturaja. and the residents who reside in Kertapati subdistrict, must be rent the land from PT. KAI management, so they can build their houses, with the sempermanent contructions of house. this is done becouse when the land is needed by PT.KAI management the community is willing to move without money compensation.
    b. The land status problem, the house construction problem, the construction of houses that are not habitable by continuously in large numbers is the one of factor wich formation of the slums at Kertapati subdistrict
2. Based on the calculation of the level of slums in the residential area of Kertapati Village which refers to the standard of CK PU calculation in 2006, obtained indicators of causes of slums include waste both problems of garbage disposal location (73.83%) and waste services that do not yet exist (100%). the strategic location of the area of population punishment (88.57%) is an attraction for

the indigenous population and migrants to reside in the Kertapati Village. Problems with inter-building distance (84.76%), and problems in building footprint and direction of view that are not organized (80%). Problems of population growth (1.01% in 2017). The dominance of land certificates (71.43%), the condition of land ownership (71.43%) are the factors that make up the Kertpati residential area to become slum.

3. Spatial planning for residential needs and infrastructure in the Relocation area in Kemas Rindo Village, with an area of 25 Ha of land consisting of 18 Ha for site houses and 7 Ha for rental flats and flats. Based on calculations for site type 36/72 m2 and 48/90 m2 total housing units were built 981 units. While for 7 hectares of land is planned rusunawa and rusunami are 22 towers along with supporting infrastructure facilities. The total residential development units, both landed and vertical houses will accommodate 2,779 residential units. Settlement infrastructure facilities that will be prepared for residential areas relocation, among others, environmental roads, drainage around housing, sewerage and sewage, temporary landfills (TPS), RTH and RTNH, social cultural facilities buildings, clean water networks, electricity networks fire department network, telecommunication network plan.

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